

Review Article

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The Epidemiological Profile of Non-Communicable Diseases in Jamaica: Burden, Transition, Social Patterning, Risk Factors, Health-System Challenges, and Priorities for Prevention and Control

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ABSTRACT

Background: Non-communicable diseases (NCDs) constitute the dominant health burden in Jamaica and increasingly shape mortality, disability, health expenditure, productivity, and demand for long-term health care. Although NCDs are extensively examined internationally, the Jamaican profile requires integrated analysis because cardiovascular disease, hypertension, diabetes, cancer, obesity, chronic respiratory disease, chronic kidney disease (CKD), and their shared behavioural and social determinants coexist within a distinctive small-island developing-state context.

Objective: This study critically examines the epidemiological profile, temporal transition, determinants, inequalities, and policy implications of NCDs in Jamaica and comparatively situates the Jamaican experience within the Caribbean, the Americas, and the wider global NCD transition.

Methods: An integrative scholarly review synthesised national health surveys, Ministry of Health and Wellness reports, WHO and Pan American Health Organization (PAHO) surveillance, Jamaica Cancer Registry studies, population-based research, and peer-reviewed epidemiological literature. Evidence was comparatively examined across disease burden, mortality, hypertension, diabetes, obesity, cardiovascular risk, cancer, CKD, chronic respiratory disease, behavioural determinants, sex, age, socioeconomic position, and rurality.

Results: The evidence demonstrates a mature but evolving NCD epidemic. National studies document increasing adiposity, substantial hypertension and diabetes, considerable undiagnosed cardiometabolic disease, sex-specific risk patterns, and persistent behavioural risks. Overweight and obesity increased from 43.8% in 2000 to 55.5% in 2016, while contemporary PAHO estimates place overweight/obesity at 61.1%. Emerging evidence estimates CKD prevalence at approximately 15%, while cancer surveillance identifies prostate, breast, cervical, and colorectal malignancies as important components of the disease profile. NCD risk is consequently produced by interconnected demographic, behavioural, metabolic, socioeconomic, environmental, commercial, and health-system determinants.

Conclusion: Jamaica requires a transition from predominantly disease-specific NCD responses towards integrated life-course prevention, early detection, primary-care risk management, stronger surveillance, equity-sensitive intervention, and multisectoral regulation of the environments generating NCD risk.

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Introduction

Non-communicable diseases have transformed the structure of morbidity and mortality throughout the world, but their consequences are particularly important in small developing states undergoing rapid demographic, nutritional, epidemiological, and social transitions. Cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases constitute the principal global

NCD groups and are increasingly concentrated in populations in which health systems must simultaneously manage infectious diseases, injuries, maternal and child health requirements, and chronic illness [1,2]. Jamaica exemplifies this transition because NCDs have become the country's dominant causes of death and long-term illness while infectious diseases and injuries have not disappeared [3,4]. The Ministry of Health and Wellness has consequently characterised NCDs as a major national public-health burden and identifies cardiovascular disease, cancer, diabetes, and chronic respiratory disease among its central priorities [3]. The Jamaican situation is therefore not simply an extension of the global NCD epidemic but a nationally specific configuration

of disease shaped by population ageing, obesity, diet, physical activity, socioeconomic conditions, health-care access, culture, and the organisation of primary care. Understanding that configuration requires a comprehensive profile capable of moving beyond isolated prevalence statistics.

The historical evidence indicates that Jamaica's NCD burden developed over decades rather than emerging suddenly. National health and lifestyle surveys have repeatedly demonstrated substantial prevalence of hypertension, diabetes, obesity, dyslipidaemia, smoking, and physical inactivity, providing empirical evidence of a progressive cardiometabolic transition [5-8]. The 2007-2008 Jamaica Health and Lifestyle Survey, for example, estimated hypertension at approximately 25%, diabetes at 8%, obesity at 25%, hypercholesterolaemia at 12%, and cigarette smoking at 15%, while approximately 35% of adults had prehypertension. [5] Particularly important was the finding that approximately half of people with hypertension, one-quarter of people with diabetes, and the large majority of those with hypercholesterolaemia were unaware of their condition [5]. More recent national evidence indicates that the burden has not resolved, with the 2016-2017 Jamaica Health and Lifestyle Survey estimating hypertension in approximately one-third of Jamaicans aged 15 years and older and documenting substantial obesity and diabetes [9]. The Jamaican NCD profile must therefore be conceptualised as an interaction between established disease, preclinical metabolic risk, undiagnosed disease, and future disease probability.

This distinction has important implications because prevalence alone can underestimate the true public-health significance of NCDs. Hypertension may remain clinically silent for years before stroke, myocardial infarction, heart failure, CKD, or vascular dementia develops, while diabetes can remain undetected until microvascular or macrovascular complications occur. Obesity operates simultaneously as an established condition, a metabolic risk factor, and an upstream determinant of several other chronic diseases. Cancer presents a different trajectory in which incidence, stage at diagnosis, access to screening, treatment capacity, and survival jointly determine population burden. CKD further demonstrates the interconnectedness of the NCD profile because hypertension and diabetes are themselves important determinants of renal disease. A national NCD profile must therefore examine disease clusters and pathways rather than treating each diagnosis as epidemiologically independent.

Jamaica also presents an important case for comparative NCD scholarship because the Caribbean has long experienced a disproportionately severe burden of chronic disease. The 2007 Port of Spain Declaration represented an early regional political recognition that NCDs constituted a threat to health and development across the Caribbean [10]. Jamaica subsequently developed a National Strategic and Action Plan for the Prevention and Control of NCDs, incorporating risk-factor reduction, disease management, surveillance, public policy, advocacy, governance, and capacity development [11]. Yet the persistence of high hypertension, diabetes, and obesity demonstrates the difference between recognising an NCD epidemic and reversing its underlying population trajectory. Public-health programmes operate within food systems, labour markets, transport environments, household resources, cultural norms, commercial influences, and demographic processes that can continually reproduce disease risk. Jamaica's experience therefore provides a valuable case through which to examine the limits of health-sector intervention when the determinants of NCDs extend well beyond the health sector.

The Research Problem and Gap

The international NCD literature is extensive, but the existence of a large global literature does not eliminate the need for country-specific epidemiological synthesis. Much of the Jamaican evidence has been organised around individual conditions, particular risk factors, specific surveys, or selected demographic populations. Studies have examined hypertension and cardiovascular risk, obesity trends, diabetes, cancer incidence, asthma, and, more recently, CKD [5,6]. These studies provide important disease-specific evidence but do not independently produce an integrated contemporary profile of Jamaica's NCD transition. A fragmented evidence base can obscure relationships among diseases, determinants, inequalities, detection gaps, and health-system consequences. The principal research gap addressed by this paper is therefore the need to synthesise these domains into a coherent epidemiological and policy interpretation of the Jamaican NCD profile [13-19].

A second gap concerns temporal interpretation. Cross-sectional prevalence values are frequently presented as isolated contemporary measurements, yet the meaning of a prevalence estimate becomes substantially clearer when examined against historical observations. Jamaica's adult overweight and obesity prevalence, for example, increased from 43.8% in 2000 to 55.5% in 2016, demonstrating a sustained population shift rather than a static high prevalence [12]. Earlier national surveys similarly documented the progression of cardiovascular risk factors and increasing obesity [5-8]. The relevant scientific question is consequently not only how many Jamaicans currently have NCDs, but how the distribution of metabolic and behavioural risks has changed and what this implies for future morbidity. A profile based on trajectories can identify emerging disease pressure that prevalence at one point in time may conceal.

