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Health Status Comorbidity and Functional Capacity Among Self-Reported Diabetic Patients in Jamaica: A Population-Based Assessment Using the Jamaica Survey of Living Conditions 2023

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ABSTRACT

Background: Diabetes mellitus is a major non-communicable disease whose clinical consequences are shaped by coexisting chronic conditions, social circumstances, healthcare access, and functional capacity.

Objective: This study assessed health status, comorbidity, functionality, and selected social characteristics among self-reported diabetic patients in Jamaica using the Jamaica Survey of Living Conditions (JSLC) 2023.

Methods: A quantitative cross-sectional secondary analysis was conducted among 322 respondents identified through the survey diabetes indicator, with descriptive statistics, cross-tabulations, Pearson chi-square tests, and Cramer's V used to characterise distributions and associations.

Results: Women constituted 64.6% of the sample, 40.1% were aged 60–74 years, 46.6% belonged to the wealthy socioeconomic group, and 54.9% of respondents with valid educational information had post-secondary education; hypertension affected 70.5%, arthritis 27.3%, heart disease 7.8%, asthma 5.3%, cancer 4.0%, and kidney disease 3.4%. Functional health was heterogeneous, with 46.4% reporting no difficulty, 19.0% some difficulty, 15.0% a lot of difficulty, and 19.6% inability to perform the measured activity, while only 21.7% reported health insurance coverage.

Conclusion: Self-reported diabetic patients in Jamaica constitute a clinically and socially heterogeneous population characterised by substantial hypertension-diabetes coexistence, additional chronic morbidity, considerable functional difficulty, and limited insurance coverage, supporting integrated cardiometabolic management, routine functional assessment, rehabilitation, strengthened primary care, and greater financial protection.

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Introduction

Diabetes mellitus represents one of the most consequential non-communicable diseases of the twenty-first century because its burden encompasses premature mortality, cardiovascular disease, kidney disease, visual impairment, neuropathy, lower-extremity complications, disability, and substantial healthcare expenditure. The World Health Organization estimated that approximately 830 million people were living with diabetes in 2022, reflecting a dramatic increase from approximately 200 million in 1990 [1]. The disease burden has increased rapidly in low- and middle-income countries, where treatment coverage and access to comprehensive chronic-disease management frequently remain constrained [1]. Diabetes is not merely a disorder of glucose metabolism but a multidimensional public-health challenge involving prevention, diagnosis, continuing treatment, complication surveillance, functional preservation, and social protection. The International Diabetes Federation estimated an adult diabetes prevalence

of approximately 11.6% in Jamaica for 2024, demonstrating the continuing importance of the disease within the national epidemiological landscape [2]. Understanding the health circumstances of Jamaicans already reporting diabetes is necessary for moving beyond prevalence estimation towards comprehensive assessment of the lived burden of the disease.

Diabetes rarely operates independently of other chronic diseases because its metabolic, vascular, behavioural, demographic, and socioeconomic determinants overlap with those underlying hypertension, cardiovascular disease, kidney disease, obesity, and other non-communicable conditions. Multimorbidity is generally conceptualised as the coexistence of two or more chronic conditions within an individual, whereas comorbidity frequently describes additional conditions occurring alongside a specified index disease [3]. For diabetic patients, hypertension is important because the simultaneous presence of elevated blood pressure and dysglycaemia substantially increases cardiovascular and renal risk and creates greater clinical-management requirements than either condition considered independently. International

guidelines emphasise integrated management of blood glucose, blood pressure, lipids, renal risk, lifestyle, and other cardiovascular determinants rather than glucose-centred treatment alone [1]. Diabetes-related comorbidity can additionally increase medication burden, healthcare utilisation, financial costs, functional impairment, and difficulties associated with self-management. The epidemiology of diabetes should incorporate the wider morbidity environment within which the condition is experienced.

Functionality constitutes another critical dimension of diabetic health because successful disease management should ultimately contribute to people's ability to live independently and participate in valued activities. Diabetes can influence functioning through cardiovascular complications, neuropathy, visual impairment, kidney disease, musculoskeletal problems, lower-extremity complications, fatigue, cognitive changes, and interactions with coexisting diseases [1]. Evidence from the United States demonstrates that adults diagnosed with diabetes have substantially greater disability than adults without diagnosed diabetes, and the disparity persists across different age groups [4]. Among Americans aged 65 years and older, for example, disability was reported by 33.3% of adults with diagnosed diabetes compared with 18.5% of those without diagnosed diabetes in the 2018 National Health Interview Survey [4]. Such findings demonstrate that glycaemic status alone provides an incomplete assessment of the health burden associated with diabetes. A population-based study of diabetic Jamaicans should examine functionality alongside chronic comorbidity and social characteristics.

Jamaica has undergone demographic and epidemiological transitions characterised by population ageing and the increasing prominence of non-communicable diseases. Mitchell-Fearon and colleagues found substantial hypertension and diabetes burdens among 2,943 community-dwelling Jamaicans aged over 60 years, demonstrating the importance of cardiometabolic disease within older adulthood [5]. A related Jamaican investigation reported that 75.3% of older respondents had at least one non-communicable disease and 47.5% experienced comorbidity, with hypertension, arthritis, and diabetes being the most frequently reported conditions [6]. Diabetes increased markedly between earlier and later survey periods, illustrating the expanding importance of the disease within Jamaica's changing epidemiological profile [6]. However, studies concentrating on the prevalence of diabetes in the general population do not necessarily reveal the comorbidity and functional characteristics of people already living with the condition. The present investigation addresses this distinction by treating self-reported diabetic patients as the analytical population rather than treating diabetes merely as an outcome variable.

The importance of this approach is reinforced by comparative evidence from the wider Caribbean and Latin America showing that diabetes frequently occurs within complex patterns of multimorbidity. Research involving six Latin American and Caribbean countries reported multimorbidity prevalence ranging from 17.5% in Colombia to 37.3% in Jamaica, with diabetes and heart disease being likely to occur with additional conditions [7]. A subsequent systematic review and meta-analysis estimated pooled multimorbidity prevalence at 43% across Latin America and the Caribbean, although substantial heterogeneity occurred because of differences in age, disease definitions, measurement, and study design [8]. These findings suggest that examining diabetes without its coexisting conditions can underestimate the complexity of healthcare required by affected individuals. Functional limitations may further intensify this complexity by reducing patients' ability to exercise, attend appointments, obtain medications, prepare

appropriate meals, and undertake self-care. The simultaneous assessment of diabetes, comorbidity, functionality, and social circumstances is theoretically and clinically warranted.

The present study assesses the health status, chronic comorbidity, functionality, and selected socioeconomic characteristics of self-reported diabetic patients in Jamaica using JSLC 2023 data. The first objective is to describe the demographic and socioeconomic profile of the diabetic population. The second objective is to determine the prevalence of selected chronic conditions occurring within this population, with particular attention to hypertension and arthritis. The third objective is to assess functional health status and identify the extent to which respondents report varying degrees of functional difficulty. The fourth objective is to consider health-insurance coverage as a component of the wider healthcare and financial-protection environment surrounding diabetes management. By integrating these dimensions, the study contributes a population-based perspective on diabetes that moves beyond diagnosis towards the broader consequences and circumstances associated with living with the disease in Jamaica.

Theoretical Framework

Biopsychosocial Model of Health

The biopsychosocial model provides an appropriate overarching framework because diabetes develops and progresses through interactions among biological processes, individual behaviour, psychological circumstances, and social environments. Biological dimensions include insulin resistance, hyperglycaemia, vascular damage, hypertension, renal impairment, inflammation, and other physiological processes influencing complications and comorbidity. Behavioural dimensions include nutrition, physical activity, medication adherence, tobacco exposure, alcohol consumption, self-monitoring, and healthcare utilisation. Social dimensions encompass income, education, employment, household arrangements, geographic location, healthcare access, insurance, social support, and wider structural inequalities. These components are interdependent because socioeconomic circumstances can influence behavioural opportunities and healthcare access, while disease and functional impairment can reciprocally affect economic participation and social relationships. The framework supports an analysis in which diabetes is understood as a condition embedded within biological, functional, and social systems rather than as an isolated metabolic abnormality.

