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Risk Factors for Congestive Heart Failure

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Abstract

I am a 4th year nursing student at the University of The Bahamas' School of Nursing and Allied Health Professions. I am presently completing course requirements for the course Nursing Research being Moxey-Adderley. I am also qualified to undertake this study because the University of The Bahamas also has its own ethics committee and institutional review board (IRB). While doing the required clinical rotations to complete my studies, I have noted a particular phenomenon among the patients I have screen over the last two years. There appears to be an increase in the incidents of Congestive Heart Failure (CHF) along with concomitant risk factors. Therefore, the aim of this study is to examine and determine to what extent this phenomenon occurs and the various impacts on Bahamian national life.

I shall be looking at independent variables (IV's) of diabetes, Hypertension (HTN), and end-stage renal disease also known as Chronic Kidney Disease (CKD) or locally referred to as kidney failure. The dependent variable for the study is Congestive Heart Failure (CHF). It is hoped that the data gathered will serve to not only give a clearer picture of the rising phenomenon, but also will be used to facilitate some breakthrough ideas that will promote improved positive patient outcomes in terms of overall prognoses and activities of daily living. Nursing students at the University of The Bahamas will form the population group via convenience sampling and snowballing techniques due to time constraints and lack of funding.

Keywords: Chronic kidney disease • Congestive heart failure • Hypertension • Diabetes

Introduction

Congestive Heart Failure (CHF) is a chronic progressive condition that affects the pumping power of your heart muscles. In layman's terms it is sometimes called "heart failure" and refers to the stage of the disease where fluid collects or builds up around the heart and causes it to pump inefficiently. There is a noticeable phenomenon in the Bahamas where an increasing percentage of the population is being afflicted with this disease. What is the etiology or underlying causes that gives rise to the increased prevalence of the condition?Are there comorbid conditions that also contribute to this condition?This study shall examine associated risk factors such as, diabetes, hypertension, and kidney failure.

It is often said as it relates to health and wellness that, "you are what you eat!" one of the hypotheses of this research project is that diet and nutrition are key factors related to understanding this phenomenon. It may be a key to unlocking the mystery of why so many Bahamians are being diagnosed with this condition at an increasingly younger age. Another factor might be lifestyle and uncontrolled elevated stress levels [1]. The study will investigate and collect data relative to the perception of the Bahamian population relative to risk factors affecting congestive heart failure.

Problem

There is a noticeable rise in the prevalence of Bahamians being diagnosed with congestive heart failure. What is more astounding is the fact that the occurrence appears to be happening at a younger age for both male and female genders. In addition, this condition usually has comorbid factor or conditions that accompany it such as Diabetes Mellitus (DM), Hypertension (HTN), and End Stage Renal Disease (ESRD) or kidney failure. These conditions are now putting a strain on the local health system due to the fact that they are expensive to treat and the vast majority of the local populous cannot afford medical or health insurance. The problem is further exacerbated by the fact that most people reject or are non-adherent to medical and health advice until it is late in the stage of disease progression. Unless there is a paradigm shift in the thinking and attitude of the population we may find this condition spiraling out of control.

Purpose

The purpose of this research is to examine, determine, understand, and explain factors influencing Congestive Heart Failure (CHF) among Bahamians. Increasingly, more and more Bahamians

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are being diagnosed with CHF and at a younger age. Therefore, this study is vitally essential as it relates to the whole issue of promotion of health and wellness, the prevention of illness, and the curing of diseases. The aim of this study is to examine and identify risk factors associated with CHF and propose possible solutions to these phenomena among Bahamians.

Hypotheses

There is no relationship between Congestive Heart Failure (CHF) and associated risk factors such as Diabetes Mellitus (DM), Hypertension (HTN), and End Stage Renal Disease (ESRD) or kidney failure. There is a positive relationship between congestive heart failure (CHF) and associated risk factors such as diabetes mellitus (DM), hypertension (HTN), and end stage renal disease (ESRD) or kidney failure. A disease in which the body's ability to produce or respond to the hormone insulin is impaired, resulting in abnormal metabolism of carbohydrates and elevated levels of glucose in the blood. A long-term medical condition in which the blood pressure in the arteries is persistently elevated; abnormally high blood pressure: a state of great psychological stress. Also called End-Stage Renal Disease (ESRD), is the last stage of chronic kidney disease. When your kidneys fail, it means they have stopped working well enough for you to survive without dialysis or a kidney transplant.

Literature Review

In the article Diabetes mellitus and heart failure: insights from a toxic relationship, the stated that diabetes is "one of the major risk factors that directly contributes to the development of heart failure," and refer to them as the 'deadly duo,' and predicts a very bleak survival outlook for persons with both conditions at the same time. The authors also posit that "diabetes and heart failure also beget each other with pathophysiological factors being closely linked, potentiating their detrimental effects". They describe the inextricable link between the two conditions this way:

Diabetes begets heart failure and heart failure begets diabetes [2]. Heart failure promotes insulin resistance and cardiac energy metabolism is perturbed which promotes development of cardiomyopathy. This triggers inflammation and induces hyperglycaemia. Conversely, diabetes induces insulin resistance and hyperglycaemia, thereby decreasing energy levels in cardiomyocytes converging into development of cardiomyopathy.

