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The Relationships Among Economic Support and Hypertension and Diabetes Among the Adult Jamaican Population

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Abstract

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by

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MPAS, University of Nebraska, 2009

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Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Public Health

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Abstract

A significant number of adult Jamaicans have been diagnosed with diabetes and hypertension, and individual socioeconomic status (SES) has been linked to these health outcomes. SES included income, education and employment. Income may directly influence health; however, some individual's income may not be sufficient to cover all financial obligations and income support may be necessary. Local or overseas family members may significantly augment an individual's income and financial situation that could affect health outcomes. This quantitative cross-sectional study was used to examine whether there were relationships between health outcomes (hypertension and diabetes) and economic support (governmental and familial). The Jamaica Survey of Living Conditions (2019-2020) data set was used for analysis. The socioeconomic status - health gradient theory served as the theoretical framework. Potential relationships between economic support and health outcomes while controlling for specific sociodemographic factors were investigated. Results of binomial logistic regression showed that the associations between diabetes and local family support was significant (p = .001), diabetes and government support was not significant (p = .480), hypertension and family support was not significant (p = .492), and hypertension and government support was also not significant (p = .184). Implications for positive social change include providing awareness and understanding of the associations between economic support and socio-demographic factors and health outcomes; such awareness can help mitigate adverse health outcomes.

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Dedication

I dedicate this capstone to my biological mother, stepmother, and stepfather. All of them died while I was completing this scholarly work. I want to thank them for their love, support, and instilling in me the motivation and drive to continue reaching for the stars. Their sacrifice and hard work provided me the opportunities to accomplish all that I embark on.

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Section 1: Foundation of the Study and Literature Review

Introduction

There is a significant number of adult Jamaicans that have been diagnosed with noncommunicable diseases (NCDs), such as hypertension and diabetes (Bidulescu et al., 2017). Individual socioeconomic status (SES; i.e., income, education, and employment) has been linked to health outcomes (Adler et al., 1994). Economic support, such as familial and governmental, may provide the necessary support to improve health outcomes; therefore, the topic of this study was economic support and NCDs among the adult Jamaican population. In this study, I examined whether there is a difference in health outcomes among the adult Jamaican population based on economic support. The results provided a generalized outcome of the relationship between the variables and a better understanding of the impact of economic support on improving health and reducing the prevalence of chronic illnesses, such as hypertension and diabetes.

Background

According to Adler et al. (1994), there was evidence of the association between socioeconomic factors and health. Bidulescu et al. (2017) posited that the prevalence for hypertension and diabetes significantly differed based on educational attainment. Finkelstein et al. (2022) demonstrated how low household income negatively affected health and found that existing income support programs can influence health by increasing household income. Kin (i.e., familial) and governmental support are two ways to augment income. Forsythe-Brown et al. (2017) found there were high levels of providing support to family members and high levels of receiving support among both

Jamaican immigrants and Jamaican nationals. Additionally, Stampini et al. (2018) studied whether conditional cash transfers (CCTs) from the Program of Advancement Through Health and Education (PATH) contributed to improvement in educational status and found that participation in the CCTs within PATH placed boys on a higher education trajectory (i.e., in high-quality secondary schools with increased school performance). Additionally, there is a perception that those with higher education were likely to have regular doctor's visits which may have resulted in optimal health (Green & Guanais, 2018).

Numerous studies have been completed examining the relationship between SES and health outcomes; however, there was little to no literature on adult Jamaicans' health status based on income with or without economic support, including governmental and familial. Most previous researchers used different age groups and geographic locations to focus on one or two variables, such as health conditions and education or health condition and income (Hewitt et al., 2019; Ferguson et al., 2010). However, there was minimal research that explained the relationship between economic support and chronic illnesses, such as hypertension and diabetes, among Jamaican adults. Income may distinctly influence health by determining where people can live and what resources they can afford to maintain a healthy lifestyle and optimal health (Madu et al., 2021). Some families may face inequitable access to income support, which makes it necessary to understand who receives income support, from where and whom, and the effect it has on health. In addition, receiving income support from the government, local family members, and

overseas family members may significantly augment household income and individual financial situations, affecting health outcomes.

Problem Statement

The Jamaican Health and Lifestyle Survey (JHLS) of 2016 to 2017 indicated that approximately 33.8% of the Jamaican population who are 15 years and older have hypertension and 12% have diabetes (Ministry of Health and Wellness, 2018). An individual's socioeconomic position, which includes income and economic support (i.e., cash assistance from family and government), can influence health outcomes (Craig et al., 2021). SES is a significant risk factor linked to health outcomes based on individual economic status, and income disparities can partly explain the prevalence of chronic illnesses, such as hypertension and diabetes (Bidulescu et al., 2017).

Leveraging these determinants of health data is critical to addressing the health care needs of a vulnerable population; however, recent studies have failed to explore the relationship between economic support and health outcomes. Researchers have found that individuals in the metabolic class were less educated and less wealthy (Craig et al., 2021). However, they did not study the relationship between economic support and hypertension and diabetes. Researchers have also studied the association between SES and risk factors for NCDs in different socioeconomic development (Stringham et al., 2016). However, less is known about economic support's role in augmenting income and improving health. Although researchers have investigated this issue, there is little or no specific literature on adult Jamaicans' health status based on income with and without economic (i.e., governmental and familial) support. Most of the research I found in the

literature review focused on one or two variables, such as a health condition and education or a health condition and income, using different age groups and geographic locations. However, minimal research explained the relationship between economic support and chronic illnesses (i.e., hypertension and diabetes) among Jamaican adults. Income may distinctly influence health by determining where people can live and what resources they can afford to maintain a healthy lifestyle and optimal health (Madu et al., 2021). Access to income support may be a challenge for some families, so it is necessary to understand the intricacies of economic support and its effect on health. The provisions of economic support from either government or family members can have a significant effect on health outcomes. Understanding the difference in health outcomes based on economic support can provide information on a more accurate economic status, informing policies and procedures that may result in economic assistance and improved health outcomes. The specific research problem addressed in this study was whether there is a difference in health outcomes (i.e., hypertension and diabetes) based on economic support among adult Jamaicans controlling for age, gender, perceived financial situation, employment, and education.

Purpose of the Study

In this study, I examined whether there is a difference in health outcomes (i.e., hypertension and diabetes) based on economic support (i.e., governmental and familial) among adult Jamaicans while controlling for age, gender, perceived financial situation, employment, and education.

Research Questions and Hypothesis

To effectively examine the association between health outcomes based on economic support among adult Jamaicans, the following research questions and hypotheses guided this study:

RQ1: Is there a relationship between familial assistance economic support and health outcome for diabetes when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$1: There is no relationship between familial assistance economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

H_a1: There is a relationship between familial assistance economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

RQ2: Is there a relationship between familial assistance economic support and health outcome for hypertension when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$2: There is no relationship between familial assistance economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

H_a2: There is a relationship between familial assistance economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

RQ3: Is there a relationship between governmental economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$3: There is no relationship between governmental economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

H_a3: There is a relationship between governmental economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

RQ4: Is there a relationship between governmental economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$4: There is no relationship between governmental economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

H_a4: There is a relationship between governmental economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

Theoretical Foundation for the Study

In the SES-health gradient, Adler et al. (1994) posited that the gradient in health conveys the idea that those individuals with higher SES live longer, healthier, and happier lives and that disparity exists across SES groups, significantly influencing health

outcomes). For example, income improves health substantially, and education is also positively associated with health. The logical connections between the framework presented and the nature of the study include that SES is a potent risk factor linked to the prevalence of diseases and is a measure that incorporates economic status (i.e., income and economic support), which also includes governmental and familial support. Social status (i.e., education), work status (i.e., occupation) and the associations between SES and health were found with each of the above indicators (Adler et al., 1994). Additionally, the association between SES and health occurs at every level of the SES hierarchy, which requires a study that evaluates the association at all levels (Adler et al., 1994).