Social Determinants of Health Framework

The social determinants of health framework further explains why the health experiences of diabetic patients may vary according to socioeconomic position, education, sex, household status, residence, and access to healthcare resources. Social conditions influence exposure to disease risks as well as the resources available for diagnosis, continuing treatment, dietary modification, physical activity, medication adherence, and complication management. Socioeconomic disadvantage may increase vulnerability through material deprivation, food insecurity, stressful living conditions, limited transportation, reduced access to preventive services, and difficulties financing continuing care. Conversely, higher socioeconomic position can improve access to information and resources while not necessarily eliminating behavioural or metabolic risks for diabetes. The substantial socioeconomic heterogeneity observed within the diabetic sample requires interpretation beyond a simplistic assumption that diabetes is concentrated exclusively among economically disadvantaged populations. Social determinants should be understood as interacting influences on disease development, detection, treatment, and outcomes.

Multimorbidity and Comorbidity Framework

A comorbidity framework is central to this study because diabetes serves as the index condition around which the coexistence of additional chronic diseases is assessed. Hypertension, arthritis, heart disease, kidney disease, respiratory disorders, cancer, and mental-health conditions may modify the clinical complexity and functional consequences of diabetes. Multimorbidity research demonstrates that combinations of chronic conditions can generate healthcare needs that differ substantially from those created by individual diseases [3-7]. Multiple conditions may require several medications, different specialists, more frequent monitoring, and potentially competing therapeutic recommendations. Comorbidity may also intensify functional limitations and reduce individuals' capacity to undertake the behavioural and clinical tasks necessary for diabetes self-management. The present framework treats the diabetic patient as a whole person experiencing a constellation of health and social circumstances rather than reducing the analysis to glycaemic disease alone.

Who Functioning and Healthy Ageing Perspective

Although diabetes affects adults across the life course, the age distribution of the present sample makes functionality and healthy ageing relevant theoretical considerations. WHO conceptualises health in later life increasingly through functional ability and intrinsic capacity rather than solely through the absence of diagnosed disease [9]. Functionality reflects the interaction between individuals' physical and mental capacities and environmental circumstances that facilitate or constrain everyday activities. Diabetes and its comorbidities may progressively reduce intrinsic capacity, but supportive environments, effective treatment, rehabilitation, assistive resources, and social support can moderate their functional consequences. This perspective explains why people with similar disease profiles may report substantially different levels of functional difficulty. Functional status is treated in this study as a substantive health outcome rather than merely a secondary manifestation of chronological ageing.

Literature Review

Global Diabetes Burden

The contemporary global burden of diabetes demonstrates why the condition has become central to non-communicable disease policy and health-system planning. WHO reported that approximately 14% of adults aged 18 years and older were living with diabetes in 2022, compared with approximately 7% in 1990 [1]. Diabetes contributes directly and indirectly to cardiovascular mortality, kidney failure, blindness, neuropathy, lower-limb amputation, and premature death [1]. More than half of adults aged 30 years and older living with diabetes globally were not taking medication for the disease in 2022, with treatment gaps greatest in lower-resource settings [1]. Effective diabetes management requires both individual clinical intervention and health systems capable of providing sustained diagnosis, medication, cardiovascular-risk management, and complication screening. These global circumstances provide the wider epidemiological context within which Jamaica's diabetes burden should be interpreted.

Diabetes and Comorbidity in Jamaica

Jamaican research has consistently identified diabetes as an important component of the country's non-communicable disease burden. Mitchell-Fearon and colleagues documented substantial diabetes and hypertension prevalence among older Jamaicans and demonstrated that both conditions had increased markedly over historical periods [5]. Their nationally representative study of older adults highlighted the importance of cardiometabolic

disease within Jamaica's demographic transition. A subsequent analysis reported diabetes among approximately 26% of older Jamaicans, while hypertension affected 61% and arthritis 35% [6]. Approximately 47.5% of that older population experienced comorbidity, confirming that single-disease approaches provide an incomplete account of later-life health [6]. These studies provide a strong Jamaican precedent for investigating the health characteristics of diabetic patients through a comorbidity framework rather than considering diabetes independently.

The current study extends this literature because it begins with a sample consisting of self-reported diabetic patients and asks what other health and functional conditions characterise that group. This analytical orientation permits direct estimation of the proportion of diabetic respondents also reporting hypertension, arthritis, cardiovascular disease, kidney disease, and other conditions. It additionally allows functionality to be examined as an outcome relevant to living with diabetes and associated diseases. The approach is important because diabetes and hypertension share several metabolic and behavioural determinants and together amplify cardiovascular and renal risk. Jamaica's earlier multimorbidity evidence suggests that such combinations are likely to be epidemiologically important, but contemporary population-based evidence focused specifically on diabetic patients remains comparatively limited. The JSLC 2023 analysis adds a patient-centred epidemiological perspective to the established Jamaican NCD literature.

Caribbean Evidence

The wider Caribbean exhibits substantial diabetes and cardiometabolic morbidity, although prevalence and health-system circumstances differ between territories. Research among older adults in Trinidad and Tobago found diabetes prevalence of 32.2%, hypertension of 45.2%, and arthritis of 29.5%, with multimorbidity affecting approximately 44% of adults aged 70 years and older [10]. Women experienced higher prevalence than men for several leading conditions, including diabetes, hypertension, and arthritis [10]. These patterns resemble the broader disease constellation evident among diabetic Jamaicans, with the prominence of hypertension and arthritis. IDF estimates also indicate substantial diabetes burdens throughout the Caribbean, including Barbados, Guyana, Trinidad and Tobago, Jamaica, and several smaller island states [2]. The regional evidence supports coordinated Caribbean strategies for diabetes prevention, cardiovascular-risk reduction, chronic-disease integration, and healthy ageing.

Latin America

Latin American evidence demonstrates that diabetes frequently exists within broader patterns of multimorbidity shaped by demographic and socioeconomic factors. Huaquía-Díaz and colleagues estimated pooled multimorbidity prevalence at 43% across population-based studies from Latin America and the Caribbean, with a corresponding estimate of 37% when analyses were restricted to nationally representative studies [8]. The pooled prevalence increased to approximately 62% in studies involving populations aged 50 years and older, illustrating the strong age gradient in multiple chronic conditions [8]. Women generally demonstrated higher multimorbidity prevalence than men, although considerable between-study heterogeneity remained [8]. Hypertension and type 2 diabetes were the only conditions incorporated into every multimorbidity definition identified in the systematic review, demonstrating their central role in regional disease clustering [8]. These findings provide a relevant comparative framework for interpreting the age and sex

composition of Jamaica's diabetic population.

Macinko and colleagues further demonstrated that multimorbidity has consequences extending beyond disease prevalence to primary-care experience and healthcare affordability across six Latin American and Caribbean countries [7]. Their analysis included Jamaica alongside Brazil, Colombia, El Salvador, Mexico, and Panama and reported the highest multimorbidity prevalence in Jamaica at 37.3% [7]. Diabetes and heart disease were likely to coexist with other conditions, reinforcing the importance of integrated disease management [7]. Individuals experiencing greater multimorbidity were more likely to report difficulties paying medical bills, high out-of-pocket expenditure, contact with multiple physicians, and fair or poor health [7]. These findings are relevant to the current study because only a minority of diabetic respondents reported health-insurance coverage. The Latin American comparison links comorbidity not only with clinical complexity but also with financial protection and health-system organisation.