A third gap concerns heterogeneity within Jamaica. National averages can mask substantial differences by sex, age, socioeconomic status, education, rurality, and other social characteristics. Rural Jamaican research, for example, has estimated hypertension at 34.5%, obesity at 28.9%, and diabetes at 12.8%, with age, obesity, physical inactivity, and education demonstrating important associations with disease [20]. Women have consistently experienced higher obesity prevalence than men, whereas tobacco use and some cardiovascular risk patterns have historically been more common among men [5,12]. Older adults bear markedly greater hypertension and diabetes burdens, but childhood and adolescent obesity indicate that the biological foundations of future NCDs are being established much earlier in the life course[12,21]. Consequently, a national NCD profile should be interpreted as a distribution of unequal risks rather than as a single population average.

Aim and Objectives

The principal aim of this study is to provide an integrated, critical, and comparative scholarly analysis of the NCD profile of Jamaica. The first objective is to examine the magnitude and temporal development of major NCDs and their metabolic and behavioural risk factors. The second is to analyse cardiovascular disease and hypertension, diabetes, obesity, cancer, chronic respiratory disease, and CKD as interconnected components of the national epidemiological profile. The third is to examine differences by sex, age, socioeconomic circumstances, and geographical setting. The fourth is to comparatively situate Jamaica within the Caribbean and wider Americas while avoiding inappropriate comparison of non-equivalent indicators. The fifth is to evaluate the policy and health-system implications of the observed disease profile.

Methodology

This paper employs an integrative epidemiological review and comparative policy-analysis design. Evidence was drawn from the Jamaica Health and Lifestyle Surveys, Jamaica Cancer Registry research, Ministry of Health and Wellness publications, WHO surveillance resources, PAHO country and regional profiles, population-based epidemiological studies, and peer-reviewed research addressing specific NCDs and their determinants. Particular emphasis was placed on nationally representative evidence and studies using objective biological measurements because self-reported chronic disease can underestimate conditions characterised by substantial undiagnosed prevalence. Historical evidence was retained where necessary to establish trajectories, while recent evidence was prioritised for the contemporary disease profile. Indicators were interpreted according to their original population, age range, measurement method, and reference year rather than assuming that values from different sources were directly interchangeable. This approach is essential because apparent discrepancies between NCD estimates can arise from different diagnostic thresholds, age structures, survey designs, standardisation procedures, and observation periods.

The analytical framework treated NCDs as products of interacting proximal and distal determinants. Proximal factors included blood pressure, glycaemia, adiposity, tobacco exposure, alcohol consumption, physical inactivity, and dietary patterns, whereas distal factors included education, income, food environments, commercial influences, health-care access, demographic ageing, rurality, and policy conditions. Disease-specific findings were therefore interpreted within an integrated causal architecture rather than as isolated diagnoses. Comparisons were made longitudinally within Jamaica and contextually with Caribbean and Americas-wide evidence. Particular care was taken not to infer causality from cross-sectional associations. The resulting synthesis is intended as a national epidemiological profile and critical scholarly review rather than a new prevalence survey or meta-analysis.

Jamaica's Epidemiological Transition

Jamaica's health profile reflects an advanced epidemiological transition in which chronic diseases account for most mortality while communicable diseases and injuries continue to contribute to the national burden. Ministry of Health and Wellness evidence has historically estimated that approximately seven in ten deaths were attributable to the four major NCD groups, demonstrating the dominance of chronic disease in national mortality [3]. Earlier PAHO assessments similarly reported that NCDs accounted for approximately 67% of deaths in Jamaica in 2014 [22]. More recent PAHO comparisons indicate that Jamaica remains among countries with comparatively high age-standardised NCD mortality in the Americas [23]. The persistence of this burden across multiple periods indicates that NCD dominance is structural rather than a temporary fluctuation. Jamaica has therefore moved beyond the stage at which NCD policy can be framed primarily as prevention of a future epidemic. The epidemic is established, and policy must simultaneously prevent new disease, detect undiagnosed disease, control existing disease, prevent complications, and manage multimorbidity.

Demographic change reinforces this transition because NCD prevalence increases markedly with age. As survival improves and fertility declines, the proportion of the population exposed to chronic disease risk for longer periods increases. This does not mean that ageing itself fully explains the NCD epidemic because age-standardised comparisons and risk-factor trends demonstrate important changes beyond demographic composition. Instead, ageing interacts with cumulative exposure to high blood

pressure, excess adiposity, unhealthy diets, physical inactivity, hyperglycaemia, and other risks. The resulting burden therefore represents both demographic success and preventable exposure. Effective policy must address both realities by supporting healthy ageing while reducing modifiable risk throughout the life course.

Hypertension: The Central Cardiovascular Risk Condition

Hypertension occupies a pivotal position in Jamaica's NCD profile because it is common, frequently asymptomatic, often undiagnosed, and causally connected to several major causes of death and disability. The 2007-2008 Jamaica Health and Lifestyle Survey estimated hypertension prevalence at approximately 25%, with an additional 35% classified as having prehypertension. By 2016-2017, national Ministry evidence indicated that approximately 34% of Jamaicans aged 15 years and older were affected, with about 40% unaware of their condition. Although direct temporal comparison requires attention to survey definitions and methodology, the combined evidence provides no indication that hypertension has become a minor population-health problem. Instead, approximately one in three adults or older adolescents within the survey age range represents an exceptionally large pool of cardiovascular risk. The absence of symptoms in many affected individuals makes population screening and reliable primary-care follow-up indispensable.

Historical evidence also reveals an important sex pattern. Earlier Jamaican studies found prehypertension more common in males than females, with one survey estimating prevalence at 35% among males compared with 25% among females [6]. Cardiometabolic risk nevertheless changes with age, adiposity, and other exposures, making simple male-female dichotomies insufficient for clinical targeting. Rural evidence indicates particularly strong age gradients, with adults aged 60 years and older having substantially greater odds of hypertension than younger groups [20]. Obesity independently increases hypertension risk, demonstrating that the blood-pressure epidemic cannot be separated from Jamaica's adiposity transition [5,20]. Hypertension should therefore be interpreted simultaneously as a disease requiring treatment and as a sentinel indicator of failures in upstream prevention. A strategy focused exclusively on prescribing antihypertensive medication after diagnosis will remain incomplete if population obesity and dietary risks continue to rise.

The undiagnosed component is especially important. A health system may report substantial numbers of patients receiving hypertension care while still leaving a large reservoir of untreated risk in the community. Individuals unaware of hypertension cannot benefit from pharmacological control or targeted cardiovascular risk reduction. Late detection can result in stroke, heart failure, renal impairment, or other complications becoming the first indication that hypertension was present. Jamaica consequently requires a hypertension cascade framework examining population prevalence, awareness, treatment, and control rather than prevalence alone. This approach would align with the logic of HEARTS in the Americas, which emphasises standardised primary-care pathways, accurate blood-pressure measurement, cardiovascular risk management, treatment to target, and continuous performance monitoring [25].