Nature of the Study

To address the research questions in this quantitative study, I used the quantitative cross-sectional design. Secondary data from the JSLC 2019 survey were analyzed to understand the relationship between economic support and NCDs (i.e., hypertension and diabetes) among Jamaican adults while controlling for age, gender, perceived financial situation, employment, and education. All variables were analyzed using descriptive and regression analysis.

Literature Review Strategy

I accessed the following databases and search engines through the Walden University Library to search for literature for this study: Google Scholar, EBSCO, ProQuest, Google, Medline, and Thoreau. ProQuest, Medline, EBSCO, and Thoreau supplied recent journals and articles that included related studies on social support,

family support, NCDs, and SES. I conducted similar searches in Google Scholar and Google for SES, social support, and health outcomes among the Jamaican population.

I developed keyword search terms according to the recommendations of the Walden University Center for Research Quality (n.d.) and Laureate Education (2008). The key terms used to conduct the literature search included *Jamaica, educational attainment, education, hypertension, income, high blood pressure, diabetes, social protection, poverty, social support, family support, non-communicable diseases, Program of Advancement Through Health and Education (PATH), metabolic syndrome, socioeconomic status, Kin support, conditional cash transfer,* and *welfare.*

Literature Review Related to key Variables

Jamaica and the Jamaican Economy

Jamaica is one of the largest English-speaking countries in the Caribbean and is divided into three counties and 14 parishes (Pan American Health Organization [PAHO], n.d.-a). The estimated population in 2019 was 2.9 million (PAHO, n.d.-a). The Jamaican economy suffered from years of very low growth combined with increasing public debt, which at one time was 145% of the gross domestic product, accumulated over several decades (PAHO, 2021). This debt required high borrowing needs that led to financial depression, resulting in limited room on the government's budget and inhibited spending on critical needs of the Jamaican people, such as health care and social assistance (International Monetary Fund [IMF], 2019). Economic reform included a partnership with IMF-supported programs to restore economic stability, which did not have much effect on observed social assistance (IMF, 2019). Health care costs, especially out-of-

pocket expenses, placed a significant burden on the population's health, economic, and social development (PAHO, n.d.-b). As a result of this substantial financial cost, social assistance is necessary.

According to Cross et al. (2018), family support networks can serve as protective and/or risk factors for various well-being outcomes, including, but not limited to, psychological, physical, and economic well-being. Family support, which may include income support, was related to higher levels of life satisfaction, lower mortality risk, and improved individual standard of living (Cross et al., 2018). Finkelstein et al. (2022) posited that lower income people have shorter lifespans and more significant morbidity than those with higher incomes.

Social assistance may come in multiple forms, such as family or governmental support. Forsythe-Brown et al. (2017) posited that family provided a necessary form of social support to family members, and this support, whether financial or social, was essential for economic welfare. In a study using secondary data to analyze the frequency and level of kin support among Jamaican nationals and immigrants, Forsythe-Brown et al. found that high levels of providing and receiving support to kin indicated a significant amount of family exchange and support. However, the authors also stated that it may be necessary to further research the impact of the support on health and economic status. Additionally, Stampini et al. (2018) posited that governmental support might positively influence education and health because poverty hampers the capacity to aspire to be a better self.

The federal government provides a financial safety net for low-income families through programs that directly supplement their income (Finkelstein et al., 2022). These programs may improve health by providing a foundation for meeting families' basic needs and supporting their participation in economic development. Stampini et al. (2018) inquired if the Jamaican CCT PATH contributed to breaking the intergenerational poverty cycle by increasing school performance and aspirations, resulting in a higher educational trajectory. After completing a quantitative study utilizing multiple data sources, Stampini et al. concluded that participation in the program was advantageous to boys more so than girls, placing them on a higher educational trajectory, increasing Grade Six Achievement Test (GSAT) scores, and increasing the quality of secondary school placement. These results showed there was a positive relationship between PATH, health, and education, but these findings mainly applied to boys, possibly because during the period analyzed, the program paid higher CCT to boys (Stampini et al., 2018). It may be necessary to conduct additional research examining a time period when there is less or no inequality in CCT payments.

Target Population

Health

In 2019, the top three causes of death in Jamaica, accounting for 42% of all healthy life loss, were the cardiovascular diseases (CVDs) of hypertension, diabetes, and cancer (PAHO, 2021). The overall adjusted mortality rate in Jamaica was 5.8 per 1,000 population, and the rate of preventable causes of premature mortality was 159.3 per 100,000 population (PAHO, 2021). Additionally, the adjusted mortality rate from NCDs

from the Jamaican population was 454.8 per 100,000 population, categorized as 477.3 per 100,000 in men and 434.2 per 100,000 in women (PAHO, 2021). Key findings from the JHLS (2018), 2016 to 2017, indicated, based on the Seventh Joint National Committee (JNC7) 2003 criteria, that the prevalence of hypertension in individuals 15 years and older were 33.8%, with 35.2% in rural communities and 33.0% in urban communities. The overall prevalence of diabetes was 12% in the same population, with 54% of the population classified as overweight which included individuals considered to be preobese or obese (JHLS III, 2018).

The Strategic Goals of Vision 2030 were developed with the aim of reducing inequalities through improved social participation and health promotions to address social determinants of health that negatively impact health status (PAHO, 2021). NCDs significantly burden population health but also lead to higher treatment costs, imposing a direct economic burden on health systems, households, and society (PAHO, n.d.-b). Madu et al. (2021) posited that social determinants of health significantly contributed to morbidity and mortality involving CVDs. Ferguson et al. (2010) completed a study to estimate the prevalence of metabolic syndrome in Jamaican adults and its association with SES and found that high income was associated with increased odds of having metabolic syndrome among males. Additionally, individuals with secondary and tertiary education also have increased odds of metabolic syndrome (Ferguson et al., 2010). Comparatively, Ferguson et al. (2017) completed a similar study involving SES and health, concluding that diabetes was higher among men with less education, while among younger women, hypertension, hypercholesterolemia, and obesity were higher among

those with less education. Several studies have shown that the burden of NCDs and their risk factors varies with SES (Craig et al., 2021). However, the current study sheds additional light on specific factors relating to SES. The Strategic Goals of Vision 2030 agenda for sustainable development recognizes NCDs as a significant challenge for sustainable development (PAHO, n.d.-b). Specifically, Target 3.4 of the sustainable development goals call for a half reduction in premature mortality from NCDs by 2030 through preventing and treating those diseases and promoting mental health well-being (PAHO, n.d.-b). To ensure that this target mentioned is met, it is necessary to understand the access to care among adult Jamaicans.