African Evidence

African studies similarly demonstrate that diabetes often forms part of cardiometabolic multimorbidity patterns associated with substantial functional consequences. An analysis of WHO Study on Global AGEing and Adult Health data from Ghana and South Africa examined 4,190 adults aged over 50 years and identified several multimorbidity clusters [11]. One cluster characterised by hypertension, abdominal obesity, diabetes, cataract, and arthritis affected approximately 10% of the study population [11]. Individuals within this cluster had approximately threefold greater adjusted odds of moderate or severe disability than participants in the relatively healthy group [11]. Moderate and severe disability affected 27.0% and 8.9% of the overall Ghanaian and South African analytical population, respectively [11]. The African evidence demonstrates the importance of considering functional consequences when diabetes occurs alongside hypertension and musculoskeletal disease.

European Evidence

European research provides additional evidence that multimorbidity can progressively undermine functional capacity and quality of life. Wilk and colleagues used longitudinal Survey of Health, Ageing and Retirement in Europe data to examine middle-aged and older adults with and without multimorbidity [12]. Adults living with multimorbidity experienced poorer quality of life and a greater risk of functional limitation across the observed life course [12]. Increasing functional limitations were additionally associated with deterioration in quality of life within important population subgroups [12]. Other European SHARE analyses have identified metabolic and severely impaired multimorbidity patterns, demonstrating that cardiometabolic diseases form recognisable clusters within ageing populations [13]. European evidence reinforces the importance of examining functionality when evaluating the health status of people living with diabetes and other chronic diseases [12,13].

United States Evidence

Evidence from the United States demonstrates a clear relationship between diagnosed diabetes and disability. National Health Interview Survey data showed that 27.1% of American adults with diagnosed diabetes had disability compared with 8.1% among adults without diagnosed diabetes in 2018 [4]. Among people aged 45–64 years, the corresponding proportions were 24.5% and 8.1%, while among those aged 65 years and older they were 33.3% and 18.5% [4]. A subsequent 2020 analysis similarly

demonstrated substantially greater diagnosed diabetes prevalence among adults with disability than among those without disability [4]. These reciprocal patterns indicate that diabetes and functional impairment are strongly interconnected at the population level, although cross-sectional evidence cannot independently establish causal direction. Kalyani et al analysed a nationally representative sample of 6,097 adults aged 60 years and older from the National Health and Nutrition Examination Survey and found considerable functional impairment among individuals with diabetes [14]. Among older adults with diabetes, the prevalence of disability was 73.6% for general physical activities, 52.2% for lower-extremity mobility, 43.6% for instrumental activities of daily living, 37.2% for activities of daily living, and 33.8% for leisure and social activities [14]. Diabetes was associated with approximately two- to threefold greater odds of disability across the examined functional domains [14]. Cardiovascular disease, obesity, and poor glycaemic control accounted for a substantial proportion of the excess disability associated with diabetes, highlighting the importance of comorbidity in understanding functional health [14]. These findings reinforce the importance of assessing functionality alongside disease status when evaluating the overall health burden experienced by older adults living with diabetes [14]. The American evidence provides an important benchmark for interpreting the considerable functional difficulty observed among self-reported diabetic Jamaicans.

Research Gap

The reviewed evidence establishes that diabetes, multimorbidity, and functional limitation constitute interconnected public-health challenges, but important Jamaican knowledge gaps remain. Existing Jamaican research has documented diabetes prevalence and broader comorbidity among older adults, yet comparatively less attention has focused on the complete health profile of respondents who already identify themselves as diabetic [5,6]. International studies demonstrate that diabetes frequently coexists with hypertension and other diseases and that multimorbidity is associated with functional limitations and healthcare complexity [7-12]. Nevertheless, international estimates cannot substitute for contemporary Jamaican evidence because disease distributions, socioeconomic conditions, healthcare systems, and population structures differ substantially between settings. The present study addresses this gap by integrating demographic characteristics, socioeconomic circumstances, chronic comorbidity, functionality, and insurance status within a diabetes-specific Jamaican analytical population. Its contribution is the construction of a broader epidemiological portrait of living with self-reported diabetes in Jamaica rather than another estimate of diabetes prevalence alone.

Materials and Methods

Study Design

The Jamaica Survey of Living Conditions (JSLC) 2023 employed a national household-based cross-sectional survey design to generate quantitative information on the socioeconomic circumstances and living conditions of individuals and households throughout Jamaica. The JSLC is jointly implemented by the Statistical Institute of Jamaica (STATIN) and the Planning Institute of Jamaica (PIOJ), with STATIN having primary responsibility for survey design and field implementation and PIOJ undertaking substantial responsibility for analysis and dissemination [15]. As a cross-sectional survey, the 2023 JSLC collected information from sampled households during a defined data-collection period rather than following the same respondents prospectively through time. The design permits estimation and comparison of numerous social, economic, demographic, health, educational, housing, consumption, poverty, and social-protection indicators at both

household and individual levels [15]. Its broad multidimensional structure is valuable for health research because health conditions can be analysed in relation to socioeconomic position, demographic characteristics, household circumstances, educational attainment, geographical residence, and access to services. The JSLC provides an appropriate population-based data infrastructure for investigating the social epidemiology of chronic diseases such as diabetes, hypertension, arthritis, cardiovascular disease, and other non-communicable conditions in Jamaica [15].

Historical and Institutional Context

The JSLC was established in 1988 and has subsequently become one of Jamaica's principal instruments for monitoring living standards and population well-being [15]. The survey was developed to provide empirical information that could support national socioeconomic planning, policy formulation, programme evaluation, poverty measurement, and assessment of access to social services. STATIN describes the JSLC as a nationally representative household survey undertaken collaboratively with PIOJ and designed to provide repeated snapshots of the social and economic circumstances of Jamaicans [15]. The survey is generally conducted annually, although interruptions have occurred, including the absence of a 2022 survey because STATIN's resources were committed to the Population and Housing Census [15,16]. The 2023 survey represented the resumption of the series following the census-related interruption and constituted the thirty-second instalment of the JSLC [15]. This long-running institutional structure makes the JSLC especially valuable for cross-sectional secondary research and, where methodological comparability is maintained, for examining changes in Jamaican living conditions across survey years.

Target Population and Unit of Analysis

The target population of the JSLC comprises persons living in private households in Jamaica and is designed to provide information concerning the living conditions of the household population. The survey incorporates information measured at both the household level and individual level, thereby permitting different units of analysis depending on the substantive research question [15]. Household-level variables include dimensions such as consumption, housing conditions, household composition, amenities, socioeconomic circumstances, and participation in selected social programmes. Individual-level information encompasses demographic characteristics, education, health, healthcare utilisation, and other personal attributes available within the survey instrument [15]. This nested structure means that individual respondents can be examined within their broader household and socioeconomic contexts, an important advantage for studies concerned with the social determinants of health. For the present diabetes investigation, the individual respondent constitutes the principal analytical unit because diabetes status, comorbid chronic diseases, functional health, sex, age, education, and related characteristics are measured at the individual level.

Sampling Design

The JSLC is designed as a probability-based national household survey, allowing selected households to represent the wider Jamaican household population when the prescribed survey design and weights are appropriately applied [15]. STATIN is responsible for the design and execution of the survey and maintains the statistical infrastructure and household sampling resources required for national household surveys [15-17]. Jamaica's household-survey infrastructure is geographically organised around Enumeration Districts and dwelling listings that permit households to be selected

systematically within defined geographic areas. The probability-sampling framework is intended to achieve coverage across Jamaica's geographical and socioeconomic population structure rather than relying on convenience, purposive, institutional, or clinical samples. This feature is important for chronic-disease research because individuals who use healthcare facilities may differ systematically from persons with the same conditions who do not routinely access formal medical services. Accordingly, a household-survey framework can identify persons reporting diabetes within the community and provides a fundamentally different epidemiological perspective from hospital-, clinic-, or specialist-based diabetes studies.