Cardiovascular Disease and Stroke

Cardiovascular disease represents the downstream clinical expression of several highly prevalent Jamaican risks, including hypertension, diabetes, obesity, dyslipidaemia, smoking, unhealthy diet, and physical inactivity. Stroke and ischaemic heart disease have been prominent among Jamaica's leading

causes of death, while the Ministry has identified cardiovascular disease as a priority NCD category [26]. The importance of stroke is particularly understandable given the population prevalence of elevated blood pressure. Hypertension contributes to both ischaemic and haemorrhagic cerebrovascular disease, while diabetes and dyslipidaemia further amplify vascular risk. Cardiovascular disease therefore provides a useful measure of the cumulative consequences of multiple inadequately controlled risk factors. Preventing cardiovascular mortality requires intervention substantially earlier than the acute event.

A comparative cardiovascular framework also demonstrates why treatment quality matters alongside treatment coverage. Two populations with similar hypertension prevalence may experience different stroke and cardiovascular mortality if awareness, treatment initiation, adherence, blood-pressure control, lipid management, diabetes control, smoking prevalence, and emergency care differ. Jamaica therefore requires stronger routine measurement of control outcomes rather than relying exclusively on diagnosis counts. Standardised treatment protocols can reduce unwarranted clinical variation, while team-based primary care can distribute chronic-disease management across physicians, nurses, pharmacists, community health workers, and other professionals. Reliable medicine availability is equally essential because clinical guidelines have little effect when patients experience interruptions in therapy. Cardiovascular prevention is consequently a health-system performance issue as well as a behavioural one.

Diabetes Mellitus

Diabetes represents another major component of Jamaica's chronic-disease profile. The 2007-2008 national survey estimated diabetes prevalence at approximately 8%, while later national reporting from the 2016-2017 Jamaica Health and Lifestyle Survey described approximately one in eight Jamaicans as having diabetes [5,9] PAHO's country profile similarly documents a long-term increase in diabetes prevalence estimates, from 8.1% in 2000 to 11.9% in 2014, although methodological differences require caution when comparing these values directly [27]. Diabetes prevalence increases dramatically with age, with national surveys reporting identifying particularly high prevalence among the oldest age groups [9]. The disease is therefore positioned to become more burdensome as the population ages unless incidence and metabolic risk are reduced. Diabetes also acts as a multiplier of cardiovascular and renal risk rather than functioning as an isolated glycaemic disorder.

The coexistence of prediabetes adds another layer to the profile. The 2016-2017 survey reported approximately 12% of Jamaicans with prediabetes, indicating a substantial population at elevated risk of progression. [9] Prediabetes is particularly important for prevention because the disease trajectory may still be modified through weight reduction, physical activity, dietary change, and appropriate clinical intervention. At the population level, however, individual counselling operates within environments that may encourage energy-dense diets and sedentary behaviour. Prevention cannot therefore be reduced to telling high-risk individuals to make better choices. Food affordability, neighbourhood environments, work patterns, transport systems, education, and commercial marketing influence the feasibility of sustained behavioural change.

Diabetes also illustrates the importance of awareness and control. Earlier national evidence found that approximately one-quarter of people with diabetes were unaware of their status. [5] More recent Ministry reporting has similarly emphasised substantial unawareness among people with diabetes or hypertension

[28]. Undiagnosed hyperglycaemia permits microvascular and macrovascular damage to progress before treatment begins. Once diagnosed, effective care requires glycaemic monitoring, blood-pressure management, lipid management, kidney assessment, foot care, retinal screening, medication access, and patient self-management support. Diabetes policy should consequently be evaluated according to complication prevention rather than diagnosis alone.

Obesity and the Nutritional Transition

Perhaps the clearest evidence of Jamaica's changing NCD risk environment is the sustained increase in overweight and obesity. A review of national trends estimated that adult overweight and obesity increased from 43.8% in 2000 to 55.5% in 2016 [12]. Among men, prevalence increased from 34.2% to 47.4%, while among women it increased from 53.0% to 63.6%. [12] Contemporary PAHO estimates place combined overweight and obesity among persons aged 15 years and older at approximately 61.1% in 2022 [27]. Although the exact figures originate from different estimation frameworks, they consistently indicate that excess body weight affects a majority of the relevant Jamaican population. Obesity therefore cannot reasonably be considered a problem confined to a small high-risk subgroup. It is a population-level metabolic condition embedded in the country's nutritional and social environment.

The sex disparity deserves particular attention. Jamaican women have consistently shown substantially higher obesity prevalence than men [5,12]. This difference may reflect interacting biological, reproductive, occupational, socioeconomic, cultural, dietary, and physical-activity mechanisms rather than any single determinant. At the same time, lower obesity prevalence among men should not be interpreted as low male NCD risk because men may have greater exposure to smoking, alcohol, or other cardiovascular risks. Sex-specific NCD prevention therefore requires differentiated strategies rather than a uniform population message. Gender-sensitive research should investigate why particular risk profiles emerge and which interventions are effective within those social contexts.

Obesity among children and adolescents makes the trend more concerning because it shifts exposure earlier in the life course. Evidence indicates that overweight and obesity among Jamaican children and adolescents increased substantially between 2000 and 2016 [12]. The 2017 Global School-based Student Health Survey estimated that 23.3% of students aged 13-17 years were overweight and 9.2% were obese [29]. Early adiposity increases the probability that metabolic risk will persist into adulthood and lengthens lifetime exposure to hypertension, insulin resistance, diabetes, and cardiovascular risk. The adult NCD epidemic can therefore no longer be addressed only through adult clinical services. School food environments, physical education, food marketing, household nutrition, and early-life prevention are central components of long-term NCD control.

Chronic Kidney Disease: An Emerging Dimension of the Jamaican NCD Profile

CKD has historically received less population-level attention in Jamaica than hypertension, diabetes, cancer, or obesity, partly because nationally representative prevalence evidence was limited. Recent analysis of the Jamaica Health and Lifestyle Survey III has substantially changed this evidence base. Fisher and colleagues estimated CKD prevalence at 14.8%, with approximately 7.2% having stage 3 or higher disease and 8.8% demonstrating albuminuria [19]. Hypertension was associated with more than

twice the odds of CKD, while diabetes was similarly associated with substantially increased odds. Higher educational attainment was associated with lower odds of CKD, suggesting that renal disease also has a social pattern rather than being distributed randomly across the population. These findings position CKD as a major component of Jamaica's NCD burden rather than a peripheral complication.

The significance extends beyond renal medicine. If approximately one in seven people within the relevant survey population has CKD, substantial numbers may require ongoing monitoring, renoprotective therapy, cardiovascular risk management, and eventual specialist care. Advanced kidney failure is exceptionally expensive to manage relative to early prevention. Jamaica therefore has a strong economic and clinical rationale for integrating renal assessment into hypertension and diabetes management. Albuminuria testing and estimated glomerular filtration rate should be conceptualised as components of cardiometabolic care rather than separate nephrology activities. CKD provides perhaps the clearest example of why Jamaica requires integrated NCD management.

