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Recipe for Life - Health Awareness

Courtney Thrower
cthrower@smu.edu

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Courtney Thrower

Mentor: Dr. Donna Gober
Southern Methodist University
Engaged Learning

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ABSTRACT

The design of this project was two-fold; the research component included examination of data from a previous investigation and compared it with data collected in a community service project. In each, the aim was to assess the health habits of underserved Spanish communities and provide information and opportunity for engagement with health education. Data were collected from voluntary participants in Panama and West Dallas. The purpose of the investigation was to learn more about perceptions of health habits and provide hands-on learning regarding what it means to be healthy and practice a wellness lifestyle. Specifically, to help participants in underserved groups understand better how diet and exercise influence health, two populations were included for comparison and possible correlation. The first data sets were collected from patients of a mobile clinic conducted by the Global Medical Brigades in Tranquilla, Panama. Four hundred and fourteen individuals of ages 18 or older were observed. The second population assessed was composed of approximately 30 community members of the non-profit, Brother Bill's Helping Hands, in West Dallas who voluntarily participated. In Panama, health education seminars were conducted in fifteen-minute intervals for the patients in the clinic. Nutrition, disease and disorder, hygiene, and exercise were discussed. Similar information was presented to the volunteer participants at Brother Bill's helping Hands. Pre- and post- assessments were completed by participants to analyze understanding and perceptions of nutrition before and after the workshop. In both settings translators assisted in presenting the information and answering questions posed by participants. Data analysis was conducted using descriptive statistics, observation, and comparisons of raw data. Findings indicated lack of resources to health education, information and regular medical care may negatively impact understanding of health practices. Results of this investigation appear to reflect trends of chronic illnesses including

diabetes, hypertension, and obesity as they relate to poor nutrition habits and sedentary lifestyle. Recommendations for future research include continued investigation and intervention with underserved communities to assist in improving health knowledge, behavior change, and health outcomes.

ACKNOWLEDGEMENTS

This project would not have been possible without the encouragement and support of Dr. Susan Kress and Mrs. Meleah Harris, in the office of Engaged Learning. Thank you for your direction and for never giving up on my idea, despite the circumstances. I have also benefited greatly from the leadership and guidance of my mentor, Dr. Donna Gober. I understand wellness because of what I see in Dr. Gober - her expertise in the fundamentals, her love in understanding the exploration for complete mind, body, and spirit, and her service to help others attain it. Only now am I realizing the sacrifice and hard work it takes to take an idea that is grounded on passion and develop it into something that can be studied in a physical setting, while providing service to those in need. I would also like to acknowledge the SMU chapter of Global Medical Brigades and all directors, coordinators, and advisors that helped make the trip possible and also for providing me with data to study the Panamanian population. Regards to: Mark Rudich, Lilian Nwora, Andrew Pham, Sonali Batta, Rohan Kanade, Kinnari Ruikar, and Mrs. Gloria, for your expertise in health and Spanish, which helped make the workshop with Brother Bill's a success. Thank you to Adair Neely, for allowing me to work with the Brother Bill's neighbors and assisting the final planning and execution of the workshop. Lastly, but certainly not least, to my family, thank you for all your love, support, and encouragement. Thank you mom for fueling my

passion to serve and Tyler for allowing me to be apart of your story and for being the catalyst that helped ignite a curiosity into a passion.

OPENING REMARKS

As an undergraduate student studying Biology with plans to become a Physician, I was drawn to the degree plan as it is immersed in the various topics of science and medicine. This includes, but is not limited to: genetics, physics, inorganic and organic chemistry, biochemistry, microbiology and of course general biology. These various courses are rigorous and detailed, but also the foundation of the intimidating MCAT and medical school application process. This extensive journey can quickly cause one lose sight of the reason to seek the life of a Medical Doctor*;* improving health. What does it mean to become healthy? This is the question I asked myself in reference to my personal life and pursuit*s* in medicine. Engaged Learning provided me the opportunity to explore and define this question. Here I will discuss my journey *in* recognizing health as a companion to wellness, which includes my experience in Panama and West Dallas. I will relate this understanding and practice to a recipe that require three important ingredients: nutrition, exercise, and an understanding of disease and disorder.

INTRODUCTION TO THE STUDY

A Personal Journey

Two summers ago, I received a disturbing call from my parents, that my now fourteen-year-old cousin, Tyler, was rushed to the emergency room and sent to ICU after collapsing one evening. During the hour blackout, concerns about him going into a coma arose. Foregoing this episode he experienced several weeks of symptoms including severe weight loss, fatigue, headaches, shortness of breath and extreme dehydration. After blood work, accompanied by several other tests, the doctors finally hit the nail and he was diagnosed with type-1 Diabetes, also known as juvenile Diabetes.