Sampling Frame and Geographic Coverage

The statistical sampling infrastructure used for Jamaican household surveys is maintained by STATIN and is based on geographically defined areas and updated listings of dwellings. STATIN periodically undertakes islandwide dwelling-listing exercises to update its master household sample frame and account for changes occurring after population and housing censuses [17]. Enumeration Districts constitute geographically defined areas used for census and survey data-collection purposes and provide an important organisational basis for constructing probability household samples. Updating the dwelling frame is necessary because new dwellings are constructed, households relocate, communities expand, and demographic distributions change over time [17]. The resulting sampling infrastructure permits survey coverage across urban and rural Jamaica and supports geographically disaggregated analysis. Within JSLC analyses, geographical information can be used to compare respondents residing in the Greater Kingston Metropolitan Area, other urban centres, and rural areas where the available dataset supports those classifications.

Sample Size and Achieved Sample

The completed JSLC 2023 survey contained 4,442 individuals drawn from 1,719 households across Jamaica [15]. This achieved sample provided the empirical basis for the demographic, consumption and poverty, health, education, housing, and social-protection analyses reported in the official 2023 overview [15]. The relatively large household-based sample allows researchers to investigate population subgroups defined by demographic, socioeconomic, geographic, and health characteristics. Nevertheless, secondary analyses involving specific diseases necessarily contain fewer observations because only respondents satisfying the relevant analytical criteria are retained. In the present study of self-reported diabetic patients, application of the diabetes criterion resulted in an analytical subsample of 322 respondents, meaning that the diabetes study represents a secondary subpopulation analysis rather than an analysis of all 4,442 JSLC participants. The distinction between the original JSLC sample of 4,442 persons and the diabetes analytical sample of 322 respondents should be maintained consistently throughout the manuscript.

Data Collection Period

Data collection for the JSLC 2023 extended from July 2023 through March 2024, notwithstanding its designation as the 2023 survey round [15]. This extended field period allowed trained survey personnel to collect detailed information from selected Jamaican households across the national sample. The temporal distinction is important for research reporting because the dataset is properly identified as JSLC 2023 even though fieldwork continued into the first quarter of 2024. Researchers should avoid incorrectly describing all observations as having been collected exclusively

during calendar year 2023. The survey year identifies the JSLC round, whereas the fieldwork dates identify the actual period over which respondent information was obtained [15]. Accurate reporting of these dates strengthens methodological transparency and permits readers to situate the findings within Jamaica's socioeconomic and epidemiological circumstances during the relevant period.

Mode of Data Collection

The 2023 JSLC used Computer-Assisted Personal Interviewing (CAPI) to collect information from participating households [15]. Under this approach, trained interviewers administered the survey instrument and entered responses electronically rather than relying exclusively on traditional paper questionnaires. CAPI can improve data quality through programmed response categories, automated routing and skip patterns, immediate data entry, and reductions in transcription requirements associated with subsequent manual entry of paper questionnaires. The approach is valuable for a multidimensional household survey such as the JSLC because different questionnaire modules apply to different household members and circumstances. Electronic interviewing does not eliminate reporting or interviewer-related measurement error, but it provides a more structured environment for implementing complex survey instruments. The use of CAPI should be explicitly identified in Scopus manuscripts employing JSLC 2023 because it represents an important feature of the survey's data-collection methodology [15].

Survey Content and Measurement Domains

The JSLC is multidimensional and collects information across several domains that collectively describe the living conditions and well-being of Jamaicans. STATIN identifies major domains including poverty, education, health and healthcare access, housing and amenities, household consumption, child welfare, social protection, food security, information and communication technology, and other socioeconomic indicators [15]. The official JSLC 2023 report organises its principal analyses into six broad areas comprising demographic characteristics, household consumption and poverty, health, education, housing, and social protection [15]. This multidomain architecture permits researchers to examine health outcomes in relation to socioeconomic and demographic factors instead of treating disease as detached from people's material and social environments. For example, diabetes and comorbidity can be analysed alongside age, sex, educational attainment, socioeconomic position, household-head status, union status, residence, and healthcare-related variables. The JSLC is well suited to social epidemiology and health-inequality research in Jamaica.

Health Component of the Survey

The health component of the JSLC provides information concerning illness and selected chronic health conditions, healthcare experiences, and related characteristics available within the survey instrument. The 2023 dataset permits identification of respondents reporting chronic conditions including diabetes, hypertension, arthritis, asthma, heart disease, cancer, kidney disease, chronic obstructive pulmonary disease, sickle-cell disease, depression, dementia, epilepsy, and other mental disorders. Disease information should be characterised as self-reported unless independent clinical or laboratory confirmation is explicitly available for a particular variable. This distinction is essential because survey-reported diabetes is conceptually different from diabetes established through fasting plasma glucose, oral glucose-tolerance testing, glycated haemoglobin, or medical-record verification. Self-report primarily identifies persons who

know, recall, and report their health condition and may under-identify undiagnosed disease within the population. The present diabetes study appropriately refers to its participants as self-reported diabetic respondents or patients rather than treating the survey indicator as laboratory-confirmed diabetes.

Socioeconomic Measurement

One of the major methodological strengths of the JSLC is its detailed measurement of household consumption and economic well-being. Consumption-based information has historically provided the foundation for Jamaica's assessment of living standards and poverty and allows respondents to be classified according to relative socioeconomic circumstances. The official 2023 report analyses findings by socioeconomic quintile where appropriate, thereby enabling assessment of gradients in social and health indicators [15]. For secondary analyses, these original quintiles may be retained or combined into broader categories such as poor, middle, and wealthy when justified by the research design and statistical requirements. Such recoding should be documented transparently because the resulting categories are analytical transformations rather than necessarily the original categories used in official JSLC reporting. Linking socioeconomic position with health outcomes allows researchers to investigate whether chronic diseases and functional difficulties are distributed differently across Jamaica's social hierarchy.

Weighting and Population Estimation

Because the JSLC is based on a sample rather than a census of the entire Jamaican population, weighting is an important consideration when the objective is to produce national population estimates. STATIN revised the JSLC sample design and weighting methodology in 2018, and earlier estimates for 2012–2017 were subsequently revised to improve comparability with the 2018 and later series [18]. Official sources caution that methodological changes should be considered when constructing long historical comparisons, including comparisons involving periods before the revised series [18]. For secondary research, investigators must determine whether the analytical file includes an appropriate survey weight and whether that weight has been activated in the statistical procedure. If analyses are unweighted, resulting percentages should be described as characteristics of the analytical sample rather than automatically interpreted as nationally representative population prevalence estimates. This distinction is important for the present diabetes study because the supplied SPSS output indicates that no weighting variable was applied to the 322-case diabetes analytical file.

Cross Sectional Nature of the Design

The JSLC 2023 provides a cross-sectional representation of household and individual circumstances during the survey period and should not be treated as a longitudinal cohort study. Exposure variables and health outcomes are generally observed within the same survey round, making temporal ordering difficult or impossible to establish for many relationships. An association between socioeconomic position and functional health, for example, does not independently demonstrate that socioeconomic circumstances caused the functional outcome. Similarly, an observed relationship between hypertension and functional difficulty among diabetic respondents cannot establish whether hypertension preceded the functional problem or whether both reflect age, obesity, disease duration, or other unmeasured factors. Pearson chi-square tests, Cramer's V, logistic regression, and other cross-sectional analyses can identify statistical relationships but do not transform observational associations into causal effects. Scopus manuscripts using the JSLC should employ terminology such as

associated with, related to, differed by, or was more prevalent among, rather than causal expressions such as caused, resulted in, or led to, unless an appropriate causal design supports such claims.