Cancer

Cancer constitutes a heterogeneous component of Jamaica's NCD profile because different malignancies possess distinct biological causes, screening opportunities, sex distributions, and treatment pathways. Longstanding Jamaica Cancer Registry data from Kingston and St Andrew have identified prostate cancer as the leading male cancer and breast cancer as the leading female cancer, with cervical and colorectal cancers also contributing substantially [14-17] During 2003-2007, age-standardised overall cancer incidence was estimated at 188.8 per 100,000 among males and 144.2 per 100,000 among females in Kingston and St Andrew. {14} The leading male sites were prostate, bronchus, and large bowel, while breast, cervix uteri, and large bowel predominated among females [14]. Prostate cancer incidence had increased relative to the preceding registry period, while colorectal cancer also demonstrated concern. {14,15} These patterns indicate that cancer control in Jamaica requires both sex-specific and cross-sex strategies.

The registry evidence also highlights an important methodological limitation in defining the national cancer profile. Kingston and St Andrew registry data cannot automatically be interpreted as national incidence because geographical coverage and population characteristics differ. National cancer surveillance would improve the precision with which regional and socioeconomic inequalities could be evaluated. Nevertheless, the long duration of registry activity provides valuable evidence on temporal patterns and dominant sites. The persistence of prostate and breast cancers across multiple reporting periods indicates that these malignancies represent structural components of the Jamaican cancer burden rather than temporary clusters. Strengthening registry completeness should therefore accompany investments in screening, diagnosis, pathology, treatment, survivorship, and palliative care.

Cervical cancer occupies a particularly important position because prevention extends from vaccination against oncogenic human papillomavirus to screening and treatment of precancerous lesions. Breast cancer requires timely recognition, diagnostic imaging, pathology, staging, and access to appropriate multimodal treatment. Prostate cancer presents more complex screening questions because population screening requires careful consideration of benefits, harms, and resource implications. Colorectal cancer becomes increasingly relevant as populations age and lifestyle

patterns change. Consequently, "cancer" should not be treated as a single programme category. Jamaica requires site-specific cancer control embedded within a coherent national oncology strategy.

Chronic Respiratory Disease

Chronic respiratory disease is another established component of Jamaica's NCD landscape, although it is less frequently foregrounded in national discourse than hypertension, diabetes, or obesity. Asthma has long been recognised as an important Caribbean public-health condition, and Jamaica has conducted national research specifically addressing asthma and allergic disease among children and adults. {18} Respiratory disease burden reflects genetic susceptibility interacting with tobacco exposure, indoor and outdoor air quality, occupational exposures, allergens, infections, and environmental conditions. Climate-related changes may further influence respiratory health through heat, dust, allergens, wildfire smoke, and extreme-weather disruption. Consequently, chronic respiratory disease connects conventional NCD policy with environmental health. This connection is particularly relevant for a climate-vulnerable small island developing state.

Tobacco control remains central despite declines in some adult smoking estimates. PAHO reported adult tobacco use at approximately 8.6% in 2023, {27} while earlier national surveys had reported higher smoking prevalence. {5} Youth exposure remains concerning: the 2017 Global Youth Tobacco Survey reported 15.6% current use of any tobacco product among students aged 13-15 years, 11.2% current cigarette smoking, and 11.7% current electronic-cigarette use. {30} Approximately one-third reported exposure to tobacco smoke at home, while nearly half reported exposure in enclosed public places. {30} These findings demonstrate that adult prevalence alone does not fully describe Jamaica's future tobacco-related NCD risk. Youth nicotine exposure and second-hand smoke therefore require continued surveillance and regulatory attention.

Dietary Risk and the Food Environment

Unhealthy diet is a central upstream determinant connecting obesity, hypertension, diabetes, cardiovascular disease, and some cancers. Jamaica's Food-Based Dietary Guidelines explicitly recognise a national double burden involving nutritional deficiencies alongside excessive obesity, fat, oil, sodium, and salt intake. {31} The guidelines promote fruits, vegetables, legumes, water, dietary diversity, and physical activity while discouraging excessive consumption of salty, sugary, fatty, and highly processed products. {31} The scientific challenge is that dietary knowledge does not automatically determine dietary behaviour. Price, convenience, availability, marketing, taste preferences, household time constraints, and the structure of food retail can overwhelm educational messaging. Consequently, nutrition policy must alter environments as well as individual knowledge.

Research on packaged foods sold in Jamaica has demonstrated the relevance of nutrient profiling to national NCD prevention. {32} Such work is important because consumers increasingly encounter industrially formulated foods whose sodium, sugar, saturated fat, and energy density may be difficult to infer from conventional packaging. Front-of-package warning labels and related policies can therefore reduce information asymmetry between manufacturers and consumers. However, labelling alone cannot compensate for unhealthy food becoming more affordable or accessible than healthier alternatives. Fiscal policies, school nutrition standards, procurement, marketing restrictions, agricultural policy, and food reformulation may be required

simultaneously. Jamaica's NCD epidemic is therefore partly a food-system problem.

Physical Inactivity

Insufficient physical activity contributes to obesity, diabetes, cardiovascular disease, poor functional health, and premature mortality. PAHO's Jamaica profile reports that approximately 32.6% of the population had insufficient physical activity in 2016.^{27} Earlier Jamaican research found physical inactivity associated with higher odds of diabetes, reinforcing its importance as a cardiometabolic determinant.^{5} Yet physical activity should not be framed entirely as an individual leisure choice. Walkability, road safety, public spaces, transport, occupational patterns, neighbourhood security, disability access, and climate all influence activity opportunities. Population interventions must therefore extend beyond exercise advice delivered in clinics.

The built environment is particularly relevant because sustained physical activity is easier when incorporated into routine life than when dependent exclusively on planned exercise. Safe walking routes, active transport, recreational spaces, school physical activity, and workplace interventions can distribute movement across the population. Conversely, car-dependent environments and sedentary occupations can increase inactivity even among individuals who understand its health consequences. Jamaica Moves represents an important health-promotion response, but durable population change requires complementary structural interventions. Physical-activity policy should consequently involve urban planning, transport, education, local government, and community development. This is another example of why NCD prevention cannot be located solely within the Ministry of Health.

Alcohol and Tobacco

Alcohol and tobacco remain important behavioural determinants but display different epidemiological patterns from obesity and hypertension. The 2016-2017 Jamaica Health and Lifestyle Survey reported current alcohol use among approximately 41% of persons aged 15 years and older, with particularly high use among younger adult men.^{9} Alcohol contributes to liver disease, cardiovascular conditions, several cancers, injuries, and social harms, creating overlap between NCD and injury prevention. Population impact depends not merely on whether alcohol is consumed but on volume, frequency, binge patterns, age of initiation, and contextual risk. Effective surveillance should therefore capture patterns rather than binary use alone. Alcohol policy similarly requires attention to pricing, availability, marketing, drink-driving, and youth exposure.

Tobacco illustrates the benefits and continuing challenges of regulatory public health. Adult prevalence appears lower in recent PAHO estimates than in earlier Jamaican surveys,^{5,27} but youth tobacco and electronic-cigarette use demonstrate that the epidemic can evolve rather than simply disappear. New nicotine products may alter initiation patterns and perceptions of harm. Tobacco marketing and retail access can particularly influence adolescents. Continued implementation of WHO Framework Convention on Tobacco Control measures remains scientifically justified. A declining adult smoking rate should therefore be interpreted as progress requiring consolidation rather than as evidence that tobacco has ceased to be an NCD priority.