Juvenile diabetes is genetically passed and it is not preventable. However, it can be delayed; it was noted that Tyler was diagnosed so soon due to his poor diet and activity levels. Being diagnosed was very challenging for him and his parents. They became overwhelmed by the lifestyle changes that needed to take place. My mother and I took the liberty to try to help as best as we could. We attended lectures, cooked several nutritious meals along with desserts for diabetics, and we were involved in several outdoor games. Now over a year later, He has learned how to properly maintain his insulin levels and diet. Although, he cannot reverse the disorder, he has and is continuing to happily live with being a type 1 diabetic.

After this experience a red flag went up for me. One factor that has lingered with me for years is the doctor's statement, "many years of him living with this illness could have been avoided if he had better dietary habits." The experience along with my previous curiosity in health and nutrition helped me realize the importance of maintaining good eating habits and regular exercise. Many families in America, including my own have a strong genetic history of

diabetes and many other common deadly diseases including hypertension, coronary artery disease, and cardiovascular disease. The underlying cause or catalyst to these disorders is nutrition and exercise. Those two factors are the most common, most cost efficient, and most effective prescriptions given by physicians. However, I have found since childhood, most people do not understand what it takes to maintain good nutrition or how to exercise properly. This can be *due* to many factors. Due to cultural heritage and beliefs concerning health practices, many populations receive limited health, nutrition, and exercise education (Marin, 1995).

Background of the Problem

The abundance of health issues in the United States is increasingly rising (WHO, 2015). Many of the most common diseases derive from a lifetime of poor nutrition and sedentary lifestyles (Hoeger, Turner, Brent, 2007). Many of these habits including fast food dining, originated since childhood and carry on to the individual's adult life. These habits are often related to the culture of the population. Culture forces, among other social forces, are powerful determinants of health related behaviors (Huff, 1999). Culture is defined as "learned, nonrandom, systematic behavior that is transmitted from person to person and from generation to generation" (Huff, 1999, p 7). As a healthcare advocate it is important to understand the health conditions of all populations, specifically to those with limited resources to instill healthy practices in their everyday life.

The purpose of this project was two-fold. The purpose of the research design was to analyze the basic nutritional habits of an underserved population in West Panama and a local community in West Dallas, TX and compare the findings to determine possible intervention and education strategies for the local community. This provided opportunity to examine needs and design an evidence-based plan for nutrition and health habits of the target populations. The

purpose of the service component was to design an education/intervention workshop to increase awareness of the importance of nutrition and health habits, which included opportunities for learning from experts in the field, hands-on practice, and resources for future learning for the participants.

The Panama Connection

The trip to Panama took place with the Global Medical Brigades in August of 2014 and a three day clinic was conducted during our week stay. The clinic was composed of five stations with health education being one of them. They also included intake and triage, doctor consultation, dental examinations, and donated medications/medication education. The health education component was presented through "Charlas," meaning, "chat" in Spanish. Here we emphasized the importance of nutrition and physical activity on health through visual presentations, examples, and open discussions. Each Charla lasted for approximately fifteen minutes and included ten to twenty adults. This information was also presented to children through craft activities, games, and songs. The experience in Panama was used to observe and understand the culture and lifestyle of the Spanish community and how it relates to their health habits. A total of four hundred and fourteen people were seen in Panama. The global brigades counselors collected data, including the patient's chief complaint, medical history, and physical examination. This is information was shared to help the development of the project.

Brother Bill's Helping Hand Local Outreach in Dallas

After observation and analysis of data collected in Panama, similar principles were applied to a local non-profit in West Dallas, Brother Bill's Helping Hands. Here a workshop was conducted to present similar education information and learning experiences similar to what was done in Panama.

Summary and Organization of the Study and the Service Project

The research design was approved by the IRB at Southern Methodist University. A professional translator was present for non-English, Spanish speaking participants. The workshop began with assessment surveys to determine current health habits of the participants and test their understanding of what it means to be healthy. Participants completed explanation of the study and informed consent forms, release of liability, and Physical Activity Readiness Questionnaire (PAR-Q). The PAR-Q was used to assess any concern for health problems. Pre- and post- assessments were given to assess the participant's current state of healthy living. All forms including the assessment surveys were reviewed and approved by the Institutional Review Board (IRB).