Secondary Analytical Design for the Diabetes Study

For the study entitled Health Status, Comorbidity, and Functional Capacity among Self-Reported Diabetic Patients in Jamaica, the original JSLC design is supplemented by a quantitative cross-sectional secondary-data analytical design. The source population consists of participants in the JSLC 2023, whereas the analytical population comprises respondents satisfying the survey criterion used to identify self-reported diabetes. The resulting diabetes-specific working dataset contains 322 cases, which form the denominator for variables having complete information, while smaller valid denominators are used where individual variables contain missing observations. The analytical unit is the individual self-reported diabetic respondent rather than the household, despite the original data having been obtained through a household survey. The study examines demographic and socioeconomic characteristics, chronic comorbid conditions, health-insurance coverage, functional-health status, and selected bivariate relationships within this diabetic population. This nested secondary design should be explicitly explained because it distinguishes the national survey design that generated the data from the research design used to answer the specific diabetes research questions.

Statistical Analytical Framework

The analytical framework appropriate to the diabetes study consists initially of descriptive statistics followed by bivariate and, where respondent-level data permit, multivariable analyses. Frequencies and percentages describe categorical demographic, socioeconomic, health, comorbidity, functional, and insurance characteristics. Pearson's chi-square test can evaluate whether categorical outcomes differ significantly according to sex, age group, socioeconomic position, educational attainment, area of residence, union status, or other categorical characteristics. Cramer's V provides an accompanying measure of association magnitude and is especially useful because statistical significance alone does not communicate the substantive strength of categorical relationships. Where expected cell frequencies are inadequate, categories should be combined when conceptually justified or exact procedures considered rather than relying uncritically on asymptotic chi-square results. Multivariable logistic or ordinal regression may subsequently be employed where appropriate to estimate adjusted relationships between social and clinical predictors and specified binary or ordered outcomes.

Missing Data and Valid Cases

Missing information should be handled explicitly because valid sample sizes can differ across JSLC variables. In the diabetes analytical output, the working file contains 322 respondents, but some variables have fewer valid observations because of item-level missing information. Statistical procedures using available cases produce denominators that may differ slightly between tables and analyses. Researchers should report the valid denominator where this affects interpretation rather than automatically if every analysis includes all 322 respondents. Missing observations should not be recoded as absence of disease, lack of difficulty, uninsured status, or another substantive response unless the survey documentation explicitly defines them in that manner. Transparent treatment of missing information is essential for reproducibility and prevents distortion of prevalence estimates and statistical relationships.

Reliability Validity and Potential Sources of Bias

The JSLC benefits from longstanding institutional implementation,

national household-survey infrastructure, trained interviewers, standardised instruments, and structured electronic data collection, all of which strengthen consistency and data quality. Nevertheless, survey estimates remain potentially affected by sampling error, non-response, recall error, interviewer effects, misclassification, and social-desirability bias. Health measures based on self-report may underestimate conditions that remain undiagnosed or may be influenced by respondents' access to healthcare and previous interactions with medical professionals. Socioeconomic and consumption variables may similarly be affected by reporting errors, although the detailed household-survey methodology is designed to minimise such problems. Cross-sectional health associations may additionally be affected by confounding because age, sex, socioeconomic position, health behaviours, healthcare access, and disease duration can influence multiple observed outcomes simultaneously. These considerations do not invalidate JSLC-based research but require cautious interpretation and transparent reporting of the boundaries of inference.

Ethical and Confidentiality Considerations

The JSLC is conducted within Jamaica's official statistical system, and STATIN states that information supplied by participating households is treated as confidential and used for statistical purposes [15]. The agency indicates that respondent identities are protected and are not released as part of statistical dissemination [15]. Secondary researchers using de-identified survey data analyse information that has already been collected under established national statistical procedures. Researchers should nevertheless comply with all data-access agreements, institutional requirements, and restrictions imposed by the data custodian or repository. A manuscript should not invent or imply a specific institutional review board approval number unless such approval was obtained and documented for the secondary analysis. Ethical reporting should additionally protect respondents from deductive identification by avoiding unnecessarily detailed presentation of very small geographic or clinical subgroups.

Methodological Strengths of JSLC 2023

Several characteristics make the JSLC 2023 valuable for epidemiological and public-health research in Jamaica. First, its household-based national design captures community-dwelling individuals rather than restricting observation to patients attending hospitals, clinics, or specialist facilities. Second, its multidimensional questionnaire allows health conditions to be situated within demographic, educational, socioeconomic, household, geographic, and social-protection contexts. Third, the achieved sample of 4,442 persons from 1,719 households provides sufficient observations for numerous population and subgroup analyses, although statistical power naturally decreases when narrowly defined subpopulations are selected [15]. Fourth, CAPI provides a structured method of data collection that supports standardisation across interviewers and respondents. Fifth, the survey's longstanding institutional history facilitates comparison with earlier JSLC rounds when sampling, measurement, weighting, and variable definitions are sufficiently comparable. Collectively, these features make JSLC 2023 one of Jamaica's most valuable sources for examining the social epidemiology of chronic disease and population well-being.

Recommended Research-Design Statement for the Diabetes Manuscript

The present study employed a quantitative, cross-sectional, population-based secondary-data design using individual-level data from the Jamaica Survey of Living Conditions (JSLC) 2023, a nationally representative household survey jointly implemented

by the Statistical Institute of Jamaica and the Planning Institute of Jamaica. The original JSLC 2023 included 4,442 individuals drawn from 1,719 households, with fieldwork conducted between July 2023 and March 2024 using Computer-Assisted Personal Interviewing [15]. The survey collected multidimensional information concerning demographic characteristics, household consumption and poverty, health, education, housing, social protection, and other dimensions of living standards, and the actual dataset is made available through the Derek Gordon Databank, Sir Arthur Lewis Institute of Social and Economic Studies, the University of the West Indies, Mona [19]. For the present investigation, the source dataset was restricted to respondents identified by the survey diabetes indicator, producing an analytical sample of 322 self-reported diabetic respondents. The individual respondent constituted the unit of analysis, and demographic, socioeconomic, comorbidity, functional-health, and health-insurance variables were examined using descriptive and categorical inferential procedures. Because the supplied diabetes-specific SPSS analyses were unweighted and cross-sectional, the resulting estimates are interpreted as characteristics of the analytical sample and observed relationships are reported as associations rather than causal effects.

Findings

Demographic and Socioeconomic Profile

Table 1 presents the demographic and socioeconomic profile of the 322 self-reported diabetic respondents included in the analytical sample. Women constituted 64.6% of respondents compared with

35.4% men, indicating substantial female predominance within the sample. Age was concentrated in later adulthood, with 40.1% aged 60–74 years, 18.9% aged 75–84 years, and 6.5% aged 85 years or older. Middle-aged adults aged 45–59 years represented 24.5%, while only a small minority were younger than 45 years. Socioeconomically, 46.6% belonged to the wealthy category, 31.7% to the poor category, and 21.7% to the middle group. These findings demonstrate that the diabetic analytical population was predominantly female, older, and socioeconomically heterogeneous.

Table 1 further demonstrates that post-secondary education was reported by 54.9% of the 319 respondents with valid educational information, while 35.7% had secondary education and 9.4% had primary education or below. Approximately 64.3% were classified as household heads, indicating that many diabetic respondents retained substantial household responsibilities despite chronic illness. Single respondents constituted 53.8% of valid union-status observations, compared with 30.6% married, 8.1% visiting, and 7.5% in common-law unions. Rural residents represented the largest residential group at 43.5%, followed by the Greater Kingston Metropolitan Area at 30.1% and other urban centres at 26.4%. The distribution across socioeconomic, educational, household, union, and residential categories demonstrates that diabetic patients cannot be conceptualised as a socially homogeneous population. These social differences provide an important context for interpreting comorbidity, functional health, healthcare access, and disease-management requirements.