Sex and Gender Patterning

One of the most consistent features of Jamaica's NCD profile is the existence of sex-specific patterns. Women experience markedly greater obesity prevalence and have historically demonstrated

higher prevalence of diabetes and hypercholesterolaemia in national surveys.^{5,12} Men, by contrast, have shown higher smoking and prehypertension prevalence in some national data.^{5,6} Male cancer burden is strongly influenced by prostate cancer, whereas breast and cervical cancers are central to the female cancer profile.^{14-17} These patterns mean that an aggregate national NCD prevalence can conceal fundamentally different pathways into morbidity for men and women. Prevention should therefore be stratified according to actual risk distributions.

Gender additionally influences health-seeking behaviour, occupational exposure, caregiving, food practices, physical activity, and engagement with health services. Women may interact with health systems more frequently during reproductive years, potentially creating opportunities for screening, whereas men may delay preventive care in some settings. Conversely, women's greater obesity burden indicates that health-service contact alone does not neutralise upstream metabolic risk. Gender-responsive policy therefore requires more than sex-disaggregated prevalence tables. It requires analysis of the social processes producing different exposures and different patterns of care. This is a major area for further Jamaican research.

Age and the Life-Course Profile

Age is among the strongest predictors of NCD prevalence in Jamaica. Rural population research found adults aged 60 years and older had approximately 4.8 times the odds of hypertension and 3.5 times the odds of diabetes compared with younger adults within the relevant models.^{20} National diabetes reporting similarly demonstrates steep age gradients.^{9} These findings reflect cumulative biological exposure, vascular ageing, metabolic change, and longer duration of behavioural and environmental risk. Population ageing will therefore increase NCD service demand even if age-specific incidence remains unchanged. Healthy ageing must become an explicit component of Jamaica's NCD strategy.

However, focusing exclusively on older adults would be epidemiologically short-sighted. Childhood and adolescent overweight demonstrate that cardiometabolic risk is developing decades before many clinical NCDs become manifest.^{12,29} Tobacco initiation similarly occurs during adolescence for some Jamaicans.^{30} Dietary preferences, physical-activity habits, and social exposures established early may track into adulthood. The life-course approach therefore connects maternal health, early childhood, schools, adolescent health, adult prevention, and healthy ageing. NCD prevention should begin before NCD diagnosis.

Rurality and Geographical Inequality

Rural populations warrant specific attention because geographical location can influence food access, transport, employment, health-service availability, physical activity, and socioeconomic conditions. Recent population-based analysis of rural Jamaican adults estimated hypertension at 34.5%, obesity at 28.9%, and diabetes at 12.8%.^{20} Older age was the strongest disease predictor, while obesity and physical inactivity independently increased risk and higher education was protective against diabetes.^{20} These findings challenge any assumption that obesity and cardiometabolic disease are principally urban phenomena. Nutritional and epidemiological transitions increasingly penetrate rural populations. Rural NCD policy must consequently move beyond traditional assumptions about protective lifestyles.

Geography also matters for chronic-disease management after diagnosis. Patients requiring repeated monitoring, laboratory

testing, specialist consultation, cancer treatment, dialysis, or advanced imaging may face greater burdens when services are geographically concentrated. Transportation costs and time away from employment can become indirect barriers even when formal services are subsidised. Telehealth can reduce some barriers but depends on digital infrastructure and cannot replace all physical services. Decentralised primary-care management is therefore particularly important for hypertension and diabetes. Equity should be evaluated partly through the distance patients must travel to obtain continuous care.

Socioeconomic Determinants

NCDs are often described through individual behaviours, but socioeconomic conditions shape the distribution of those behaviours and their consequences. Education influences health literacy, employment, income, access to information, and capacity to navigate health systems. The recent CKD analysis found higher education associated with lower odds of CKD, while rural NCD research found secondary or higher education protective against diabetes within its analytical framework.[19,20] These findings do not establish education as a simple biological cause but indicate that chronic-disease risk is socially patterned. Poverty can simultaneously constrain food choice, preventive care, medication adherence, transportation, and opportunities for physical activity. NCD inequality is therefore produced through cumulative disadvantage.

The economic consequences can then reinforce the original disadvantage. Chronic disease can reduce labour-force participation, increase absenteeism, create out-of-pocket expenditure, and require unpaid family caregiving. Severe complications such as stroke, kidney failure, amputation, advanced cancer, or heart failure can remove individuals from productive employment for prolonged periods. Households with limited savings are particularly vulnerable to such shocks. NCDs therefore generate a feedback loop between illness and socioeconomic vulnerability. Social protection should consequently be considered part of NCD policy rather than external to it.

The Commercial Determinants of NCDs

Contemporary NCD scholarship increasingly recognises that population risk is influenced by commercial actors whose products and marketing shape tobacco, alcohol, food, and beverage consumption. This framework is relevant to Jamaica because consumer choices occur within markets characterised by advertising, product placement, pricing, retail availability, branding, and corporate political activity. Individual responsibility remains relevant, but the concept becomes scientifically incomplete when the choice architecture itself is commercially constructed. Children and adolescents are particularly important because marketing can establish preferences before individuals possess mature capacity to evaluate long-term health consequences. Regulation is therefore justified not simply because some products are unhealthy but because markets can systematically amplify population exposure. The NCD epidemic must consequently be analysed partly through political economy.

Front-of-package labelling provides a clear example. Experimental research involving Jamaican consumers has examined how labelling systems affect understanding and purchase intentions, demonstrating that information architecture can influence consumer interpretation.[33] Such evidence supports the wider principle that public policy can modify the commercial environment in which dietary decisions are made. Industry reformulation can also shift exposure without requiring every consumer to make an

active health decision. Salt reduction is a classic example because lowering sodium across widely consumed products can reduce population intake. Structural prevention therefore complements rather than replaces individual education.

Multimorbidity and the Hidden Complexity of the NCD Profile
The conventional practice of reporting one NCD at a time understates the complexity of chronic illness. Hypertension, diabetes, obesity, CKD, dyslipidaemia, cardiovascular disease, arthritis, and other conditions frequently coexist in the same individual. Shared determinants make such clustering epidemiologically predictable rather than exceptional. A patient with obesity may develop hypertension and diabetes, subsequently CKD and cardiovascular disease, while also experiencing functional limitations. Clinical guidelines organised around single diseases can then produce polypharmacy, conflicting recommendations, multiple appointments, and treatment burden. Jamaica's ageing population makes multimorbidity increasingly important.

Multimorbidity also complicates prevalence interpretation because counting diagnoses does not reveal the number of people managing multiple conditions simultaneously. Health-system planning should therefore measure both disease-specific prevalence and the distribution of chronic-disease counts or clusters. Primary care is the natural location for integrated multimorbidity management because specialist fragmentation becomes increasingly inefficient as the number of conditions rises. Electronic health records can support longitudinal risk assessment if systems are interoperable. Patient-centred outcomes such as function and quality of life should complement biomarker control. The future Jamaican NCD profile is likely to be defined increasingly by multimorbidity rather than isolated disease.