The authors are qualified to address and research the issue because moritz hundertmark, is clinical research fellow/dphil candidate, oxford centre for clinical magnetic resonance research, radcliffe department of medicine, john radcliffe hospital, university of oxford, uk and eleanor wicks is a consultant cardiologist and clinical lead of heart failure and inherited cardiac conditions (cardiomyopathies), oxford university hospital foundation trust, john radcliffe hospital, oxford, uk. They utilized 65 articles to "summarize current knowledge on disease pathophysiology and disease progression" and to show how diabetes is one of the major risk factors that leads to the development of congestive heart failure. Finally, they have great credibility because they are published in a current international, peer-reviewed journal practical diabetes.

Mechanisms and treatment of heart failure in diabetes, utilized 54 articles to do a review showing a strong positive relationship between diabetes and heart failure. Their research also "describes important cardiological aspects of heart failure in diabetes, including epidemiology, pathophysiology, and cardiological treatments." Their study also agreed with the prior report that "diabetes is a major risk factor for cardiovascular disease including ischaemic heart disease.

Their objective was to "explore whether the relationship between body mass index and survival differs between patients with heart failure who do or do not have diabetes." They approached the study from the premise that "diabetes is a common comorbid condition in patients with heart failure and is strongly associated with poor outcomes." The results of their research concluded that "obesity was a survival benefit in heart failure patients without comorbid diabetes but not in those with comorbid diabetes". The authors are qualified to speak on the topic because they are all academically trained and are professors or assistant professor at various universities in South Korea and the United States.

Contrary to the findings in the article above, in their article absence of obesity paradox in patients with chronic heart failure and diabetes mellitus: A propensity-matched study came up with opposing views from their research a few years prior [3]. They examined the relationship "between obesity and outcomes in propensity-matched cohorts of HF patients with and without diabetes mellitus," and concluded that "obesity confers no paradoxical survival benefit" articles were used in their review where they used descriptive analysis such as "Pearson χ_2 and Wilcoxon rank-sum tests for the pre-match, and McNemar's test and paired sample t-tests for the post-match comparisons of baseline covariates between obese and non-obese patients, as appropriate, and separately for the DM and non-DM groups". The authors' work is credible because they all hold faculty positions at various universities throughout Europe and the United States, and their study is published in the European Journal of Heart Failure which appears to be peer-reviewed.

An in depth look at the pathophysiology and epidemiology of heart failure in diabetes, heart failure drugs and their effect on diabetes; also covered practical aspects of management of hyperglycaemic emergencies in diabetic patients with heart failure. Their findings showed that there were worse patients' outcomes for those who had comorbid conditions of DM and HF. The study also revealed life-threatening conditions such as diabetic ketoacidosis Hyperosmolar Hyperglycaemic State (HHS) requires immediate recognition and aggressive treatment. These acute emergencies in diabetic patients with heart failure are very hard to manage due to the difficulty in correctly assessing fluid balance. For this reason, the authors recommend involving both diabetologists and cardiologists as soon as possible to ensure the best possible patient outcome [4]. They are qualified to address these topics because they both hold fellowship positions at Poole Hospital NHS Trust, Poole, Dorset, UK; Dr. Legate Philip is a Specialty Registrar, Cardiology & Dr. Ruth Poole is a Consultant, Diabetes and Endocrinology.

The hypertension connection

Proplesch, Merz, Claggett, Lewis, Dwyer, Crousillat, Lau, Silverman, Peck, Rivero, in their article Right atrial structure and function in patients with hypertension and with chronic heart failure posits that atrial remodeling is a common response to Heart Failure

(HF) that is caused by elevated filling pressures due to pressure and/or volume overload. The aim of their study was to assess RA volume index RAVI) and RAEF in patients with chronic HF and patients with Hypertension (HTN) and to relate these findings to other cardiopulmonary ultrasound parameters and 12-month outcomes. The authors are qualified and highly trained holding key positions.

As wrote a very interesting article titled, blood pressure is normal, but is the heart? The authors stated that "longstanding hypertension leads to Left Ventricle Hypertrophy (LVH) which has been proven to cause the irreversible deterioration of left ventricle (LV) function, ultimately resulting in congestive heart failure. Their study included a cohort of pediatric patients and was conducted in accordance with the Declaration of Helsinki and received approval from the local ethics committee subsequent to the parents of the subjects signing the detailed consent forms. They are highly qualified to conduct such a study and hold positions.