Table 1: Demographic and Socioeconomic Characteristics of Self-Reported Diabetic Patients in Jamaica

Characteristic	Category	n	%/Valid %
Sex	Male	114	35.4
	Female	208	64.6
Age cohort	0–14 years	2	0.6
	15–24 years	2	0.6
	25–44 years	28	8.7
	45–59 years	79	24.5
	60–74 years	129	40.1
	75–84 years	61	18.9
	≥85 years	21	6.5
Socioeconomic group	Poor	102	31.7
	Middle	70	21.7
	Wealthy	150	46.6
Education	Primary and below	30	9.4
	Secondary	114	35.7
	Post-secondary	175	54.9
Head of household	No	115	35.7
	Yes	207	64.3
Area	GKMA	97	30.1
	Other urban centres	85	26.4
	Rural	140	43.5

Chronic Morbidity and Comorbidity

Table 2 demonstrates a substantial burden of additional chronic disease among respondents already classified as diabetic. Hypertension was overwhelmingly the most prevalent coexisting condition, with 11.2% reporting the condition within the preceding 12 months and 59.3% reporting a history extending beyond 12 months, producing a combined reported history of 70.5%. Arthritis affected 27.3%, comprising 5.6% reporting recent disease and 21.7% reporting disease extending beyond the preceding year. Heart disease affected 7.8%, while asthma affected approximately 5.3% and cancer 4.0%. Kidney disease affected 3.4%, and sickle-cell disease was reported by 3.1% of respondents. The findings identify hypertension as the principal comorbid condition within Jamaica's self-

reported diabetic population.

The remaining conditions in Table 2 were less common but remain clinically relevant because their consequences may be substantial for affected individuals. Depression was reported by approximately 2.2%, while other mental disorders affected 1.2%, dementia 0.9%, epilepsy 0.9%, and chronic obstructive pulmonary disease 0.6%. The low prevalence of several conditions produces sparse contingency-table cells and requires caution when conducting inferential tests. Importantly, the percentages in Table 2 describe separate disease histories and should not be summed to estimate the total number of comorbid conditions per respondent. Respondent-level disease counts would be required to calculate the proportion experiencing two, three, or more additional conditions. Nevertheless, the dominance of hypertension and arthritis demonstrates that diabetes management within this sample frequently occurs within a wider cardiometabolic and musculoskeletal disease environment.

Table 2: Selected Comorbid Conditions Among Self-Reported Diabetic Patients (N=322)

Condition	≤12 months, %	>12 months, %	Combined reported history, %
Hypertension	11.2	59.3	70.5
Arthritis	5.6	21.7	27.3
Heart disease	1.2	6.5	7.8*
Asthma	0.9	4.3	5.3*
Cancer	0.6	3.4	4.0
Kidney disease	0.6	2.8	3.4
Sickle-cell disease	0.3	2.8	3.1
Depression	0.9	1.2	2.2*
Other mental disorder	0.0	1.2	1.2
Dementia	0.0	0.9	0.9
Epilepsy	0.0	0.9	0.9
COPD	0.0	0.6	0.6

Functional Health

Table 3 indicates considerable heterogeneity in functional health among self-reported diabetic respondents. Among the 321 respondents with valid functional information, 46.4% reported no difficulty on the measured functional item. Some difficulty was reported by 19.0%, while 15.0% reported a lot of difficulty. The most severe category, inability to perform the measured activity at all, was reported by 19.6%. The current findings revealed that 53.6% of respondents with valid information reported at least some degree of functional difficulty. These findings demonstrate that functional limitation represents an important component of the diabetes burden within the analytical sample.

The distribution in Table 3 is noteworthy because more respondents reported some level of difficulty than reported complete absence of difficulty. Approximately one-third of respondents occupied the two most severe categories when a lot of difficulty and inability are considered together. The findings cannot establish whether diabetes itself, age, hypertension, arthritis, cardiovascular disease, or other factors generated the observed functional difficulties. Nevertheless, the coexistence of substantial cardiometabolic morbidity and functional limitation supports a multidimensional approach to diabetes management. Functional screening may identify needs that would remain undetected if clinical encounters concentrated exclusively on glucose, blood pressure, and medication. The findings support further multivariable investigation of the independent and combined predictors of impaired functionality among diabetic Jamaicans.

Table 3: Functional Health of Self-Reported Diabetic Patients

Functional-Health Category	N	Valid %
No difficulty	149	46.4
Some difficulty	61	19.0
A lot of difficulty	48	15.0
Cannot do at all	63	19.6
Total valid	321	100.0

Health Insurance Coverage

Table 4 shows that health insurance coverage was limited within the self-reported diabetic analytical population. Only 70 respondents, representing 21.7% of the sample, reported insurance coverage. Conversely, 252 respondents, or 78.3%, were classified as uninsured. The finding is important because diabetes and its major comorbidities require continuing monitoring, medication, diagnostic testing, and periodic assessment for complications. Insurance status does not determine whether respondents receive healthcare because Jamaica's public health system provides services independently of private insurance arrangements. Nevertheless, the predominance of uninsured respondents identifies financial protection as an important area for further investigation.

Table 4 should be interpreted as describing insurance possession rather than effective healthcare access. Uninsured respondents may use public-sector facilities, while insured respondents may still experience out-of-pocket expenditure, waiting times, transportation difficulties, medication costs, or gaps in covered services. The clinical importance of these issues may increase among individuals simultaneously managing diabetes, hypertension, arthritis, and functional limitations. Future analyses should determine whether insurance coverage varies by socioeconomic position, age, sex, residence, and comorbidity burden. Research should additionally examine whether insurance status predicts medication adherence, routine monitoring, preventive screening, hospital utilisation, or catastrophic healthcare expenditure. Such evidence would provide a stronger basis for evaluating financial protection among Jamaicans living with diabetes.

Table 4: Health Insurance Coverage Among Self-Reported Diabetic Patients

Insurance Status	N	%
Uninsured	252	78.3
Insured	70	21.7
Total	322	100.0

Synthesis of Principal Findings

The combined findings portray a diabetic population characterised by substantial age, sex, socioeconomic, morbidity, and functional heterogeneity. Women constituted almost two-thirds of respondents, and approximately two-thirds of the sample were aged 60 years or older. Hypertension affected 70.5%, establishing hypertension-diabetes coexistence as the most important observed comorbidity pattern. Arthritis affected more than one-quarter, while smaller but clinically important groups reported heart disease, asthma, cancer, kidney disease, and other conditions. More than one-half of respondents with valid functional information experienced at least some degree of difficulty, and approximately four-fifths lacked health-insurance coverage. These results collectively demonstrate that the health status of diabetic Jamaicans cannot be adequately represented by diabetes diagnosis alone.

Discussion

Principal Interpretation

The principal finding of this study is the exceptionally prominent coexistence of hypertension among self-reported diabetic patients, with 70.5% reporting hypertension. This combination is clinically important because diabetes and hypertension share metabolic and vascular pathways and jointly increase risks for cardiovascular and kidney complications. The World Health Organisation (WHO) recommends that diabetes management incorporate blood-pressure and lipid control alongside glycaemic management and screening for renal, ophthalmic, and lower-extremity complications [1]. Arthritis represented the second most common measured comorbidity at 27.3%, introducing an important musculoskeletal dimension that may influence physical activity and functional independence. The morbidity profile extends beyond conventional glucose management towards integrated cardiometabolic, musculoskeletal, and functional care. Diabetes services organised primarily around glycaemic monitoring may overlook a substantial proportion of patients' wider healthcare needs.

The functional findings are similarly consequential because only 46.4% of respondents with valid information reported no difficulty. More than one-half experienced some level of difficulty, including 19.6% who reported inability to perform the measured activity at all. Functional impairment can complicate diabetes self-management by restricting physical activity, food preparation, medication collection, attendance at clinical appointments, and independent self-care. The cross-sectional design prevents attribution of these limitations specifically to diabetes or any comorbidity, especially given the substantial proportion of older respondents. Nevertheless, functionality provides clinically meaningful information that is not captured through disease

prevalence alone. The results support integrating functional-health assessment into diabetes surveillance and clinical management, among older patients and those with multiple chronic conditions.