Access to Care

Health inequalities denote an unjust difference between groups that would have been avoided by mitigating social factors, such as poor governance (Madu et al., 2021). Access to medical care is a component of the social determinants of health and is directly related to governance. Access to health care plays a significant role in health outcomes (Madu et al., 2021). In a developing country such as Jamaica, poverty is the main factor that defines a vulnerable population (Madu et al., 2021). Poverty restricts access to health care because poor people cannot afford medical services, and universal health care is not always available when needed (Madu et al., 2021). In rural Jamaica, only 4% have health insurance and 62% have access to any health care provider (Madu et al., 2021). Jamaica was one of the countries with the highest rate of respondents with private health insurance, and the lowest ratings from respondents about having received health advice (Macinko et al., 2016).

In Jamaica, CVDs accounted for four of the five leading causes of death, with 52% of the population being overweight or obese, 25% having hypertension, 12% having hypercholesterolemia, and 8% having diabetes (Ferguson et al., 2017). Macinko et al. (2016) concluded that Jamaica had the highest prevalence (52%) of at least one chronic condition. Residents in low-income communities experience many barriers that affect their ability to access health care services and make appropriate medical decisions (Hewitt et al., 2019).

According to Hewitt et al. (2019), residents in rural medically underserved areas had more significant barriers to accessing health care than urban areas. Jamaica has many underserved areas, mainly rural areas, and implementing efficient, cost-effective care models in these communities may offer safe, timely, and efficient treatment. Researchers have suggested that persons living in medically underserved areas are frequently unable to access health care in a timely and efficient manner, resulting in inappropriate use of the emergency department and ultimately forgone preventive exams and screenings for preventable and treatable conditions (Hewitt et al., 2019). The vulnerable population often lacked access to safe, timely, equitable, and patient-centered health care (Hewitt et al., 2019). Many people reported that they skipped their doctor's appointments because of cost and wait times (Macinko et al., 2016). Jamaica was one of the countries with the highest proportion of respondents reporting skipping treatment because of cost and relatively high level of access to care barriers (Macinko et al., 2016).

In 1986, user fees were introduced in Jamaica, which referred to charges related to health services at the point of use (Zhihui et al., 2017). Recognizing user fees as a

barrier to access to health services, the World Health Organization passed resolutions urging the removal of user fees to achieve universal health coverage (Zhihui et al., 2017). In May 2007, Jamaica's government implemented a new policy that removed user fees for all children 0 to 18 years of age in the public sector, except the University Hospital of the West Indies (Zhihui et al., 2017). According to Zhihui et al. (2017), life expectancy, infant mortality, and under-5 mortality improved, with the under-5 mortality rate decreasing by 36% and the infant mortality rate falling by 34%. The user fees for adults were removed in 2008 (Zhihui et al., 2017). Zhihui et al. concluded that eliminating user fees could effectively promote utilization by removing financial barriers to health care access, but not without overcrowding and overworked health care providers at the country's limited public medical facilities.

Researchers have suggested that while eliminating health care user fees increased health care use, it also negatively impacted quality due to understaffed facilities, longer wait times, and scarcity of medications and medical supplies (Beuermann & Pecha, 2020). From the Jamaican experience, the policy applied to all public health facilities, and the rationale behind the policy was that user fees were regressive and prevented access to health care for individuals who could not afford the fees (Beuermann & Pecha, 2020). Researchers found that these policy changes affected about 83% of the population, including those who lacked health insurance and mainly relied on the public health system (Beuermann & Pecha, 2020). However, there were no effects on individuals under 40 years old (Beuermann & Pecha, 2020).

SES

Many components of the social determinants of health, including income, education, and employment, affect the population's health and well-being (Madu et al., 2020). Additionally, the social determinants of health have a significant influence on SES. Income level, educational attainment and occupational status are structural socioeconomic position determinants (Craig et al., 2021). Studies have suggested a social gradient to multimorbidity with a higher burden among the socioeconomically disadvantaged, including the low-wealth quintile, less educated, and unemployed (Craig et al., 2021).

Income. The combination of low-income communities, minority groups, and high poverty created an environment of the most vulnerable, with very high adverse health outcomes (Zare et al., 2021). Income influences health outcomes by decreasing the barriers to accessing care. Using a cross-sectional analysis of data from a cohort study on individuals living in one parish in Jamaica, Ferguson et al. (2010) estimated the prevalence of metabolic syndrome in Jamaican adults and its association with SES, finding that the prevalence of metabolic syndrome was associated with SES among men in the higher income category.

The uneven distribution of health across the socioeconomic spectrum is a recognized and well-established fact (Yue et al., 2021). The determinants of reduced health range from genetic disposition to the social circumstances that shape individuals' life experiences, with income and education being the most important (Hogberg, 2019). Education and income are known as the "causes of the causes" of ill health (Zeglin et al., 2019, p. 330). Researchers have suggested that regular medical care and higher education

are associated with lower adverse health rate (Zeglin et al., 2019). The relationship between education and income is substantial, and education is often called an investment in human capital (Wolla & Sullivan, 2017). People invest in human capital for the same reason people invest in financial assets--to make money. In general, those with more education earn higher incomes; therefore, income inequality is a serious issue that significantly affects education levels and limits freedom, opportunities, and resources, resulting in adverse health outcomes (Mohr et al., 2019).

Education. According to the World Bank (n.d.), the literacy rate was 88% in 2014 among Jamaicans 15 years and older, and the primary school completion rate was 77% in 2019. Research suggested that regular medical care and higher education was associated with lower adverse health rate (Zeglin et al., 2019). Education is often referred to as an investment in human capital. It is generally assumed that with a college education comes better health (Wolla & Sullivan, 2017). The mechanism through which education impacts health is so numerous that education has been conceptualized as a fundamental factor influencing health (Zajacova & Lawrence, 2021). Low educational attainment affects health literacy. Health literacy is essential to navigating any health care system and ensuring well-informed decision-making regarding an individual's health (Calvo, 2016).

Greene and Guanais (2018) completed a cross-sectional study examining the relationship between educational attainment and health experience outcomes in assessing the health system, access to care, and experience with general practitioners in six Latin American and Caribbean countries, including Jamaica. Using data from a bank survey

from 2012 to 2014, they found that Jamaica had greater inequality (Greene & Guanais, 2018). In Jamaica, there was observed relationship between education level and the belief that their health care system needed significant reform (Greene & Guanais, 2018). Those with higher education were more likely to have a regular doctor than those with lower and less likely to skip doctor's visits (Greene & Guanais, 2018). There was substantial education-based and health coverage-based inequality in Jamaica, which significantly impacted socioeconomic status.

Employment. Work is a central element of persons lives because it is their main source of income and has a crucial role in shaping their socioeconomic position (d'Errico et al., 2021). This socioeconomic position is the primary determinant of health and health inequalities. According to the World Bank (n.d), Jamaica's unemployment was 6.0% in 2022.

d'Errico et al. (2021) completed a study examining the association between unemployment and mortality using a prospective cohort of Italians aged 30 to 55 who completed the Italian national survey between 1999 and 2000. The data were analyzed using Cox regression, and the researchers concluded that unemployment directly affected men's health, not women's (d'Errico et al., 2021). Unemployment has been found to be associated with increased morbidity and mortality. Studies have also concluded that unemployment was positively associated with increased suicide in Jamaica (Bourne et al., 2022).