The kidney failure connection

The concluded that diabetes and end-stage renal disease (kidney failure) "synergistically increase risks of CV events," and recommended "proactive screening and control for diabetes in patients with ESRD should be built into our daily practice. They utilized over 40 article references to do a study of this phenomenon. The aim of their study was to investigate the effects of interaction of diabetes and End-Stage Renal Disease (ESRD) on the risks of Cardiovascular (CV) events. The results have showed a positive relationship between ESRD and Congestive Heart Failure (CHF). The authors are academically trained and hold faculty positions at various universities and hospitals throughout Taiwan.

The commonwealth of The Bahamas is an archipelago of 700 islands, rocks, and cays and stretches from Bimini Islands 50 miles east of the US Florida coast to the southernmost island of Inagua northeast of the Turks and Caicos Islands. According to the 2010 national census, the Commonwealth of The Bahamas has a population of 351,461 with the remainder (53,764, 15.29%) dispersed amongst approximately 28 other inhabited islands. Based upon the following, we chose to use nursing students aged 18 and over from the University of The Bahamas' campuses on New Providence and Grand Bahama Islands as representative group or cross-section of the entire population. According to published data from 2011, the University has a student population of 4,936. They participated via surveys that were either hand delivered.

Sample

The sample included a cross-section of nursing students from the University of The Bahamas. Using the free sample size calculator from Raosoft Incorporated, we settled on a sample size of (N=200) with a Margin Of Error (MOE.) of 5.70% and a confidence level at about 90%. Two hundred fifty-seven invitations were sent-reporting in the survey. Sample size is especially important given that we are university students with limited time and financial restraints. An adequate sample size is important for economic reasons, which is especially true for researchers on a limited budget, and is necessary to obtain statistical significance for real effects that exist. For the purpose of this study convenience sampling and snowballing was used to collect the data.

Measures/Scales/Instruments

Scales and measurements used in this study are: Demographic Research Questionnaire, New Patient Questionnaire from Johns Hopkins Hypertension Center, the Diabetes Self-Management Questionnaire (DSMQ), the Kidney Survey Questionnaire, and the Hypertension Survey.

Protection of human rights

A letter was sent to the ethics committee and the Institutional Review Board (IRB) of the University of The Bahamas seeking approval for the Protection of Human Subjects prior to conducting the surveys. Their approval gives a guarantee to the prospective study participants that the information gathered and the method of data collection meets university standards for research and protection of study subjects. A cover letter outlining the reason for the survey along with the risks and benefits of the study was also included with the survey questions in order to obtain informed consent. It was also stated in the letter that they are participating of their own free-will, without offer of payment or coercion, and that they are free to withdrawn at any time if they feel uncomfortable about the survey or questions therein. Further to this, our lecturer for this research course.

Theoretical framework

This study uses the work of noted nursing theorist Dr. Jean Watson as a theoretical underpinning or framework to guide its proceedings. Dr. Watson's Theory of Human Caring, also known as, the Philosophy and Theory of Transpersonal Caring is one of several caring theories. The major conceptual elements of the original (and emergent) theory are - ten carative factors (evolving toward "clinical caritas processes"), the transpersonal caring relationship, caring moment/caring occasion, and caring–healing modalities [5]. According to 55, her work is viewed both as a grand and/or middle range theory that has contextual applications in philosophy, ethics, a paradigm, nursing clinical settings, and as an expanded science model or theory for research.

As indicated before, this study examines the relationships between the independent variables of Diabetes Mellitus (DM), Hypertension (HTN), and End Stage Renal Disease (ESRD) or kidney and how they are related to and/or affect the outcomes of Congestive Heart Failure (CHF). Critiques and analyses of six contributing authors to this project are included for each Independent Variable (IV).

References

1. Adamopoulos C, Meyer P, and Desai RV. Absence of Obesity Paradox in Patients with Chronic Heart Failure and Diabetes Mellitus: A Propensity-Matched Study. Eur J Heart Fail 13 (2011): 200-206.
2. Celik SF, Karakurt C, Tabel Y, and Elmas T, et al. Blood Pressure is Normal, but is the Heart?. *Pediat Nephrol*. 33 (2018): 1585-1591.
3. Chang Y, Wu, Hsu JC, Wang J, and Sung J. Diabetes and End-Stage Renal Disease Synergistically Contribute to Increased Incidence of Cardiovascular Events: A Nationwide Follow-Up Study During 1998-2009. Diabetes care. 37 (2014): 277-285.
4. Dauriz, M Mantovani, Bonapace SA, Verlato G, and Zoppini G, et al. Prognostic Impact of Diabetes on Long-Term Survival Outcomes in Patients with Heart Failure: A Meta-Analysis. Diabetes Care. 40 (2017) : 1597-1605.

5. Orencole, M Dec, Picard GW, Singh MH, and Mela JP. Renal Response in Patients with Chronic Kidney Disease Predicts Outcome Following Cardiac Resynchronization Therapy. Pace. 38 (2015).

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