Comparison with Jamaican Evidence

The 70.5% hypertension prevalence within the diabetic analytical population is consistent with the broader prominence of hypertension in previous Jamaican research. Mitchell-Fearon and colleagues reported hypertension in approximately 61% of older Jamaicans, while diabetes affected approximately 26% and arthritis approximately 35% [6]. The higher hypertension proportion observed here is understandable because the current analysis begins specifically with diabetic patients rather than with the general older population. Diabetes and hypertension commonly cluster because of shared relationships with ageing, obesity, metabolic dysfunction, diet, physical inactivity, and vascular risk. Earlier Jamaican evidence that almost one-half of older adults experienced comorbidity further supports the interpretation that disease coexistence is a major component of the national NCD burden [6]. The present findings extend rather than contradict earlier Jamaican evidence by demonstrating the concentration of hypertension within the diabetic subgroup.

Earlier Jamaican research additionally documented substantial increases in diabetes and hypertension over time among older adults. Mitchell-Fearon and colleagues emphasised Jamaica's simultaneous demographic and epidemiological transitions and the resulting pressure on healthcare services [5]. The current age distribution reinforces this concern because approximately 65.5% of diabetic respondents were aged 60 years or older. Population ageing is likely to intersect increasingly with diabetes management, comorbidity, functional decline, and long-term healthcare utilisation. The presence of younger diabetic respondents simultaneously demonstrates that the disease cannot be conceptualised solely as a geriatric condition. Jamaican diabetes policy requires a life-course approach combining prevention in younger populations with increasingly complex comorbidity and functionality management in later adulthood.

Comparison With the Caribbean

The disease profile observed among Jamaican diabetic respondents has important parallels with evidence from Trinidad and Tobago. Kalloo and colleagues reported hypertension in 45.2%, diabetes in 32.2%, and arthritis in 29.5% among adults aged 70 years and older, with multimorbidity affecting approximately 44% [10]. Women generally reported greater chronic-disease prevalence than men for hypertension, diabetes, and arthritis [10]. Although that population differs from the diabetes-selected Jamaican sample,

the repeated prominence of hypertension, diabetes, and arthritis demonstrates a recognisable Caribbean pattern of cardiometabolic and musculoskeletal disease. Direct prevalence comparisons should remain cautious because of differences in age, sampling, disease ascertainment, and analytical population. Nevertheless, the regional evidence supports integrated chronic-disease services capable of addressing multiple conditions simultaneously rather than relying on independent disease programmes.

Contemporary IDF estimates further demonstrate that diabetes remains a substantial regional challenge throughout North America and the Caribbean. Jamaica's estimated adult prevalence for 2024 was 11.6%, compared with 13.5% in Trinidad and Tobago, 16.4% in Barbados, and 14.9% in Guyana [2]. Such country estimates are not directly comparable with the present study because the current sample contains only respondents identified as diabetic and does not estimate national diabetes prevalence. The IDF figures nevertheless demonstrate that the population from which the present diabetic sample arises exists within a wider regional epidemic. Caribbean small-island health systems must manage diabetes alongside hypertension, cardiovascular disease, kidney complications, population ageing, and constrained specialist resources. Regional cooperation in surveillance, primary-care protocols, medication procurement, patient education, and complication prevention may offer important benefits.

Comparison with Latin America

The Latin American and Caribbean multimorbidity literature provides a strong contextual explanation for the extensive comorbidity observed in this study. Huaquía-Díaz and colleagues reported a pooled multimorbidity prevalence of 43%, increasing substantially among studies of adults aged 50 years and older [8]. Women experienced greater pooled multimorbidity than men, while age and the number of included conditions explained considerable variation between studies [8]. Relevant to the current findings, hypertension and type 2 diabetes were included in every multimorbidity definition identified by the systematic review [8]. This demonstrates that the hypertension-diabetes relationship observed in Jamaica represents part of a broader regional pattern rather than an isolated national phenomenon. The Jamaican findings nevertheless add specificity by quantifying the extent of hypertension within an explicitly diabetic analytical population.

Macinko and colleagues provide further comparative evidence concerning the healthcare implications of this disease complexity. Their six-country investigation reported that Jamaica had the highest multimorbidity prevalence among the participating countries and that diabetes and heart disease frequently occurred alongside other chronic conditions [7]. Greater multimorbidity was associated with more physicians, greater financial difficulties, higher out-of-pocket expenditure, and poorer self-assessed health [7]. These findings are relevant given that 78.3% of respondents in the current diabetic sample were uninsured. Lack of insurance cannot be equated with lack of healthcare in Jamaica, but the conjunction of chronic disease and limited insurance coverage warrants detailed investigation of actual financial burden. Integrated diabetes policy should address both clinical coordination and the economic accessibility of continuing chronic-disease management.

Comparison with Africa

African evidence demonstrates how diabetes-containing multimorbidity patterns can translate into substantial functional consequences. The Ghana-South Africa SAGE analysis identified a cluster characterised by hypertension, abdominal obesity, diabetes, cataract, and arthritis that was associated with approximately

threefold greater odds of moderate or severe disability [11]. This cluster bears notable conceptual similarity to the Jamaican profile because hypertension and arthritis were the two leading additional conditions within the diabetic sample. The African study additionally found moderate disability in 27.0% and severe disability in 8.9% of participants [11]. Although the JSLC functional measure is not directly equivalent to the WHO disability instrument used in SAGE, the Jamaican data similarly demonstrate considerable functional difficulty. The cross-regional convergence suggests that diabetes-containing cardiometabolic multimorbidity warrants explicit functional assessment rather than exclusively biochemical disease monitoring.

The African comparison also highlights the importance of avoiding single-disease clinical models in settings experiencing simultaneous population ageing and non-communicable disease transitions. Patients with diabetes, hypertension, arthritis, visual problems, cardiovascular disease, or obesity may require coordinated care from multiple professional disciplines. Fragmented services can increase treatment burden and place responsibility for coordinating care disproportionately on patients and families. Functional limitations may make this coordination difficult for people with mobility, cognitive, sensory, or self-care challenges. Primary-care systems capable of integrating risk-factor control, complication surveillance, rehabilitation, and patient education may be especially valuable in Jamaica and comparable middle-income settings. The present findings support such integration because diabetes was embedded within a broad spectrum of health and functional conditions.

Comparison with Europe

European longitudinal evidence reinforces the relationship between multiple chronic diseases and declining functional health. Wilk and colleagues demonstrated that middle-aged and older Europeans with multimorbidity experienced poorer quality of life and greater functional limitation than individuals without multimorbidity [12]. Their longitudinal design additionally showed that changes in functional limitations were related to changes in quality of life within important subgroups [12]. The Jamaican study cannot reproduce this temporal analysis because JSLC 2023 provides a cross-sectional observation of the diabetic sample. Nevertheless, the finding that 53.6% reported some degree of functional difficulty identifies a population potentially vulnerable to poorer subsequent health and quality-of-life trajectories. Longitudinal Jamaican diabetes research would provide considerable value by determining whether disease combinations predict accelerated functional decline.

European SHARE research has additionally identified metabolic multimorbidity as a recognisable disease pattern among adults aged 50 years and older [13]. Such evidence demonstrates that cardiometabolic disease clustering is not unique to low- and middle-income countries, although health-system capacity and social protection may substantially modify its consequences. European populations generally operate within different healthcare-financing and welfare environments from Jamaica, making direct outcome comparisons inappropriate without attention to contextual differences. The comparatively low insurance coverage observed in the Jamaican diabetic sample underscores the importance of examining institutional environments alongside biological disease patterns. WHO's broader functional perspective similarly emphasises that health outcomes emerge through interactions between intrinsic capacity and environmental circumstances [9]. International comparison supports combining disease management with policies addressing the social and healthcare environments within which diabetes is experienced.