Nutrition. Following the introduction of all formal material, an intervention session took place. This session included an interactive presentation of nutrition, by a UT Southwestern Dietician graduate student. This portion covered the basics of what nutrition is, what it takes to maintain a nutritious diet, the food plate, how to read and understand the dietary labels on food packaging. The closing activity for this session was a demonstration of how to make a healthy affordable snack, and all participants engaged in this process and tastings of the food preparation.

Disease and Disorder. This was followed by presentation and discussion from three UT Southwestern medical students which included content pieces focused on three of the most common preventable food related diseases in America: diabetes, hypertension, and obesity. Participants were encouraged to ask questions and share related experiences. Visual aids and handouts were provided.

Exercise. The Exercise portion of the workshop followed and was covered by an ACSM (American College of Sports Medicine) certified fitness instructor who is also a SMU wellness

professor. The five components of health-related fitness were presented. Participants were guided through a visual presentation of the importance of including fitness practices in a healthy lifestyle. A brief, safe and effective exercise session was included to establish basic exercises that could be performed at home. The instructor offered participants an explanation of body composition and health as it relates to fitness and nutrition and an option to have their body composition assessed at the end of the workshop.

Post-workshop assessments were given to assess participant learning and perceptions of how they planned to implement these changes into their lifestyle. A goal-setting component was presented to participants. Observations during participation and analysis of data collected during the volunteer workshop may assist in understanding cultural habits of underserved communities and developing more intentional preventative measures to better improve overall health.

REVIEW OF THE LITERATURE

Introduction

After research and experience, I have found there is a steep educational delay amongst the Hispanic/ Latin culture. Adult Hispanics lag behind other groups (Non-Hispanic Caucasians and African Americans) in education levels (Huff, 1999). According to Huff in his book, *Promoting Health in Multicultural Populations* (1999, p. 118), "Only about fifty percent of Hispanics age twenty five years or older have completed high school education, compared to eighty four percent of their Non-Hispanic white counterparts. Economic status, therefore health status, is closely related to education levels". Economic status can determine health care access and health care education (Ramirez, Villarreal, Chalela, 1991). Diseases that are commonly seen in the Hispanic population include are diabetes, obesity, cardiovascular disease, and cancers of the gallbladder and liver, with diabetes being the number one health-related disorder (WHO,

2015). Risks of these disorders are linked to cultural habits, environmental factors, lack of health insurance and lack of involvement in medical and preventative factors. Of these risk factors, preventative factors can be controlled and addressed.

Historical Perspective

I traveled to Panama with the Global Medical Brigades to setup a mobile clinic and provide educational resources to a target underserved Panamanian village. Here I had the opportunity to further analyze and understand the cultural restrains amongst the Latin community. This experience contributed to the impetus and execution of the workshop with Brother Bill's Helping Hands.

Thirty percent of the Panamanian population lives in poverty (Global Brigades, 2011). The impoverished areas are centered at the targeted Panamanian community where the brigade took place. Due to these economic conditions, most inhabitants of the community only receive primary and secondary education. There are typically no health care attendants or health committees in the village. The community members must travels to Panama City for medical and dental care. However, their resources for travel and service are usually very limited. The most common diseases seen amongst community members are diabetes, hypertension, and parasite infections (Global Brigades, 2011). The Global Brigades was designed to help these communities so that they can learn to be self-sufficient and one day no longer needs the assistance of Global Brigades. They first implement this plan by offering a Medical brigade that provides medical attention, consultation from Medical Doctors, dental care, medications, and nutrition and hygiene education. Travels to Panama provided hands on experienced in prevention education and the opportunity to experience the Latin American culture while understanding their nutritional, educational, and economical social status.

West Dallas is bound by: Interstate 30 on the south, the Trinity river on the east and north, and the Trinity River's West Fork on the West. According to Serve West Dallas, the current population is 24,063 with a median age of twenty-six. The demographic break down consists of seventy-two percent Hispanic, twenty-five percent African American, and three percent Caucasian. West Dallas is considered one of the most economically disadvantaged communities in the US. Sixty-seven percent of the adult population has less than a twelfth grade education and thirty-five percent of that has less than a ninth grade education. Only two percent of the adult population has a college education. The average per capita income of West Dallas inhabitants is $9,813, compared to the average per capita for the city of Dallas, $24,273 (Serve West Dallas, 2015).

The Panamanian village and West Dallas community shared similar economic and cultural stature. This helped ensure the information presented and analyzed was addressed comparatively and also a provided a valuable representation of the issues shared in underserved Spanish communities. As stated previously, the cultural heritage, economic status, and educational status of Hispanic populations strongly influence health status. Poverty rates of Hispanics are nearly four times that of non-Hispanic white Americans and only 50 percent of Hispanics in the U.S completed high school (Huff, 1999).