The confounding variables were important factors in the study due to their interconnected impact on health outcome. Education and income are known as the

"causes of causes" of ill health (Zeglin et al., 2019). Education was often considered an investment in human capital, which includes financial stability and was also attainable through an individuals' income (Willa & Sullivan, 2017). Income influenced health outcomes by decreasing the barriers to assessing care or moderating environmental factors (Zare et al., 2021). Employment and income are critical mechanism through which education impacts health (Zajacova & Lawrence, 2021)

Limitations

A limitation is the use of secondary data collected by surveys which presents the possibility of respondent bias while obtaining the data and, with no visibility, may inadvertently affect the study's outcome. For example, respondent bias may involve the questions' structure and language, leading the participant to answer in a particular way. The secondary data may contain sources of errors, including research design, sampling, data collection, analysis, and reporting. Additionally, there is not much generalized research on the topic, which may limit the analysis scope and cause inaccuracies presenting a significant error margin.

Significance

This study is significant because, based on the above literature review, there is various research on the relationships between income and education and hypertension and diabetes among Jamaicans. However, little research includes economic support, such as familial and governmental support. Minimal research explains the relationship between economic support and chronic illnesses (hypertension and diabetes) among Jamaican adults from all the parishes of Jamaica. Understanding the differences in health

outcomes based on economic support can provide information on a more accurate economic status which can inform social protection strategies and policies that may result in economic assistance to those in need resulting in improved health outcomes. This study aims to examine whether there is a difference in health outcomes based on economic support. Therefore, this study will provide a generalized outcome on the relationships between the variables and a better understanding of the impact of economic support on improving health and reducing the prevalence of chronic illnesses such as hypertension and diabetes.

Section 2: Research Design and Data Collection

Introduction

In this study, I examined whether there was a difference in health outcomes (i.e., hypertension and diabetes) based on economic support (i.e., with or without cash assistance) among adult Jamaicans. The high incidence of diabetes and hypertension, which affects the country's mortality rate; the increased poverty; and low family income may significantly affect these health outcomes (hypertension and diabetes). It was necessary to examine the relationship between economic support through cash assistance and health outcomes because income augmented by cash assistance may have a significant association to health.

Research Design and Rationale

Dependent Variable

The dependent variable in this study was health outcome, which included two NCDs: hypertension and diabetes. This variable was measured from individual's answers to a survey question concerning being informed by a healthcare provider of one's health involving these two disease processes. The data were collected from the participants selecting these diseases from a list of chronic illnesses. The health outcome was coded 0 for hypertension and 1 for diabetes.

Independent Variable

The study's independent variable was economic support, which included familial and governmental assistance. This variable was measured by the participants' responses to a survey question about who provided their major economic support. The responses

were categorized into family locally, family international, and governmental assistance. I recoded family economic support into two categories 1 for local and 2 for international. The government assistance economic support variable was coded 0 for no and 1 for yes.

Confounding Variables

The confounding variables for the study were sex, age, perceived financial situation, education, and employment. Gender was coded as 1 for male and 0 for female, and age was coded 1 for 18 years and older. The perceived financial situation variable of this study involved the participants' responses to the question about the economic situation for households compared to a year ago. The responses were coded as 1 for better, 2 for equal or the same, 3 for worse off, and 4 for do not know. The education variable was recoded as 0 for no school, 1 for below secondary, and 3 for above secondary. The employment variable for the study included responses about the principal earner's employment status and was recoded as 0 for not working and 1 for working.

I chose the quantitative cross-sectional study design because it allowed for the simultaneous comparison of many different variables (Institute for Work and Health, 2015). Although this design had many limitations, such as difficulty determining causality, possible selection/respondent bias, and sources of error, the design allowed for the assessment of the confounding effects of other socioeconomic demographic factors on the relationship between economic support and health outcomes. The cross-sectional study design could allow for future research to use biospecimen and bio information compiled from existing secondary data to perform a deeper and adequate analysis of economic support and health outcomes (Gertman, 2015; Laureate Education, 2016). The

cross-sectional study design is used for population-based surveys and can usually be conducted quickly and inexpensively (Sertia, 2016). The one-time measurement of exposure and outcome make it difficult to derive causal relationships from its analysis, but it provides information that is useful in designing a cohort study (Sertia, 2016).

Methodology

Population

In the current study, I conducted a secondary analysis of the Jamaican population data set, the JSLC 2019, completed between 2019 and 2020. The data set included over 6,000 individuals, so it was necessary to select specific cases. The cases I selected were adult residents aged 18 and older because they are most likely to have an income, varying education levels, and be diagnosed with NCDs.

Sampling Procedure

Big data, also known as secondary data, significantly influence health care and research, allowing for better predicting of disease patterns and at-risk populations (Koziara et al., 2021). For example, this vast amount of data can provide relevant information for intervention and answer many research questions. Secondary data can also provide information to produce new interventions that limit individual risk.

Following the Institutional Review Board's approval (IRB approval # 11-28-23-1017024), I utilized secondary data and the data set collected from the JSLC survey in the current study after analyzing it for appropriateness and the ability to answer the research questions. The data collection focused on the variables necessary for this study, including annual perceived financial situation, educational attainment, gender, age, economic

support (i.e., government and familial), health outcomes, and employment. The data were appropriately managed to reduce bias and contribute to the research. The current study involved a target population that required a sample of the large data set; therefore, obtaining the appropriate sample size was necessary for the validity and reliability of this study.

The data for this study were retrieved from the JSLC 2019, which was collected via a computer-assessed interview administered questionnaire from May 2019 to February 2020 (JSLC III, 2018). The JSLC has been a source of information on the measurement of living standards in Jamaica for over 3 decades, and each report provides an annual snapshot that facilitates the monitoring of important social indicators, such as Jamaican communities' social, economic, housing, and demographic characteristics, and identifies gaps that require policymaking (Sir Arthur Lewis Institute of Social and Economic Studies, n.d.). The JSLC 2019 used stratified random sampling with a method of data collection that included interviews and anthropometric measurements and was collected by the Statistical Institute of Jamaica and the Planning Institute of Jamaica as the principal investigator (Sir Arthur Lewis Institute of Social and Economic Studies, n.d.). The sampling includes 2,379 households and 6,551 individuals. Additionally, these data included personal variables that represented the personal history of respondents, which may help measure relationships with other variables. The information obtained from the current study will serve as important indicators of the country's needs.

Sample Size

Utilizing Soper's *t* a priori sample size for hierarchical multiple regression calculation, I conducted the analysis for power after imputing the specific parameters. Effect sizes are necessary for power analysis because it requires estimating a true but unknown effect (Correll et al., 2020). Cohen's *f*-square effect size includes three sizes, small (0.02), medium (0.15), and large (0.35), and for each, the required sample varies (Soper, 2023). I chose a medium effect size, with a significance of 0.05 and a power of 80%. Additional information required were the number of independent variables (i.e., three); the number of confounding variables (i.e., five); and the *p* value, which was less than or equal to 0.05. With this information, the sample size needed to have a good chance of significance if there is an actual correlation can be determined (Soper, 2023). Based on the analysis, with a minimum sample size of 94, there was an 80% chance of getting significance and a 20% chance of not getting significance.

Instrumentation and Operationalization of Constructs

Published Instruments

I did not need published instruments for this study becuase I used secondary data derived from a survey completed on the target population.

Researcher Instruments

I found no need to refer to any researcher instruments because I did not use surveys, tests, and questionnaires to collect data for the study. I used secondary data that was already available.

Operationalization of Constructs

Table 1 displays the way each variable in the study was operationalized.