NCD Awareness, Diagnosis, Treatment, and Control

A central theme across Jamaican evidence is the difference between disease prevalence and disease awareness. Earlier national data demonstrated substantial unawareness of hypertension, diabetes, and hypercholesterolaemia.[5] The 2016-2017 survey continued to identify major awareness gaps, particularly for hypertension.[9,24] These findings imply that administrative records of treated patients cannot be interpreted as population prevalence. They also indicate that screening and case detection remain important even after decades of NCD programming. The first clinical challenge is therefore finding disease before complications occur.

Diagnosis, however, is only the beginning of an effective care cascade. Patients must initiate treatment, remain engaged in care, obtain medicines consistently, achieve therapeutic targets, and receive monitoring for complications. Losses at any stage reduce the population impact of screening. Jamaica should therefore publish routine national hypertension and diabetes cascade indicators analogous to those increasingly used for infectious diseases. Such metrics would reveal whether the principal bottleneck lies in awareness, treatment, retention, or control. Precision in NCD policy requires precision in performance measurement.

Health-System Response

Jamaica's public-health response to NCDs has developed over several decades and includes strategic planning, health promotion, primary-care reform, disease-specific programmes, and surveillance. The National Strategic and Action Plan for NCDs established risk-factor reduction, integrated disease management, surveillance, public policy, advocacy, leadership, governance, and capacity development as major programme areas.[11] More recent initiatives have included implementation of a Chronic Care

Model intended to strengthen patient-centred management [28] Primary health-care reform provides an opportunity to embed NCD prevention and treatment within routine community services rather than concentrating chronic care in hospitals. This direction is consistent with international evidence favouring integrated cardiovascular risk management and essential NCD interventions in primary care. [25,34] The challenge is implementation at sufficient scale and quality.

The system must also manage the increasing technological requirements of NCD care. Cancer requires pathology, imaging, surgery, systemic therapy, radiotherapy, and palliative services. CKD requires laboratory surveillance and, for advanced disease, expensive renal replacement therapies. Cardiovascular emergencies require rapid hospital care even when primary prevention is strong. Diabetes generates ophthalmological, vascular, renal, and podiatric requirements. Consequently, successful primary prevention reduces but does not eliminate the need for specialist capacity.

Comparative Position Within the Americas

Jamaica's NCD profile should be interpreted within the wider epidemiological pattern of the Americas but not diluted into regional averages. PAHO's NCDs at a Glance 2025 reports an age-standardised NCD mortality rate of 420.2 per 100,000 population for the Region of the Americas in 2021 and shows substantial between-country variation [23]. Jamaica appears near the high end of the regional distribution, second only to Haiti in the ordering displayed in the PAHO comparison. This position is epidemiologically important because it indicates that Jamaica's burden is high even relative to a region already substantially affected by NCDs. It also demonstrates that national NCD challenges cannot be explained solely by global ageing or worldwide lifestyle change. Country-specific determinants and health-system performance matter.

Caribbean comparison is particularly relevant because neighbouring states share aspects of colonial history, food systems, small-island economics, imported-food dependence, tourism, migration, and demographic transition. Yet there is considerable heterogeneity

in mortality, obesity, diabetes, and policy implementation across Caribbean populations. Jamaica can therefore learn from regional successes without assuming that interventions transfer unchanged between countries. The Port of Spain Declaration created a common political framework, but implementation has varied [10]. Regional cooperation can strengthen surveillance, procurement, food policy, technical expertise, and advocacy. The Caribbean should consequently function as both a comparison group and a platform for collective NCD action.

Surveillance and the Data Gap

Jamaica has important strengths in NCD surveillance, particularly its history of national health and lifestyle surveys and cancer registration. The Jamaica Health and Lifestyle Surveys have generated repeated objective measurements that permit examination of cardiometabolic trends [5-8] WHO also catalogues Jamaica's participation in youth tobacco and school health surveillance. [29,30,35] The 2023 Jamaica Survey of Living Conditions provides another nationally relevant source for examining health in relation to socioeconomic and geographical circumstances [36]. These systems collectively create a stronger evidence base than exists in many similarly sized countries. Nevertheless, the surveillance architecture remains fragmented across datasets, periods, populations, and disease definitions.

The time interval between comprehensive national biological surveys is a particular challenge. Rapid nutritional and commercial changes can occur between survey waves, making older biological measurements increasingly inadequate for contemporary planning. Routine clinical data can partially fill this gap but are subject to selection because people attending health facilities differ from the general population. Jamaica therefore requires a surveillance model combining periodic nationally representative biomarker surveys with high-quality routine clinical information. Linkage across mortality, cancer, renal, primary-care, hospital, and socioeconomic data could substantially improve analytic capacity if privacy and governance requirements are addressed. Better surveillance is itself an NCD intervention because policy quality depends on knowing where disease and control failures are concentrated.

Table 1: Selected Indicators Characterising Jamaica's NCD Profile

Domain	Selected evidence	Epidemiological interpretation
Hypertension	~25% in JHLS 2007-2008; ~34% in JHLS 2016-2017 reporting	Large and persistent cardiovascular-risk population
Hypertension awareness	Approximately 40% unaware in 2016-2017 reporting	Major detection gap
Diabetes	~8% in 2007-2008; approximately one in eight in 2016-2017 reporting	Important and potentially increasing metabolic burden
Prediabetes	~12% in 2016-2017	Large population at elevated future diabetes risk
Adult overweight/obesity	43.8% in 2000; 55.5% in 2016; PAHO estimate 61.1% in 2022	Sustained nutritional and adiposity transition
Adolescent overweight	23.3% among students aged 13-17 in 2017	Early-life metabolic risk
Adolescent obesity	9.2% among students aged 13-17 in 2017	Future adult NCD burden developing early
CKD	14.8% estimated from JHLS III subsample	Important previously under-characterised NCD
Physical inactivity	32.6% in PAHO-reported 2016 estimate	Significant behavioural risk
Adult tobacco use	8.6% in PAHO-reported 2023 estimate	Continued but changing tobacco burden
Youth tobacco	15.6% any current tobacco product among ages 13-15 in 2017	Important future-risk signal
Cancer	Prostate dominant in men; breast dominant in women in KSA registry data	Sex-specific cancer prevention and care priorities
Regional mortality position	Jamaica near upper end of PAHO 2021 NCD mortality comparison	Burden high even within the Americas

Note: Indicators originate from different surveys, populations, years, and measurement approaches and should not be treated as directly equivalent trend points without consideration of methodology.