The ability to assimilate and acculturate the American culture and habits is less acquired by the Spanish culture compared to that of other cultures (Huff, 1999). With these factors in mind, one of the goals of this project was to open the cultural boundary and support the importance of healthy living and awareness. The intention was to apply the same motto of Global Brigades and educate individuals on how to properly maintain their diets and daily activity, while respecting and protecting their culture. This may in turn help them control their health

issues, promote self-assurance and confidence, and an overall sense of being well.

Understanding Nutrition

Nutrition is the science of how the body uses food. All living things need nutrition. Every day our bodies need certain essential nutrients that it cannot manufacture for itself. These essential nutrients provide energy to our cells to build and repair body tissues and regulate body functions. Nutrition looks at food in two ways: energy and nutrients. Energy is the ability to do work; every bite of food provides you with some sort of energy, even when it does not give you nutrients. Nutrients are chemical substances your body uses to build, maintain, and repair tissues. (Duncan, 2005). Nutrients are broken down into macronutrients or micronutrients by our digestive system to help carry out function. There are six essential nutrients that fit into these categories: water, protein, carbohydrates, fats, vitamins, and minerals (Hoeger, et al., 2007).

Sixty percent of our body is composed of water. We obtain carbohydrates, protein, and fats in the food we eat and they also provide our bodies with energy (Hales, 2005). Vitamins and minerals are provided in some foods and also through supplementation. Together they make up micronutrients. The amount of energy that can be derived from macronutrients is measured in calories. Calories should be balanced to energy expenditure (WHO, 2015). According to federal standards, the calorie intake for adults should be the following: forty-five to sixty-five percent of calories should come from carbohydrates, twenty to thirty-five percent from fat, and ten to thirty-five percent from proteins (Hales, 2005).

To create a healthy diet and avoid overconsumption, it is important to choose foods that are rich in nutrients (Hoeger, et al., 2007). These include foods such as vegetables, fruit, and lean meats. Food choices that are low in nutrients are considered empty calories. These foods deliver

only calories with few if any nutrients. Examples of low nutrient foods include potato chips, candy, soft drinks, and crackers. According to the Dietary Guidelines for Americans, 15 percent of American households have been unable to acquire adequate food to meet their needs (WHO, 2015).

Nutrition Data Collected in Panama and Brother Bill's Helping Hands

While in Panama, nutrition and dietary habits of the clinical patients were not collected. Nutrition was one of the topics presented during the Charla. We discussed the food categories, the food plate, and food labels. We also provided open discussion to gather what were the main types of foods consumed by the clinical patients. The patients reported rice as the main food consumed with every meal. They also reported eating a lot of fruits such as plantains, papayas, and mangos, and other carbohydrates such as beans and bread. Many of the participants were not aware of the food categories and the foods that fit into each category or the food plate.

At the beginning of the workshop at Brother Bill's Helping Hands, pre assessments were passed out to provide a snap shot of the participant's daily consumption. Data indicated sixty one percent of the individuals reported eating averagely healthy on a scale of zero to seven; fifty percent eat fruit or vegetables at least once per day; fifty two percent reported drinking sodas or sugary beverages more than six times per week; fifty eight percent drink a glass of water four or more times a week; forty percent reported eating from fast food restaurants at least three days a week; fifty eight percent of the participants eat sweets including chips, cookies, and cakes daily; sixty seven percent were aware of the food plate; and only twenty four percent reported it is difficult to find healthy foods.

Understanding Disorder and Disease

Unhealthy diet and lack of physical activity are leading global risks to health (WHO, 2015). The World Health Organization projects, diabetes will be the seventh leading cause of death in year 2030 (Mathers, 2006). In the past few years, an estimated 1.5 million deaths worldwide were directly related to diabetes and more than eighty percent of the diabetes deaths occur in low- and middle- income countries (WHO, 2014). The overall prevalence rate in the United States for non-insulin dependent, Type 2 Diabetes, is approximately 12 million people or six percent of the population (Huff, 1999). Type 2 Diabetes is two to five times more prevalent among Hispanics than among the general United States' population (Ramirez, Villarreal, Chalela, 1991). "A healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use can prevent or delay the onset of type 2 diabetes," (WHO, 2011).