Table 1

Operationalization of Each Variable

Name of variable	Variable label	Level of measurement
Health outcome		Nominal
Hypertension	Yes/No	
Diabetes	Yes/No	
Economic support		Nominal
Familial support	Local/International	
Government support	Yes/No	
Age	Age of respondent	Continuous
Gender	Male/Female	Nominal
Perceived financial situation	1 = Better, 2 = Equal or the same, 3 = Worse off, 4 = Do not know	Nominal
Education	0 = No school, 1 = Below secondary, 3 = Above secondary	Nominal
Employment	0 = Not working; 1 = Working	Nominal

Data Analysis Plan

I recoded most variables into nominal variables except the age variable, which was continuous. The most appropriate descriptive methods for analyzing the categorical and continuous variables were frequency, rates, and dispersion. Utilizing categorical variables, some with more than two categories and continuous variables, the analytic method of choice was the binomial logistic regression because it can handle categorical independent variables with greater than two levels and dichotomous dependent variables (see Gertman, 2015). I completed all statistical analyses using IBM Statistical Package for Social Science (SPSS) Version 28. Bivariate analyses were performed on the outcome variable and predictor variables. Binomial logistic regression was also performed as a statistical analysis method of choice.

Research Questions

RQ1: Is there a relationship between familial cash assistance economic support and health outcome for diabetes when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$1: There is no relationship between familial cash assistance economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

H_a1: There is a relationship between familial cash assistance economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

RQ2: Is there a relationship between familial cash assistance economic support and health outcome for hypertension when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$2: There is no relationship between familial cash assistance economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

H_a2: There is a relationship between familial cash assistance economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

RQ3: Is there a relationship between governmental economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$3: There is no relationship between governmental economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

H_a3: There is a relationship between governmental economic support and health outcomes for diabetes when controlling for age, gender, perceived financial situation, employment, and education.

RQ4: Is there a relationship between governmental economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education?

$H_0$4: There is no relationship between governmental economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

H_a4: There is a relationship between governmental economic support and health outcomes for hypertension when controlling for age, gender, perceived financial situation, employment, and education.

Assumptions for Binomial Logistics Regression

Assumptions included the independence of errors, where all sample outcomes are separate from each other (no duplicate responses); Linearity of the logit for any continuous variable (ex., age) to ensure that there is a linear relationship between these variables and their respective outcomes (Stoltzfus, 2011). Solutions include dummy coding the independent variable; the absence of redundancy among independent variables. The solution is to eliminate one or more redundant variables: Lack of strongly influential outliers (Stoltzfus, 2011). The model's accuracy would be compromised if there were too many outliers. The solution is to look at the difference between predicted and actual outcomes and compare the overall model fit in estimated beta coefficients with versus without the outlier cases (Stoltzfus, 201). Depending on the magnitude of change, one could either retain or eliminate the outliers (Stoltzfus, 2011).

Procedures Used to Account for Multiple Statistical Tests

The use of logistic regression was appropriate since the dependent variable was continuous, and the independent variables were nominal and continuous, and the control variables were nominal and continuous (Gerstman, 2015; Laureate Education, 2016).

Rationale for Inclusion of Potential Covariates and/or Confounding Variables

To test the hypotheses adequately and answer the research questions effectively, the inclusion of potential covariates and/or confounding variables allowed us to effectively assess the confounding effects of social (education, perceived financial situation, and employment) and demographic (gender and age group) elements on the correlation between health outcomes (hypertension and diabetes and economic support).

Threats to Validity

Threats to External Validity

The study's results were generalized to the Jamaican populations by implying the recognition of the impact of economic support on health outcomes. Thus, the outcome proposed immediate consideration of health determinants as important contributors to the prevalence of chronic illness in Jamaica. According to the study design and methodology, there was no need to test for reactivity (interaction effects of selection and experimental variables) as the study was nonexperimental with no human subjects involved, inhibiting the reactive effect. According to the study design and methodology, all variables included in the study have been specified in the optimization section (Walden University Center for Research Quality, n.d.). There were no effects of experimental arrangements and multiple treatment interference based on the nature of the study (Laureate Education, 2008).

Threat to Internal Validity

The specific assumptions of the logistic regression tests were investigated prior to the analysis of the data (Laureate Education, 2016). Thus, I diagnosed linearity,

independence of error, homoscedasticity, multicollinearity, undue influence, and normal error distribution to better interpret the multiple regression model (Laureate Education, 2016; Wagner, 2016a). The assumptions of the binomial logistic regression model were met.

Ethical Procedures

Utilizing a secondary data set for this study sample selection presented the ethical dilemma of privacy and consent. Based on the reason for using secondary data previously mentioned in the study, one can conclude that the benefit outweighed the risk. However, privacy and consent are significant ethical concerns (Koziara et al., 2021). According to researchers, there were multiple ways to mitigate these ethical issues. In this study, participants data were deanonymized. There was no mention of personally identifiable data.

Additionally, the Health Insurance Portability and Accountability Act (HIPAA) applies to the United States, and data sharing across multiple countries can become irrelevant due to collecting and processing data outside the approved entity (Koziara et al., 2021). Nevertheless, there is an upside to utilizing secondary data, and throughout the study, there was continued effort to prioritize the individual's rights to privacy. The right to privacy and further advancement in health care and public health is equally important.

Section 3: Presentation of the Results and Findings

Introduction

In this study, I examined whether there was a difference in health outcomes (i.e., hypertension and diabetes) based on economic support (i.e., with or without cash assistance) among adult Jamaicans while controlling for age, education, employment, gender, and perceived financial situation. There were four research questions, and in with each research question, I examined the relationship between one aspect of health outcome (i.e., the dependent variable) and one aspect of economic support (i.e., the independent variable) while controlling for the aforementioned confounding variables.

In this section, I describe the data collection process of the secondary data set, indicating the timeframe of collection and discrepancies in the data set. Then, I present the results of the data analysis and a summary of my findings. An explanation of how the findings of the study can result in positive social change is also provided.

Accessing the Data Set for Secondary Analysis

I collected the data for the current study from the JSLC 2019 data set, which the Planning Institute of Jamaica (PIOJ) provided. The survey responses were collected from the Jamaican population during 2019 and 2020. The sample comprised economic and health data, including financial support and health diagnoses, respectively. Some demographic and social factors were also included, such as age, sex, education, employment, and financial situation. There was one discrepancy noted in the data, and there were also missing data within the data set. However, the number of cases for the

analysis met the minimum sample size requirement indicated by the G-power analysis I conducted.

Results

Descriptive Demographics of the Sample Population

Data were missing in the JSLC 2019 data set for some variables included in the study. The variables that had missing data included perceived financial situation (1.5%), education status (7.1%), family support (87.8%), diabetes diagnosis (1.8%), and hypertension diagnosis (2.0%). I included all cases in the analysis regardless of the missing data; however, primary data collection in future studies may alleviate the high percentage of missing data.

Based on the frequency tables for the dependent variables of hypertension diagnosis and diabetes diagnosis (see Tables 2 and 3), out of the 4,742 total participants, 90.9% were not diagnosed with diabetes and 9.1% had the diagnosis. For hypertension diagnosis, 77.4% were not diagnosed with hypertension, and 22.6% had the diagnosis. For the independent variable of governmental economic support, 99.1% did not receive government support, and 0.9% received government support (see Table 4). For the family economic support variable, 48% of the studied population received support from local families and 52.0% from families overseas (see Table 5).