Table 2: The Causal Architecture of Jamaica's NCD Epidemic

Level	Major determinants	Principal consequences
Biological	Ageing, genetic susceptibility, blood pressure, glycaemia, adiposity, dyslipidaemia	CVD, diabetes, CKD, cancer and multimorbidity
Behavioural	Diet, inactivity, tobacco, alcohol	Increased metabolic and disease risk
Household	Income, food affordability, caregiving, transport	Unequal ability to prevent and manage disease
Community	Food retail, walkability, safety, health-service access	Geographical variation in exposure and care
Commercial	Marketing, pricing, product formulation and availability	Population exposure to unhealthy commodities
Health system	Screening, medicine availability, continuity, treatment quality	Awareness, treatment and control gaps
National policy	Fiscal policy, food standards, tobacco/alcohol regulation, social protection	Upstream modification of population risk
Regional/global	Trade, imported foods, pharmaceutical markets, climate and economic shocks	Constraints on national prevention and resilience

Discussion

The central finding of this synthesis is that Jamaica's NCD profile represents a mature epidemiological transition that is still dynamically worsening in important metabolic dimensions. The country is not merely experiencing high rates of individual chronic diseases; it is experiencing an interconnected system of hypertension, adiposity, diabetes, cardiovascular disease, CKD, cancer, and other chronic conditions supported by shared behavioural and structural determinants. The sustained increase in overweight and obesity is especially important because it creates upward pressure on several downstream diseases simultaneously [12,27]. Hypertension affects approximately one-third of the population within recent national survey reporting, while substantial proportions remain unaware of their status. [9,24] Diabetes and prediabetes add a second large metabolic-risk population, and recent CKD evidence reveals an additional burden closely linked to both hypertension and diabetes. [19] The Jamaican NCD epidemic is therefore best understood as a cardiometabolic and multimorbidity transition rather than a collection of unrelated diagnoses.

The historical comparison strengthens this conclusion. Prehypertension affected approximately 30% of Jamaicans in 2000-2001, [6] while the 2007-2008 national survey documented substantial hypertension, obesity, diabetes, and dyslipidaemia. [5] Subsequent evidence indicates continued growth in excess body weight and substantial hypertension and diabetes rather than population-level reversal [9,12]. This persistence suggests that conventional health education and clinical treatment, although necessary, have been insufficient to neutralise the upstream forces producing risk. The implication is not that previous interventions failed because disease levels might have been still higher without them. Rather, policy intensity has not yet matched the structural scale of the determinants.

The obesity transition is particularly revealing because it reflects changes extending beyond the health system. When more than half of an adult population becomes overweight or obese, explanations based predominantly on individual lack of knowledge become implausible. Population-wide change requires population-wide shifts in food consumption, physical activity, work, transport, commercial exposure, or related environments. Jamaica's dietary guidelines appropriately recognise excessive salt, sugar, fat, and highly processed foods as concerns but educational guidance competes with commercial systems designed to maximise product consumption. Stronger food-environment policy is therefore required [31]. Obesity prevention is likely to be one of the highest-leverage interventions available because of its downstream relationships with hypertension, diabetes, cardiovascular disease, CKD, and some cancers.

The sex profile provides another important insight. Jamaican women carry a substantially greater obesity burden, whereas men have historically exhibited greater smoking and prehypertension in some datasets [5,6,12]. This means that a single generic NCD campaign may inadequately address the mechanisms operating in either group. Women's metabolic risk requires investigation of diet, physical activity, reproductive history, caregiving, socioeconomic circumstances, and cultural norms, while men's cardiovascular risk requires attention to tobacco, alcohol, preventive service utilisation, and other exposures. Sex-disaggregated surveillance should therefore become routine. Gender-responsive intervention should follow from the evidence rather than merely adding men and women as demographic categories.

The emergence of population-based CKD evidence is scientifically important because it changes the conceptual map of Jamaican NCDs. An estimated prevalence approaching 15% suggests that renal disease should receive substantially greater attention within national chronic-care planning [19]. Its strong associations with hypertension and diabetes reinforce the need for integrated screening and management. Detecting renal impairment early may prevent or delay progression while simultaneously reducing cardiovascular risk. Conversely, failure to control hypertension and diabetes will increase demand for expensive renal services. CKD therefore demonstrates the economic value of effective primary prevention.

Cancer illustrates a different but complementary challenge. The Jamaican cancer profile contains strong sex-specific components, with prostate cancer dominating male incidence and breast cancer female incidence in longstanding Kingston and St Andrew registry data [14-17]. Cervical and colorectal cancers provide important opportunities for prevention and early detection, although interventions differ substantially by cancer site. Cancer control therefore requires infrastructure extending beyond conventional primary-care NCD management. Pathology, imaging, staging, surgery, systemic therapy, radiotherapy, palliative care, and registry systems form a complex continuum. A comprehensive NCD strategy must accommodate this heterogeneity rather than assume that all chronic diseases can be addressed through identical service models.

Comparatively, Jamaica's position within the Americas provides cause for concern. PAHO's 2025 surveillance report places Jamaica near the upper end of age-standardised NCD mortality among countries for which comparable 2021 data were presented [23]. This suggests that the national burden cannot be dismissed as an inevitable consequence of the global NCD transition.

Other countries facing ageing, urbanisation, and commercial food systems achieve lower NCD mortality. Differences in risk exposure, early detection, treatment, control, and health-system performance therefore offer potentially modifiable explanations. Comparative policy analysis should increasingly identify which regional countries have achieved better outcomes and determine whether their approaches can be adapted to Jamaica.

Policy Implications

Jamaica requires a dual NCD strategy combining population prevention with high-quality clinical control. Population prevention should reduce the incidence of obesity, hypertension, diabetes, tobacco-related disease, and other NCDs by modifying food, physical activity, tobacco, alcohol, and social environments. Clinical control should identify people who already have risk factors or established disease and reduce their probability of complications. These strategies are complementary rather than competing. Prevention without treatment abandons people already living with disease, while treatment without prevention continually adds new patients to the health system. Sustainable NCD policy must therefore operate upstream and downstream simultaneously.

Hypertension should be treated as a flagship indicator of primary-care performance. Jamaica should establish measurable national targets for screening, awareness, treatment, and control. Accurate validated blood-pressure measurement should be standardised across facilities. Treatment protocols should be simplified and aligned with evidence-based cardiovascular risk management. Medicine availability should be continuously monitored because interruptions can erase the benefits of diagnosis. Facility-level performance dashboards could identify geographical inequalities and accelerate quality improvement.

Obesity prevention requires more structural intervention. School nutrition standards, restrictions on unhealthy food marketing to children, front-of-package warning labels, healthier public procurement, reformulation, fiscal measures, water promotion, and physical-activity environments should operate as a coordinated package. Policies should be evaluated for effects on low-income households to avoid unintentionally worsening food insecurity. Agricultural and trade policies should be aligned where possible with health objectives. The goal should be to make healthier choices more accessible rather than relying predominantly on individual willpower. Population obesity cannot realistically be reversed through counselling alone.

Diabetes and CKD should be integrated into a common cardiometabolic pathway with hypertension. Patients diagnosed with one condition should be systematically assessed for related risks and complications. Primary-care systems should incorporate renal function, albuminuria, glycaemic control, cardiovascular risk, and appropriate eye and foot assessment. Multimorbidity should be expected rather than treated as an exception. Electronic records could support longitudinal recall and monitoring. Integrated care would reduce fragmentation and improve efficiency.

Cancer control requires parallel strengthening of surveillance and service pathways. Expansion and modernisation of cancer registration would improve national incidence estimates and permit better evaluation of inequalities. Cervical cancer prevention should integrate vaccination, screening, diagnosis, and treatment of precancerous disease. Breast and colorectal cancer strategies should emphasise evidence-based early detection and timely diagnostic resolution. Prostate cancer policy should balance early detection against potential harms of overdiagnosis and overtreatment. Palliative care should be recognised as an essential component of comprehensive cancer services.