Diabetes

Diabetes is a chronic disorder that takes place one of two ways. In the first, the body does not produce enough insulin. The second path occurs when the body cannot effectively use the insulin it produces (Hales, 2005). Insulin is a hormone that is produced by the pancreas and it plays a crucial role in regulating blood sugar. Sugar, or glycogen is obtained in the foods we eat. It is insulin's job to break down the blood sugar into a form that our cells can use to metabolize and function (Hales, 2005). In a person who has diabetes, the cells that release insulin are destroyed or are in the process of destruction (Cnop, Welsh, Jonas, Jorns, Lenzen, and Eizirik, 2005). Elevated blood sugar levels are the cause and effect of uncontrolled diabetes and over time can lead to the damage of many of the body's systems (Cnop, et al. 2005).

There are two common forms of diabetes, Type 1 and Type 2. Type 1 is also known as juvenile diabetes, because the onset is typically during childhood. With this type of diabetes, the individual's pancreas does not produce insulin, so they must regular take insulin shots to help control their disorder; they are insulin dependent (Web md, 2015). Type 2 diabetes is typically adult onset and non-insulin dependent. However, the prevalence of Type 2 in children is rising (WHO, 2015). This form of the disorder accounts for the majority of the people who have diabetes; 90 to 95 out of 100 people diagnosed (Web md, 2013). With Type 2 the body cannot effectively use insulin. As the disorder gets worse, the pancreas makes less and less insulin and can lead to insulin deficiency. This form of the disorder is largely the result of excess body weight and physical inactivity (WHO, 2015).

In a major federally funded study by the Diabetes Prevention Program, 3,234 people at high risk for diabetes, demonstrated that moderate diet and exercise may delay the onset of or prevent type 2 diabetes. This program consisted of thirty minutes or more of moderate exercise five or more days per week, or one hundred and fifty or more minutes per week with consistency to result in a five to seven percent weight loss (Preventing Diabetes, 2014). Though type 1 and type 2 diabetes increase an individual's risk for many health complications, both can be mediated with good nutrition and fitness practices (WHO, 2015). Managing and monitoring the disorder can prevent or delay these complications (Web, md, 2013). Diabetes is the leading cause of blindness, kidney failure and is a risk factor for heart disease, stroke, and foot and leg amputations (Diabetes, 2013).

Hypertension

"High blood pressure is one of the most important modifiable risk factors for cardiovascular disease. It is an extremely common finding in the community and a risk factor for myocardial infarction, stroke, congestive heart failure, end-stage renal disease, and peripheral vascular disease," (Burt, Whelton, Roccella, Brown, Cutler, Higgins, and Labarthe, 1995). Hypertension or high blood pressure was defined as mean systolic blood pressure (SBP) ≥140 mm Hg, mean diastolic blood pressure (DBP) ≥90 mm Hg (Burt, et al., 1995). Normal blood pressure is defined as a systolic equal or less than 120mmHg and a diastolic equal to or less than 80 mmHg (Hales, 2005).

To understand how hypertension develops, and overview is necessary. Blood is carried to all parts of the body from the heart. As the heart beats it pumps blood into the vessels; the force of the blood pushing against the blood vessel walls generates pressure. The higher the pressure, the harder the heart has to pump. The persistent elevated pressure on the blood vessel causes hypertension. The higher the blood pressure equals the higher the risk of damage to the heart and blood vessels. This can lead to heart attack or heart failure. The World Health Organization's Global Health Observatory data states, "Around 22% of adults aged 18 or over have high blood pressure," (2015). The prevalence of elevated blood pressure was higher in low-income countries compared to middle-income and high-income countries (Raised Blood Pressure, 2015).

People with increased weight have excess fat tissue that can clog the arteries and blood vessels (Burt, et al.,1995). This causes an increase in vascular resistance, in turn causing the heart to do more work to move blood throughout the body. The Framingham Heart Study (2015) estimated that excess body weight (including overweight and obesity), accounted for

approximately 26 percent of cases of hypertension in men and 28 percent in women (Delaney, 2015).

Obesity and Inactivity

"Poor diet and physical inactivity are the most important factors contributing to an epidemic of overweight and obesity in this country. The most recent data indicated seventy two percent of men and sixty four percent of women are overweight or obese, with one third of adults being obese. In absence of overweight and obesity, poor diet and physical inactivity are associated with major causes of mortality and morbidity. These include cardiovascular disease, hypertension, type 2 diabetes, osteoporosis, and some types of cancer," (US department of Agriculture and US department of Health and Human Services, 2015).