Table 2

Frequency of the Diabetes Diagnosis Variable

		Frequency	Percent	Valid percent	Cumulative percent
Valid	No diabetes diagnosis	4,231	89.2	90.9	90.9
	Diabetes diagnosis	424	8.9	9.1	100.0
	Total	4,655	98.2	100.0	
Missing	System	87	1.8		
Total		4,742	100.0		

Table 3

Frequency of the Hypertension Diagnosis Variable

		Frequency	Percent	Valid percent	Cumulative percent
Valid	No hypertension diagnosis	3,598	75.9	77.4	77.4
	Hypertension diagnosis	1,051	22.2	22.6	100.0
	Total	4,649	98.0	100.0	
Missing	System	93	2.0		
Total		4,742	100.0		

Table 4

Frequency of the Government Support Variable

		Frequency	Percent	Valid percent	Cumulative percent
Valid	No	4,698	99.1	99.1	99.1
	Yes	44	.9	.9	100.0
	Total	4,742	100.0	100.0	

Table 5

Frequency of the Family Support Variable

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Local family	278	5.9	48.0	48.0
	International (overseas) family	301	6.3	52.0	100.0
	Total	579	12.2	100.0	
Missing	System	4,163	87.8		
Total		4,742	100.0		

There were multiple confounding variables: gender, education, employment status, and perceived financial situation. As shown in Table 6, 52.3% of the participants for the gender variable were female, and 47.7% were male. As depicted in Table 7, 0.5% of the cases were unemployed, 51% were employed, and 48.6% did not respond to the survey question. Per Table 8, 0.3% of the participants did not attend school, 32.3% had an education status below the secondary level, and 67.5% were above the secondary level. According to Table 9, 22.1% of the participants believed that their financial situation was better, 49.3% believed that theirs was equal or the same, and 27.9% believed that theirs was worse off. The mean age for the participants was 45.74, ranging from 18–99 years old (Table 10).

Table 6

Frequency of the Gender Variable

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Female	2,479	52.3	52.3	52.3
	Male	2,263	47.7	47.7	100.0
	Total	4,742	100.0	100.0	

Table 7

Frequency of the Employment Status Variable

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Unemployed	22	.5	.5	.5
	Employed	2,417	51.0	51.0	51.4
	Not stated	2,303	48.6	48.6	100.0
	Total	4,742	100.0	100.0	

Table 8

Frequency of the Education Status Variable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No school	13	.3	.3	.3
	Below secondary	1,421	30.0	32.3	32.5
	Above secondary	2,972	62.7	67.5	100.0
	Total	4,406	92.9	100.0	
Missing	System	336	7.1		
Total		4,742	100.0		

Table 9

Frequency of the Perceived Financial Situation Variable

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Better	1,033	21.8	22.1	22.1
	Equal/same	2,300	48.5	49.3	71.4
	Worse off	1,302	27.5	27.9	99.3
	Don't know	34	.7	.7	100.0
	Total	4,669	98.5	100.0	
Missing	System	73	1.5		
Total		4,742	100.0		

Table 10

Frequency of the Age Variable: Descriptive Statistics

	N	Minimum	Maximum	Sum	*M*	*SD*	Variance
AGEYRS	4,742	18	99	216,910	45.74	18.743	351.316
Valid *N* (listwise)	4,742						

Inferential Analysis

I conducted bivariate analysis to examine the relationship between the single independent variable and the outcome variable. Table 11 indicated a significant positive correlation between the outcome variable diabetes diagnosis and all independent variables except education and gender, which had a significant negative correlation, indicating no correlation [Spearman Rho = -.188, $p < 0.001$; Spearman Rho = -.99, $p < 0.001$, respectively]. Additionally, there are significant positive correlations between hypertension diagnosis and all independent variables except education and gender, which had a significant negative correlation, indicating no correlation [Spearman Rho = -.247, *p*

< 0.001; Spearman Rho = -.195, $p < 0.001$, respectively] (see Table 11). It is important to note that there was no significant correlation between the outcome variable hypertension diagnosis and the predictor variable of family economic support.

Table 11

Bivariate Analyses: Correlations

Spearman's rho		AGEYRS	D20	Educat-ion status	Employ-ment status	Gender	Govern-ment support	Family support	Diabetes diagnosis	Hyperten-sion diagnosis
AGEYRS	Correlation Coefficient	1.000	.071**	-.544**	-.013	-.005	.078**	-.020	.304**	.457**
	Sig. (2-tailed)	.	<.001	<.001	.361	.722	<.001	.625	<.001	<.001
	N	4742	4669	4406	4742	4742	4742	579	4655	4649
D20	Correlation Coefficient	.071**	1.000	-.098**	.057**	-.004	.057**	-.164**	.038*	.060**
	Sig. (2-tailed)	<.001	.	<.001	<.001	.791	<.001	<.001	.011	<.001
	N	4669	4669	4379	4669	4669	4669	579	4628	4622
Education status	Correlation Coefficient	-.544**	-.098**	1.000	-.052**	-.069**	-.071**	.125**	-.188**	-.247**
	Sig. (2-tailed)	<.001	<.001	.	<.001	<.001	<.001	.004	<.001	<.001
	N	4406	4379	4406	4406	4406	4406	543	4393	4388
Employment status	Correlation Coefficient	-.013	.057**	-.052**	1.000	-.098**	.038**	-.006	.032*	.066**
	Sig. (2-tailed)	.361	<.001	<.001	.	<.001	.009	.894	.028	<.001
	N	4742	4669	4406	4742	4742	4742	579	4655	4649
Gender	Correlation Coefficient	-.005	-.004	-.069**	-.098**	1.000	.009	.032	-.099**	-.195**
	Sig. (2-tailed)	.722	.791	<.001	<.001	.	.544	.443	<.001	<.001
	N	4742	4669	4406	4742	4742	4742	579	4655	4649
Government support	Correlation Coefficient	.078**	.057**	-.071**	.038**	.009	1.000	.	.031*	.043**
	Sig. (2-tailed)	<.001	<.001	<.001	.009	.544	.	.	.036	.004
	N	4742	4669	4406	4742	4742	4742	579	4655	4649
Family support	Correlation Coefficient	-.020	-.164**	.125**	-.006	.032	.	1.000	.083*	-.003
	Sig. (2-tailed)	.625	<.001	.004	.894	.443	.	.	.047	.939
	N	579	579	543	579	579	579	579	570	568
Diabetes diagnosis	Correlation Coefficient	.304**	.038*	-.188**	.032*	-.099**	.031*	.083*	1.000	.351**
	Sig. (2-tailed)	<.001	.011	<.001	.028	<.001	.036	.047	.	<.001
	N	4655	4628	4393	4655	4655	4655	570	4655	4644
Hypertension diagnosis	Correlation Coefficient	.457**	.060**	-.247**	.066**	-.195**	.043**	-.003	.351**	1.000
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	.004	.939	<.001	.
	N	4649	4622	4388	4649	4649	4649	568	4644	4649

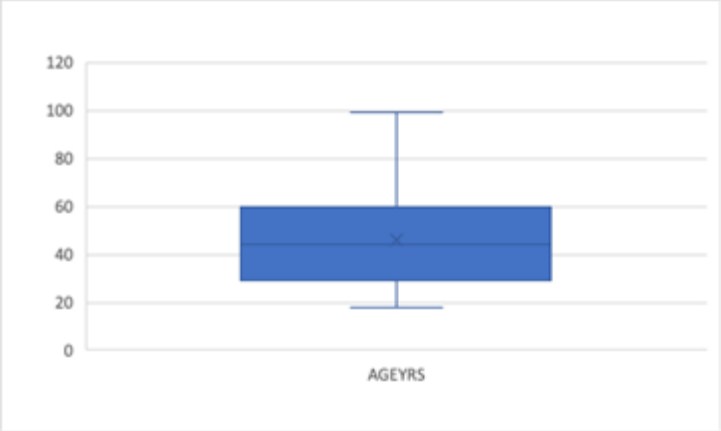
**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

I performed statistical assumptions for binomial logistic regression. The first four assumptions of a binomial logistic regression, which included having a dichotomous dependent variable, one or more independent variables, independence of observations, and mutually exclusive and exhaustive categories for the variables, were all met. I created a box plot for the continuous predictor variable that showed that the data contained no outliers (see Figure 1). Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern (see the correlation coefficients in Table 10).