Table 3: Priority Actions for Jamaica

Priority	Immediate objective	Long-term population effect
Hypertension cascade	Increase awareness, treatment and control	Reduce stroke, CVD and CKD
Obesity prevention	Slow and reverse population weight gain	Reduce multiple downstream NCDs
Diabetes prevention/control	Detect prediabetes and improve glycaemic management	Reduce vascular and renal complications
CKD integration	Screen high-risk patients and slow progression	Reduce kidney failure and cardiovascular burden
Cancer control	Strengthen registry, prevention, early diagnosis and treatment	Improve survival and reduce avoidable mortality
Food policy	Reduce salt, added sugars and unhealthy processed-food exposure	Improve cardiometabolic risk distribution
Physical activity	Create routine opportunities for safe movement	Reduce obesity and metabolic risk
Tobacco control	Prevent initiation and promote cessation	Reduce cancer, respiratory and cardiovascular disease
Youth prevention	Address obesity, tobacco and diet early	Alter lifetime NCD trajectory
Surveillance	Increase frequency and integration of population data	Enable evidence-responsive policy
Primary care	Standardise chronic disease management	Improve continuity and control
Equity	Target rural and socioeconomically vulnerable groups	Narrow preventable health inequalities

Research Agenda

The priority for future research is a new comprehensive nationally representative biomarker-based NCD survey capable of providing contemporary estimates of hypertension, diabetes, dyslipidaemia, obesity, CKD, tobacco exposure, diet, and physical activity. Such a survey should retain sufficient methodological comparability with earlier Jamaica Health and Lifestyle Surveys to permit robust trend analysis. It should oversample groups for whom precise estimates are required, including older adults and geographically vulnerable populations. Objective measurement should be prioritised wherever feasible because self-report substantially underestimates silent

disease. Multimorbidity should be measured explicitly. Public-use datasets should be released rapidly to maximise scientific value.

Second, research should move beyond prevalence towards care cascades and outcomes. National studies should quantify what proportion of people with hypertension and diabetes know their status, receive treatment, remain in care, and achieve clinical control. Similar pathways should be constructed for CKD and selected cancers. Geographical mapping could identify communities in which detection or control is particularly poor. Qualitative research should investigate why patients disengage from chronic care or experience medication interruptions. Implementation science should then test interventions against these identified barriers.

Third, greater attention should be given to social determinants. Education, income, wealth, food insecurity, employment, neighbourhood characteristics, rurality, sex, and age should be incorporated into NCD surveillance as explanatory dimensions rather than demographic afterthoughts. Longitudinal research would be particularly valuable for distinguishing causal pathways from cross-sectional association. Household-level studies could evaluate the economic consequences of multimorbidity and catastrophic chronic-care expenditure. Research should also examine commercial determinants, including food and beverage marketing and product availability. The resulting evidence would permit more precise equity-oriented policy.

Fourth, Jamaica requires stronger research on multimorbidity and functional health. As the population ages, the public-health impact of chronic disease will increasingly depend on combinations of conditions and their effects on daily functioning rather than single diagnoses. Research should identify common disease clusters and evaluate their effects on employment, disability, quality of life, health-service utilisation, and mortality. Such analysis would improve workforce and social-care planning. It would also provide a more patient-centred representation of NCD burden. The epidemiology of NCDs should ultimately describe how people live with disease, not merely how many diagnoses exist.

Strengths and Limitations

This study's principal strength is its integration of multiple dimensions of the Jamaican NCD profile rather than examination of one disease in isolation. National surveys, government evidence, regional surveillance, cancer registry research, and peer-reviewed epidemiology were brought into a common interpretative framework. Historical comparisons permitted examination of the direction of the epidemiological transition. Disease-specific findings were linked to behavioural, social, commercial, and health-system determinants. Comparative analysis situated Jamaica within Caribbean and Americas-wide developments without assuming that all indicators were directly equivalent. This multidimensional approach provides a stronger basis for policy interpretation than isolated prevalence reporting.

Several limitations must nevertheless be recognised. Important national biomarker data derive from survey periods that are no longer recent, creating uncertainty about the exact contemporary prevalence of several conditions. Differences in age ranges, diagnostic thresholds, measurement procedures, and modelling methods limit direct comparison across sources. Cancer registry evidence historically concentrated on Kingston and St Andrew and therefore cannot automatically be generalised to the entire country. Cross-sectional studies identify associations but cannot establish temporal causality. Some conditions have substantially stronger surveillance than others, producing an uneven evidence

base. These limitations themselves support the paper's argument that strengthened integrated NCD surveillance should be a national priority.

Conclusion

Jamaica's NCD profile demonstrates that the country's principal contemporary health challenge is no longer simply the presence of chronic disease but the accumulation and interaction of multiple chronic conditions across the life course. Hypertension affects a large share of the population and remains substantially undiagnosed; diabetes and prediabetes create major metabolic and vascular risk; overweight and obesity have risen over time and now affect a majority of the relevant adult population; and CKD has emerged as a substantial previously under-characterised burden [5,9,12,19,27]. Cancer contributes an additional heterogeneous disease burden dominated by prostate cancer among men and breast cancer among women within longstanding registry evidence [14-17]. Chronic respiratory disease, tobacco exposure, physical inactivity, unhealthy dietary patterns, and alcohol further broaden the national risk architecture. These conditions do not operate independently. They constitute an interconnected NCD system.

The longitudinal evidence is particularly important because it demonstrates that Jamaica's NCD problem cannot be understood as a static high prevalence. Rising adiposity indicates continuing movement of the population towards greater metabolic vulnerability [12]. Childhood and adolescent overweight demonstrate that this transition is being reproduced in younger generations. {29} Population ageing will simultaneously increase the number of individuals living long enough to develop chronic disease and multimorbidity. Without effective intervention, these processes can produce increasing demands for cardiovascular care, diabetes management, renal services, cancer treatment, rehabilitation, and long-term care. The future burden is therefore partially visible in today's risk-factor distribution.

The scientific and policy response must accordingly shift from fragmented disease management towards integrated NCD prevention and control. Jamaica requires stronger surveillance, earlier diagnosis, measurable treatment and control cascades, high-quality primary care, integrated cardiometabolic and renal management, comprehensive cancer services, and life-course prevention. Yet clinical care alone cannot reverse a population epidemic generated partly by food systems, commercial environments, socioeconomic inequality, transport, education, and social conditions. Multisectoral policy must make healthier diets, physical activity, tobacco avoidance, and chronic-care adherence more feasible across all socioeconomic groups. Equity should be a central performance criterion rather than a secondary policy consideration.

Jamaica has already demonstrated substantial institutional recognition of the NCD challenge through national surveys, strategic plans, health-promotion programmes, chronic-care initiatives, and participation in regional action [10,11,28]. The next phase requires converting recognition into measurable population improvement. Success should be judged not by the number of programmes established but by whether obesity trends reverse, hypertension control improves, diabetes complications decline, CKD progression is prevented, cancer is detected earlier, premature mortality falls, and socioeconomic inequalities narrow. The NCD profile presented in this study indicates that incremental responses are unlikely to be sufficient for a burden of this magnitude. Jamaica requires a sustained, scientifically measured, whole-of-government and whole-of-society NCD strategy capable of changing both individual outcomes and the population conditions from which chronic disease emerges.

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