The center for Disease Control and Prevention defines overweight and obesity as a disorder involving excessive body fat that increases the risk of health problems. They are both measured based on ranges of weight that are greater than what is considered to be normal for a person's height (Center for Disease and Control, 2012). These ranges are based upon the "body mass index" (BMI) and it correlates to the amount of body fat present. A BMI range for most adults (this does not include athletes) from 25 to 29.9 is considered overweight. A BMI of 30 or more is considered to be obese. More than one-third (34.9% or 78.6 million) of U.S. adults are obese. In general, the prevalence is higher in persons who are members of racial and ethnic minority populations than in non-Hispanics white populations. African Americans have the highest rates of obesity, forty-eight percent, followed by Hispanics, forty-three percent (Ogden, Carroll, & Flegal, 2014). There is also a trend that individuals of low income populations and

those without college degrees are more likely to have obesity compared with higher income populations with more educated individuals (Ogden, 2010).

Obesity leads to many serious health problems. Excess weight wears and tears the body and makes it more difficult to perform the body's daily function. Overweight and obesity results from an energy imbalance that involves eating too many calories and not getting enough physical activity (Hales, 2005). Behavior and environment play a role in causing people to become overweight and obese (Office of Surgeon General, 2001). For example, the availability of locations to exercise and the resources to choose healthier food options has been shown to influence health behaviors (Huff, 1999). The Center for Disease Control reports the leading consequences of overweight and obesity are the following: coronary heart disease, diabetes type 2, cancers of the endometrium, breast and colon, hypertension, high cholesterol, stroke, liver and gallbladder disease, sleep apnea, respiratory disease, osteoarthritis, and gynecological problems. Overweight and obesity and their associated health problems have raised medical care costs. In 2008 the cost totaled to $147 billion dollars (Office of Surgeon General, 2001).

Good nutrition that includes an adequate number of calories and well balanced variety of foods, combined with regular physical activity, is the cornerstone of good health (Hoeger, et al., 2007). Poor nutrition and excess weight can lead to reduced immunity, increased susceptibility to disease, impaired physical and mental development, and reduced productivity (WHO, 2015).

Disorders found in Panama and Brother Bill's Helping Hands

During the course of the week in Panama, we treated a total of 417 people for acute illnesses such as cold, flu, and intestinal parasites. However, it was suggested they also suffered

from chronic illnesses, such as Diabetes and Hypertension. Twenty percent of the patients reported Hypertension or Diabetes as their chief complaint. Twenty one percent were overweight or obese. Ten percent were severely or morbidly obese, having a BMI closer to 40. During the workshop at Brother Bill's Helping Hands, the pre-assessment completed by participants included questions in related to disease and disorders. The assessment inquired whether or not the individuals themselves or a family member suffered chronic illnesses such as Diabetes or Hypertension. Seventy two percent reported their immediate relative or themselves suffer from a chronic illness.

Understanding the Impact of Exercise on Health

Physical fitness is defined as "the ability to respond to routine physical demands, with enough reserve energy to cope with a sudden challenge" (Hales, 2005, 106). A person is considered fit if they are able to adapt to three instances: they meet their daily energy demands, they can handle unexpected extra demands, and they are protecting themselves from potential health problems (Hales, 2005). Diana Hales, author of *An Invitation to Health states, "*If exercise could be packed into a pill, it would be the single most widely prescribed and beneficial pill in the nation, because nothing can do more to help your body function at its best," (p.107). Exercise benefits to your entire body: your heart muscles become stronger and obtain to ability to pump blood more efficiently; your heart rate and resting heart rate slows down; your blood pressure can decrease; exercise thickens the bones and slows down the process of losing calcium that comes with age, osteoporosis; it increases joint flexibility; it improves digestion and elimination; it speeds up the metabolism; it produces more lean body mass, thereby causing the body to burn more calories at rest and decrease body fat percentage; it heightens insulin sensitivity, playing a

direct role in diabetes prevention; it enhances clot dissolving substances in the blood to prevent stokes, heart attacks, clots in the lungs, and lowering the risk of certain cancers; and it can extend your lifespan and sharpen your memory and mental status (Hales, 2005). The World Health Organization found that insufficient physical activity is 1 of the 10 leading risk factors for death worldwide (2014).

There are five health-related components of fitness: cardiovascular fitness, muscular strength, muscular endurance, flexibility, and body composition (American College of Sports Medicine, 2015). All five components must be incorporated into a weekly exercise regimen for health-related fitness (ACSM, 2015). It is recommended by the American College of Sports Medicine that adults perform at least 150 minutes of moderate-intensity physical activity throughout the week, or do at least 75 minutes of vigorous-intensity physical activity throughout the week (2015).