Comparison with the United States

The United States provides useful comparative evidence regarding diabetes and functional health because national surveys have employed function categories closely related to those appearing in the JSLC output. American NHIS evidence found disability in 27.1% of adults diagnosed with diabetes compared with 8.1% among those without diagnosed diabetes [4]. The difference remained substantial among adults aged 45–64 years and those aged 65 years and older [4]. In 2020, diagnosed diabetes was similarly reported by 25.7% of adults with disability compared with 7.7% of adults without disability [4]. Although these analyses operationalised disability more specifically than the current JSLC functional variable, they demonstrate a robust population-level relationship between diabetes and functional difficulty. The Jamaican findings fit an international body of evidence indicating that functional assessment should form part of comprehensive diabetes care.

The American comparison additionally demonstrates the importance of age because disability and diabetes both become increasingly common across older age groups. Approximately 65.5% of respondents in the Jamaican diabetic sample were aged 60 years and older, creating substantial potential for age-related and disease-related functional processes to overlap. Cross-sectional data cannot determine the proportion of observed difficulty attributable independently to diabetes, ageing, arthritis, hypertension, or other comorbidities. Multivariable analysis would be necessary to separate these relationships statistically. Future Jamaican studies should additionally include objective glycaemic indicators, duration of diabetes, medication use, complications, body mass index, physical activity, and validated disability measures. Such information would enable more direct comparison with high-quality international diabetes and disability research.

Limitations

Several limitations should be considered when interpreting the results of this study. First, diabetes and the additional chronic conditions are based on survey-reported disease information rather than systematic clinical examinations or laboratory confirmation, creating potential recall, awareness, and diagnostic-access biases. Second, the cross-sectional design prevents determination of temporal sequence and cannot establish whether diabetes or its comorbidities caused the observed functional difficulties. Third, the SPSS output explicitly indicated that no survey weight was applied, meaning that the reported percentages should be interpreted as characteristics of the analytical sample rather than weighted national prevalence estimates. Fourth, some rare conditions generated small cell counts, limiting the reliability of chi-square inference and requiring cautious interpretation of associations involving uncommon diseases. Fifth, the available functional variable should not be equated automatically with a validated global disability, ADL, or IADL instrument without confirmation of the underlying survey item and scoring methodology. Finally, the analysis does not include objective measures of glycaemic control, disease duration, medication adherence, body mass index, diabetic complications, or healthcare expenditure, all of which would strengthen assessment of diabetes severity and outcomes.

The study nevertheless possesses important strengths that support its contribution to the Jamaican diabetes literature. It focuses directly on people identified as diabetic rather than treating diabetes merely as one variable within a general population analysis. This approach permits the disease environment surrounding diabetes to be characterised and demonstrates the substantial coexistence of hypertension. The analysis additionally integrates chronic

morbidity, functional health, socioeconomic circumstances, residential characteristics, and insurance status within a single epidemiological framework. Comparison with evidence from Jamaica, the Caribbean, Latin America, Africa, Europe, and the United States situates the findings within both regional and global diabetes scholarship. The study also distinguishes sample findings from nationally weighted prevalence estimates and avoids causal claims unsupported by the cross-sectional design. These methodological safeguards enhance transparency and provide a strong foundation for subsequent multivariable and longitudinal research.

Recommendations

Jamaican diabetes services should increasingly adopt integrated cardiometabolic management because hypertension affected more than seven in ten respondents within the diabetic analytical sample. Routine diabetes care should include systematic blood-pressure measurement, cardiovascular-risk assessment, renal surveillance, lipid management, medication review, and appropriate lifestyle interventions alongside glycaemic management. Arthritis and other musculoskeletal conditions should also receive attention because they may restrict physical activity and thereby complicate recommended diabetes self-management behaviours. Functional-health screening should become a routine component of care among older adults and patients experiencing multiple chronic conditions. Individuals reporting substantial difficulty should be assessed for rehabilitation, mobility support, assistive devices, home-environment needs, and barriers to independent disease management. Such an integrated approach would align clinical practice more closely with the multidimensional burden demonstrated in the present findings.

Public-health policy should additionally address the social and financial context within which diabetes management occurs. The finding that 78.3% of the analytical sample was uninsured warrants investigation of out-of-pocket expenditure, medication affordability, transportation costs, unmet healthcare need, and use of public versus private services. Insurance status should not be used as a proxy for access because Jamaica's public health system remains an important source of healthcare for uninsured individuals. Nevertheless, financial protection should be evaluated according to whether patients can consistently obtain medications, laboratory testing, complication screening, specialist care, and rehabilitation without experiencing financial hardship. Particular attention should be directed towards socially vulnerable patients with multiple diseases and functional limitations because their healthcare requirements may be both greater and more difficult to navigate. Strengthening primary-care coordination and continuity may simultaneously reduce fragmentation and improve management of multiple chronic conditions.

Future research should construct respondent-level comorbidity counts and disease clusters rather than relying exclusively on separate disease prevalence estimates. Multivariable regression should examine predictors of functional difficulty, including age, sex, socioeconomic position, education, residence, hypertension, arthritis, cardiovascular disease, kidney disease, insurance status, and other relevant characteristics. Longitudinal research is required to establish whether comorbidity patterns predict subsequent disability, hospitalisation, dependency, reduced quality of life, or premature mortality. Future national surveys should incorporate objective measurements such as glycated haemoglobin, fasting glucose, blood pressure, anthropometry, renal indicators, medication use, and duration of diabetes where feasible. Validated functional measures covering mobility, self-care, cognition, vision,

hearing, communication, ADLs, and IADLs would considerably strengthen the assessment of disability among diabetic patients. These research developments would permit Jamaica to progress from descriptive epidemiology towards risk prediction and targeted intervention.

Conclusion

This study demonstrates that self-reported diabetic patients within the JSLC 2023 analytical sample experience a health burden extending substantially beyond diabetes itself. Hypertension affected 70.5% of respondents, while arthritis, heart disease, asthma, cancer, kidney disease, and other conditions contributed additional layers of clinical complexity. Women constituted almost two-thirds of the sample, and approximately two-thirds of respondents were aged 60 years or older, demonstrating important demographic concentration within the diabetic population. Functional health was compromised among a majority of respondents with valid information, while only 21.7% reported health-insurance coverage. Comparisons with Jamaica, the Caribbean, Latin America, Africa, Europe, and the United States demonstrate that the intersection of diabetes, multimorbidity, and functional limitation constitutes a wider international public-health challenge. The Jamaican findings support a transition from disease-specific diabetes management towards integrated, person-centred chronic-disease care incorporating cardiovascular risk, comorbidity, functional capacity, social circumstances, and financial protection.

The central implication is that effective diabetes management cannot be judged solely by whether an individual receives a diabetes diagnosis or achieves an isolated metabolic target. A substantial proportion of Jamaican diabetic patients simultaneously confront hypertension, other chronic diseases, functional difficulties, and social circumstances capable of complicating self-management and healthcare utilisation. Preserving functionality should become an explicit outcome of diabetes care alongside glycaemic control and prevention of cardiovascular, renal, ophthalmic, neurological, and lower-extremity complications. Primary healthcare provides an appropriate platform for integrating these objectives because it can coordinate prevention, disease management, screening, rehabilitation referral, patient education, and continuity of care. More detailed respondent-level and longitudinal research is now required to determine which combinations of social and clinical factors produce the greatest risks of functional deterioration and adverse outcomes. Jamaica's diabetes response should ultimately seek not merely to extend the lives of people with diabetes but to maximise the quality, functionality, independence, and security of those lives.

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