Figure 1

Outliers



I performed a binomial logistic regression to model the relationship between the predictor variable of family economic support and the outcome variable of diabetes while controlling for the covariates to answer Research Question 1 (see Table 12). The logistic regression model was statistically significant, X^2 (9) = 105.139, $p < .001$. The model

explained 30.4% (Nagelkerke R^2) of the variance in diabetes and correctly classified 85% of cases. Sensitivity was 22.4%, specificity was 96.7%, positive predicted value was 55.9%, and negative predictive value was 87%. Of the six independent variables, only three were statistically significant: age, gender and family support. Increasing age was associated with an increased likelihood of diabetes diagnosis (*OR* = 1.054, 95% CI [1.033,1.075]). Males were less likely to be diagnosed with diabetes (*OR* = .342, 95% CI [.187, .624]). Additionally, local family were 2 times more likely to provide support to participants with diabetes (*OR* = 2.510, 95% CI [1.441, 4.372]). Perceived financial situation, education, employment, and government economic support were not associated with diabetes.

Table 12

Logistic Regression Predicting Likelihood of Diabetes Based on Age, Gender, and Family Support

							95% C.I.for EXP(B)	
	B	S.E.	Wald	*df*	Sig.	Exp(B)	Lower	Upper
AGEYRS	.052	.010	26.075	1	<.001	1.054	1.033	1.075
Gender	-1.073	.307	12.206	1	<.001	.342	.187	.624
Family support	.920	.283	10.565	1	.001	2.510	1.441	4.372

I performed a binomial logistic regression to model the relationship between the predictor variable of family economic support and the outcome variable of hypertension while controlling for the covariates to answer Research Question 2 (see Table 13). The logistic regression model was statistically significant, X^2 (9) = 185.398, $p < .001$. The model explained 40.3% (Nagelkerke R^2) of the variance in diabetes and correctly classified 75.3% of cases. Sensitivity was 56.3%, specificity was 85.1%, positive

predicted value was 66%, and negative predictive value was 79.1%. Of the six independent variables, only three were statistically significant: age, gender and education status. Increasing age was associated with an increased likelihood of hypertension diagnosis (*OR* = 1.056, 95% CI [1.040, 1.072]). Males were less likely to be diagnosed with hypertension (*OR* = .251, 95% CI [.155, .406]). Additionally, participants with an educational status below secondary level were less likely to have hypertension (*OR* = .557, 95% CI [.316, .981]). Family economic support, government economic support, employment, and perceived financial situation were not associated with hypertension.

Table 13

Logistic Regression Predicting Likelihood of Hypertension Based on Age, Gender, and Education Status

							95% C.I.for EXP(B)	
Step 1	*B*	S.E.	Wald	*df*	Sig.	Exp(B)	Lower	Upper
AGEYRS	.054	.008	49.171	1	<.001	1.056	1.040	1.072
Gender)	-1.384	.246	31.567	1	<.001	.251	.155	.406
Education status	-.586	.289	4.111	1	.043	.557	.316	.981

I performed a binomial logistic regression to model the relationship between the predictor variable for government economic support and the outcome variable of diabetes while controlling for the covariates to answer Research Question 3 (see Table 14). The logistic regression model was statistically significant, X^2 (10) = 485.361, $p < .001$. The model explained 22.6% (Nagelkerke R^2) of the variance in diabetes and correctly classified 90.2% of cases. Sensitivity was 4.3%, specificity was 99.3%, positive predictive value was 38.3%, and negative predictive value was 90.8%. Of the six independent variables, only two were statistically significant: age and gender. Increasing

age was associated with an increased likelihood of diabetes diagnosis (*OR* = 1.063, 95% CI [1.054, 1.071]). Males were less likely to be diagnosed with diabetes (*OR* = .454, 95% CI [.360, .571]). Perceived financial situation, education, employment, government economic support, and family economic support were not associated with diabetes.

Table 14

Logistic Regression Predicting Likelihood of Diabetes Based on Age and Gender

							95% C.I.for EXP(B)	
Step 1	*B*	S.E.	Wald	*df*	Sig.	Exp(B)	Lower	Upper
AGEYRS	.061	.004	226.708	1	<.001	1.063	1.054	1.071
Gender (1)	-.790	.118	45.182	1	<.001	.454	.360	.571

I performed a binomial logistic regression to model the relationship between the predictor variable of government economic support and the outcome variable of hypertension while controlling for the covariates to answer Research Question 4 (see Table 15). The logistic regression model was statistically significant, X^2 (10) = 1176.240, $p < .001$. The model explained 35.6% (Nagelkerke R^2) of the variance in diabetes and correctly classified 80.4% of cases. Sensitivity was 40.2%, specificity was 92.7%, positive predicted value was 63%, and negative predictive value was 83.5%. Of the six independent variables, only two were statistically significant: age and gender. Increasing age was associated with an increased likelihood of diabetes diagnosis (*OR* = 1.074, 95% CI [1.068, 1.081]). Males were less likely to be diagnosed with hypertension (*OR* = .289, 95% CI [.242, .344]). Perceived financial situation, education, employment, familial economic support, and government economic support were not associated with hypertension.

Table 15

Logistic Regression Predicting Likelihood of Diabetes Based on Age, Gender, and Family Support

							95% C.I.for EXP(B)	
Step 1	*B*	S.E.	Wald	*df*	Sig.	Exp(B)	Lower	Upper
AGEYRS	.072	.003	520.681	1	<.001	1.074	1.068	1.081
Gender (1)	-1.243	.090	192.530	1	<.001	.289	.242	344

Summary of Results

According to the bivariate analysis, a significant association existed between diabetes and perceived financial situation, employment, age, and family support. There was also a significant association between hypertension and perceived financial situation, employment status, and age. There was no significant association between hypertension and family support. Additionally, there was no relationship between the health outcomes and government support.

A binomial logistic regression was performed to ascertain the relationship between diabetes diagnosis and economic support (government and familial) and covariates, including age, gender, perceived financial situation, employment, and education status. Increasing age was associated with the increased likelihood of individual diagnosed with both hypertension and diabetes. Additionally, males were less likely to be diagnosed with hypertension or diabetes. Local family members were more likely to provide financial support to individuals with diabetes. Participants with a below secondary level education were less likely to have hypertension. Education and gender were less likely to be associated with hypertension diagnosis. Based on the results of the logistic regression, once can conclude that there was no significant association between

economic support (government and familial) and hypertension. However, local family support was associated with diabetes diagnosis.