Data indicating the physical activity level of the patients in Panama was not collected. However, it was discussed and example exercises were provided during the educational programming there. Data collected from the pre assessments completed by participants during the Recipe for Life workshop at Brother Bill's indicated forty seven percent of the individuals reported exercising at a moderate level at least four days a week.

Health and Wellness

The World Health Organization defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (WHO, 2015). Health may be viewed from various viewpoints as a state of mental health and physical health. A

perception of health may not only be defined within medical context. When defined in reference to a patient it analyzes their sociocultural status that includes their physical appearance, emotional disposition, and behavioral traits. "For many adults, the functional component is a critical factor in defining health or illness—in the absence of symptoms, there is no disease" (Georgetown University Center for Child and Human Development, 2015). Health is the process of discovering, using, and protecting all resources within the body, the mind, and the spirit. The holistic approach to medicine looks at the health and the individual as a whole, rather than part-by-part (Hales, 2005).

Wellness is defined as a lifestyle choice characterized by personal responsibility and optimal enhancement of physical, mental, and spiritual health (Hales, 2005). To fully be able to take advantage of these aspects of health and purposely enjoy life, the health status of a person comes into play. Health practitioners look at wellness as a belief that everything you do, think, and feel impact on your state of health (Hales, 2005). This approach suggests, to address the well-being of an individual for medical purposes it is important to acknowledge the health of their mind, body, and spirit (Hales, 2005).

Prevention education addresses all three of these areas. Through preventative education the holistic lifestyle habits of the individual influence all health outcomes simultaneously (Marin, 1995). Encouraging and promoting efforts to improve mental and spiritual health provides a mechanism for empowering people to help themselves (Marin, 1995). The ability to become aware of your condition and the acceptance to make changes to better improve the condition promotes the identity of the individual's purpose and helps move them in the direction of achieving their full potential within that purpose (Hales, 2005).

"According to the Wellness Inventory by Dr. John Travis, No matter what your current state of health, you can begin to appreciate yourself as a growing, changing person and allow yourself to move toward a happier life and positive health," (Hales, 2005, 4). Individuals in underserved communities do not often have the luxury of medical practitioners at their service. Preventative education delivered by caring professionals may provide a consistent source of preventative medicine and empower individuals to make more effective health choices.

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

The results of this study provided an understanding of how dietary habits and exercise practice can influence health perceptions, practices, and outcomes. Results of this investigation and outreach are congruent with the literature (WHO, 2015). The lack of resources, specifically the lack of health education and availability resources, may contribute to poor health outcomes. These factors can affect food choices, methods of dieting, and exercise behaviors. Many participants were not aware of the relationship between these factors and their health, particularly with regard to nutrition and exercise as it relates to disease and disorder. This research and future research can contribute to knowledge of the disadvantages that affect underserved communities.

On a personal note, I am inspired by this project. Studying biology as a pre-med undergraduate student can make it difficult to put life into perspective. It is hard to understand how to diagnose and treat someone while sitting in Introductory Biology. This opportunity provided the chance to visualize health by putting the scientific aspect in action and applying it to how to help someone become well. I believe lack of exercise and nutrition is the root to all physiological imbalances. This project catalyzed my outlook on medical practice as a future health professional. Patient Health, I believe, is a general condition of wellness. It reflects the

patient's mind, body, and spirit. I value the importance of serving all aspects of health. I not only desire to master the skill of diagnosis and prognosis, but also to educate and empower future patients to address their issue and choose a healthier lifestyle. As I continue my journey to become a physician I focus my eyes on the ultimate goal and my heart in the hands of others.

REFERENCES

American College of Sports Medicine. (2015). ACSM Recommendations on Quantity and Quality of Exercise. Retrieved April 2015 from http://www.acsm.org/about-acsm/media-room/news-releases/2011/08/01/acsm-issues-new-recommendations-on-quantity-and-quality-of-exercise

Burt, V., Whelton, P., Roccella, E., Brown, C., Cutler, J., Higgins, M., Labarthe, D. (1995). Prevalence of Hypertension in the US Adult Population: Results From the Third National Health and Nutrition Examination Survey, 1988-1991. *Hypertension,25*(3), 305-313. Retrieved April 10, 2015, from http://www.ncbi.nlm.nih.gov/pubmed/7875754

Center for Disease and Control. (2014, October 21). Preventing Diabetes. Retrieved April 10, 2015, from http://www.cdc.gov/diabetes/basics/prevention.html

Center for Disease and Control. (2012, April 27). Causes and Consequences. Retrieved May 2015, from http://www.cdc.gov/obesity/adult/causes/index.htm