For RQ1, the null hypothesis was rejected because of a significant positive relationship between diabetes and local family support. For RQ2, RQ3 and RQ4, there were no significant associations between both health outcome (diabetes and hypertension) and government support while controlling for the confounding variables. Additionally, there was no significant association between hypertension and familial support while controlling for the confounding variables.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

As mentioned in Section 1, there is a significant number of adult Jamaicans that have been diagnosed with hypertension and diabetes (Bidulescu et al., 2017). Socioeconomic factors, such as financial status, education, and employment, have been linked to health outcomes, making economic support an integral part of improving health outcomes Adler et al., 1994). The purpose of this quantitative study was to examine whether a difference existed in health outcomes (i.e., hypertension and diabetes) based on economic support among adult Jamaicans while controlling for age, gender, perceived financial situation, employment, and education. The secondary data used in the study were derived from the JSLC 2019 data set. All variables were analyzed using descriptive statistics and binomial logistic regression analysis.

The results of the analysis indicated that increasing age was associated with the increased likelihood of diabetes and hypertension, local families were most likely to provide support to participants with diabetes, and males were less likely to be diagnosed with diabetes and hypertension. Additionally, there was no significant association found between economic support and hypertension. Participants with below secondary level education were less likely to have hypertension.

Interpretation of the Findings

According to Cross et al (2018), family support networks could serve as a protective and/or risk factor for various well-being outcomes, including physical well-being. The current study findings confirmed this notion by illustrating that local families

were most likely to support participants with diabetes, indicating that family support was a surrogate for SES. Ferguson et al (2010) found that diabetes was higher among Jamaican men with less education and hypertension was higher among Jamaican women with less education. The current study findings illustrated that education and gender were less likely to be associated with hypertension; however, participants with a below secondary level education were less likely to have hypertension.

Education and income were known as the "causes of the causes" of ill health (Zeglin et al., 2019, p. 330). However, there were no significant association found between the participants' perceived financial situation and either health outcome in the current study. According to d'Errico et al (2021), employment was a central element of people's lives because it was the main source of income that shaped a person's socioeconomic position; therefore, socioeconomic position was the primary determinant of health. D'Errico et al. examined the association between unemployment and mortality and found that unemployment was associated with increased morbidity and mortality. However, the findings in the current study illustrated no association between employment status and the participants' health outcomes.

Limitations of the Study

The use of secondary data collected by the JSLC presented the possibility of respondent bias and participants not answering all questions, resulting in missing data. However, the cross-sectional design allowed the assessment of confounding effects of other socioeconomic demographic factors on the relationship between economic status and health outcomes. In this study, the number of cases for analysis and appropriate

power were met, and all cases with missing data were retained in the data set and used in the analysis. Additionally, the subjective diagnosis of hypertension and diabetes was based on responses from a survey question that asked if the participants were told by a health care provider that they had the chronic illness. I did not confirm these diagnoses, resulting in possible information bias.

In cross-sectional studies, the data are collected at a single point in time to measure the prevalence of health outcomes, test determinants of health, and describe demographics of a population (Wang & Cheng, 2020). The JSLC only measured the current exposures and health status of the participants. I chose the quantitative cross-sectional study design because it allowed for the simultaneous comparison of many different variables (see Institute for Work and Health, 2015).

Recommendations

The longitudinal study design is an appropriate approach to evaluate the association between risk factors and the development of hypertension and diabetes; therefore. I recommend that in the future, researchers conduct a longitudinal study to assess the association between exposure and outcomes by limiting the influence of sample selection bias (see McLeod et al., 2022). This research design would allow for follow ups over a prolonged period and may provide a more comprehensive understanding of the many risk factors that may affect the development of health outcomes and economic support (Caruana et al., 2015). Additionally, researchers could also examine the reasons for low economic support, especially government support, as well as who received government support and if they did not, identify the reasons why.

Focusing on this topic in future research may result in identifying the barriers and ways to mitigate them, which may ultimately result in optimal health outcomes.

Use of the cross-sectional study design could allow future researchers to employ biospecimen and bioinformation compiled from the existing secondary data to perform a deeper and adequate analysis of economic support and health outcomes (see Gertman, 2015; Laurete Education, 2016). The one-time measurement of exposure and outcome in the current study made it difficult to derive causal relationship from its analysis, but it provided information that will be useful in designing a cohort study (see Sertia, 2016).

Implications for Professional Practice

Economic support comes in many forms, such as familial and government support, which can augment an individual's income and improve their perceived financial situation. Financial stability plays a significant role in health outcomes and disease prevention in a country (Finkelstein et al., 2022). The lack of economic support can result in a negative effect on health with increased prevalence of NCDs, such as hypertension and diabetes. And with the multiple complications associated with hypertension and diabetes, the increased prevalence of these two diseases could become a significant public health crisis. Understanding the associations between economic support, demographic factors, and health outcomes can provide relevant information to mitigate adverse health outcomes among the vulnerable Jamaican population.

Implications for Social Change

The results of the bivariate analysis in this study showed that there were significant associations between diabetes and perceived financial situation, employment,

age, and family economic support. Additionally, there were significant associations between hypertension and perceived financial situation, employment, and age. I did not find significant association between hypertension and family economic support or between either health outcome and government economic support. Through inferential analysis, I found that increasing age was associated with increased likelihood of both health outcomes, indicating an upstream effect. The findings of this study could have a potential impact on positive social change by being used to develop an additional prevention campaign that includes education and screening in communities using mobile clinics. Additionally, the study findings indicated that local families were more likely to provide financial support to individuals with diabetes, but there were no association between government economic support and both health outcomes. Informational messaging to the public about the availability of government support and assistance with application process for governmental support may be necessary to improve individuals' financial situations.

Conclusion

Jamaica is one of the largest English-speaking countries in the Caribbean with an estimated population of over 2 million and an economy that has suffered from years of low growth combined with indebtedness (PAHO, n.d.-a). Health care costs, especially out-of-pocket expenses, have placed a significant burden on the population's health and economic and social development, resulting in the need for social assistance (PAHO, n.d.-b). Additionally, in 2019, 42% of all healthy lives lost in the country were from three causes of death: hypertension, diabetes, and cancer (PAHO, 2021). NCDs, such as

hypertension and diabetes, significantly affect the population's health and lead to higher treatment costs, imposing a direct burden on health system and the population.

The Strategic Goals of Vision 2030 aimed to reduce inequalities through improved social participation and health promotion to address the social determinants of health that negatively affect health status (PAHO, n.d.-b). Many studies have been conducted to understand the relationships between health outcomes and social determinants of health; however, not many of these studies have examined the associations between economic support and health outcomes. In the current study, I found that increasing age was associated with the increased likelihood of individuals diagnosed with both hypertension and diabetes, males were less likely to be diagnosed with hypertension or diabetes, local family members were more likely to provide financial support to individuals with diabetes, participants with a below secondary level education were less likely to have hypertension, and education and gender were less likely to be associated with hypertension diagnosis. Additionally, there was no significant association between economic support and hypertension; however, local family economic support was associated with diabetes diagnosis.

The findings of this study showed a minimally significant association between health outcomes and economic support, which indicated the need for future research to conduct an in-depth examination of the provisions of government support and develop a more comprehensive understanding of the many risk factors that affect health outcomes and economic support. Considering the burden of NCDs and high treatment costs on the Jamaican population, it is necessary to fully understand the relationship between

economic support and health outcomes, keeping in mind other socioeconomic factors to ensure improved population health with minimal mortality and morbidity rates.

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