Center for Disease and Control. (2012, January 1). Defining Overweight and Obesity. Retrieved April 11, 2015, from http://www.cdc.gov/obesity/adult/defining.html

Cnop, M., Welsh, N., Jonas, J., Jorns, A., Lenzen, S., & Eizirik, D. (2005). Mechanisms of Pancreatic β-Cell Death in Type 1 and Type 2 Diabetes Many Differences, Few Similarities. *Diabetes, 54*(2), S97-S107. Retrieved from http://diabetes.diabetesjournals.org/content/54/suppl_2/S97.short

Delaney M.D., J. (2015, January 1). Obesity Action Coalition » Hypertension and Obesity: How Weight-loss Affects Hypertension. Retrieved May 15, 2015, from http://www.obesityaction.org/educational-resources/resource-articles-2/obesity-related-diseases/hypertension-and-obesity-how-weight-loss-affects-hypertension

Duncan, A. (2005). *The chemistry of food and nutrition* (Kindle ed.). Manchester: Vegetarian Society ;.

Georgetown University Center for Child and Human Development. (2015). "Body / Mind / Spirit - Definitions of Health, Illness and Sickness." Retrieved May 1, 2015, from http://nccc.georgetown.edu/body_mind_spirit/definitions_health_sickness.html

Global Brigades. (2011). JOIN THE GLOBAL HEALTH AND DEVELOPMENT. Retrieved May 2015 from http://www.globalbrigades.org

Hales, D. (2005). *An invitation to health* (12th ed.). Australia: Wadsworth.

Hoeger, W., Turner, L., & Hafen, B. (2007). *Wellness: Guidlines for A Healthy Lifestyle* (Fourth Edition ed.). Belmont, CA: Thomson Higher Education.

Huff, R. (1999). Community-Level Diabetes Control in a Texas Barrio. In *Promoting health in multicultural populations: A handbook for practitioners*. Thousand Oaks, Calif.: Sage Publications

Marín, G., et al. (1995). "A Research Agenda for Health Education among Underserved Populations." Health education quarterly 22.3 : 346.

Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS* Med, 2006, 3(11):e442

Office of the Surgeon General (US); Office of Disease Prevention and Health Promotion (US); Centers for Disease Control and Prevention (US); National Institutes of Health (US). The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity. Rockville (MD): Office of the Surgeon General (US); 2001. Available from: http://www.ncbi.nlm.nih.gov/books/NBK44206/

Ogden CL, Carroll MD, Kit BK, Flegal KM. (2014). Prevalence of Childhood and Adult Obesity in the United States, 2011-2012.*JAMA*. 311(8):806-814. doi:10.1001/jama.2014.732.

Ogden CL, Lamb MM, Carroll MD, Flegal KM. (2010). Obesity and socioeconomic

status in adults: United States 1988–1994 and 2005–2008. NCHS data brief no 50. Hyattsville, MD: National Center for Health Statistics.

Ramirez, A., Villarreal, R.Chalela, P., (1991) "Community-Level Diabetes Control in a Texas Barrio." In. Huff, R. (1999). *Promoting health in multicultural populations: A handbook for practitioners*(p. 169). Thousand Oaks, Calif.: Sage Publications.

Serve West Dallas. (2015, January 1). Retrieved May 1, 2015, from http://servewestdallas.org/about/west-dallas-demographics/

US department of Agriculture and US Department of Health and Human Services Food and Nutrition Service (2015, March 16). Retrieved May 1, 2015, from http://www.fns.usda.gov/school-meals/child-nutrition-programs

Web md. Diabetes: Differences Between Type 1 and 2-Topic Overview. (2013, January 13). Retrieved April 10, 2015, from http://www.webmd.com/diabetes/tc/diabetes-differences-between-type-1-and-2-topic-overview

WHO | World Health Organization. (2015). Retrieved May 1, 2015, from http://www.who.int

World Health Organization. (2015, January). Diabetes. Retrieved April 10, 2015, from http://www.who.int/mediacentre/factsheets/fs312/en/

World Health Organization. (2015). Raised blood pressure. Retrieved from http://www.who.int/gho/ncd/risk_factors/blood_pressure_text/en/

World Health Organization. (2014). Global Health Estimates: Deaths by Cause, Age, Sex and Country, 2000-2012. Geneva, WHO.

World Health Organization. (2011). Global status report on Non-communicable Diseases 2010. Geneva, World Health Organization.

MENTOR APPROVAL

I acknowledge that I have read and reviewed this report prior to submission to Engaged Learning.

Donna L Gober, Ed.D

Dr. Donna Gober