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A Comparative Analysis of Socioeconomic Position, Social Relationships, and Functional Health Among Jamaican Males

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ABSTRACT

Background: Functional limitation is an increasingly important public-health concern as population ageing, chronic non-communicable diseases, and social inequalities reshape the ability of individuals to function independently. Yet contemporary male-specific evidence from Jamaica remains limited despite extensive research from Europe, Asia, Africa, and other parts of Latin America and the Caribbean.

Objective: This study examined whether area of residence, union status, educational attainment, household headship, age, and socioeconomic status independently predicted functional-health limitation among Jamaican males, while explicitly comparing the Jamaican findings with evidence from other world regions.

Methods: A secondary quantitative analysis of the 2023 Jamaica Survey of Living Conditions was conducted using binary logistic regression, with 1,299 complete cases drawn from an initially selected sample of 1,770 males and adjusted odds ratios (AORs), 95% confidence intervals (CIs), model-fit indices, and classification statistics examined [3].

Results: The overall model was statistically significant, $\chi^2(10)=220.788$, P<.001, with Cox and Snell $R^2=.156$ and Nagelkerke $R^2=.257$; age independently increased the odds of functional limitation by 6.3% per year (AOR=1.063, 95% CI=1.050-1.075, P<.001), while single males had 55.1% greater adjusted odds than the omitted union-status reference group (AOR=1.551, 95% CI=1.065-2.260, P=.022).

Comparative findings: Wealth, education, household headship, and geographical residence did not independently predict functional limitation, contrasting with many studies from Britain, Southern Europe, India, and Ghana that report socioeconomic gradients but resembling some Asian evidence in which socioeconomic gradients attenuate or become unclear after multivariable consideration of related factors.

Conclusion: The current findings close part of an important Caribbean research gap by demonstrating that functional limitation among Jamaican males cannot simply be interpreted through socioeconomic disadvantage, because age emerged as the dominant independent correlate and socioeconomic position did not retain an independent association after adjustment, thereby underscoring the need for Jamaican-specific, longitudinal, male-centred models of functional ageing.

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Introduction

Functional health has become a central population-health concern because longevity increasingly involves not merely surviving disease but retaining the capacity to move, communicate, care for oneself, participate socially, and perform everyday activities independently. The World Health Organization conceptualises healthy ageing through functional ability, shifting emphasis from the absence of disease towards what individuals are practically able to be and do within their environments [1]. This approach is particularly important because an estimated 1.3 billion people, approximately 16% of the global population, experience significant disability, and many face poorer health and greater limitations in everyday functioning than people without disabilities [2]. Functional limitation is produced through interactions among ageing, chronic disease, socioeconomic resources, educational opportunities, social relationships, physical environments, and healthcare systems rather than by biological impairment alone. International research accordingly demonstrates inequalities in functional health across age, education, income, social class,

gender, relationship status, and geographical location [5-14]. However, whether these internationally identified determinants operate similarly among contemporary Jamaican males remains insufficiently established, creating the central research problem examined in this study.

The geographical distribution of existing evidence complicates attempts to apply global findings directly to Jamaica. British research among older men reported substantial social-class inequalities in activities of daily living, instrumental activities of daily living, and functional limitation, although behavioural risks and comorbidities explained much of the initial inequality [5]. Southern European evidence from Portugal, Italy, and Spain similarly showed greater functional limitation among socioeconomically disadvantaged adults and protective associations with university education [6]. Research based on SHARE data found that 23.8% of European adults aged 65 years or older reported at least one instrumental activity limitation, with prevalence increasing markedly at advanced ages and with lower education, frailty, multimorbidity, depression, and other disadvantages [7]. Studies from India and Ghana also identify poverty, low income, low educational attainment, rural residence, or related socioeconomic vulnerabilities as contributors to functional disability [11-13]. These findings create a plausible expectation of socioeconomic inequality in Jamaica, yet they simultaneously expose a gap because evidence from different health systems, cultures, populations, and age structures cannot automatically establish the independent predictors of functional health among Jamaican males.

The Caribbean evidence base remains comparatively limited despite the region's demographic transition and growing burden of chronic disease. The Salud, Bienestar y Envejecimiento study (SABE) indicated substantial heterogeneity in functional disability among older populations in seven Latin American and Caribbean cities, including Bridgetown, Havana, São Paulo, Santiago, Buenos Aires, Mexico City, and Montevideo.[8,9] Among adults aged 75 years or older, instrumental activity difficulty ranged from 12.0% in Montevideo to 33.8% in São Paulo, while difficulty with basic activities ranged from 16.9% in Bridgetown to 34.7% in Santiago [8]. Increasing age, fewer years of education, low body mass index, and multiple medical conditions were associated with functional difficulties in the combined analysis, illustrating the importance of both demographic and socioeconomic factors [8]. Yet Jamaica was not included in that cross-national comparison, meaning that the country's position within the wider Caribbean pattern could not be inferred directly. The absence of Jamaica from much comparative functional-disability scholarship represents more than a geographic omission because it limits understanding of whether determinants documented elsewhere in the region are transferable to Jamaican men.

Jamaica nevertheless possesses an important earlier foundation for male-specific functional-health research. Bourne examined functional capacity among 2,000 Jamaican men aged 55 years and older and identified demographic, health, social, and behavioural characteristics associated with activities of daily living and instrumental activities of daily living [4]. That study was particularly important because it explicitly addressed an earlier absence of Jamaican research focused on the functional capacity of older men [4]. However, the demographic, socioeconomic, health-service, and epidemiological context has evolved considerably since that evidence was published in 2009, while the study was also restricted to men aged 55 years and older. The availability of the 2023 Jamaica Survey of Living Conditions creates an opportunity to revisit functional health with more contemporary data and to distinguish the independent effects of socioeconomic position from age, education, residential location, household headship, and union status. the unresolved gap is no longer simply whether functional limitation exists among Jamaican men, but whether contemporary socioeconomic inequality independently predicts it once important demographic and relational factors are simultaneously considered.

The present study addresses this gap by applying multivariable binary logistic regression to a selected male sample from the 2023 Jamaica Survey of Living Conditions. The JSLC is particularly appropriate because its broader design captures demographic, health, educational, housing, social-protection, consumption, and socioeconomic information and permits analysis by sex, age group, socioeconomic quintile, and region [3]. The 2023 survey included 4,442 persons in 1,719 households nationally, with data collected using computer-assisted personal interviewing between July 2023 and March 2024 [3]. The current study examines a selected analytic sample of males and focuses specifically on whether functional-health status is independently associated with age, wealth, education, union status, household headship, and residence. The central comparative question is whether socioeconomic gradients widely documented in other regions remain evident among Jamaican males after multivariable adjustment. By answering that question, the analysis contributes both to Jamaican men's health research and to the broader international debate concerning whether social inequalities in functional health are universal, mediated, or context-dependent.

Statement of the Research Problem

Functional limitation has important consequences for independence, employment, caregiving, healthcare utilisation, social participation, and quality of life, yet its determinants cannot be assumed to be identical across societies. International evidence frequently associates socioeconomic disadvantage with functional disability, suggesting that poorer people accumulate greater exposure to unhealthy occupations, material deprivation, inadequate healthcare, chronic diseases, and environmental barriers [5,6,11-14]. If this pattern operates similarly among Jamaican males, poor socioeconomic status should remain associated with functional limitation after demographic and social characteristics are controlled. If the association disappears after adjustment, however, socioeconomic differences may be indirect, confounded, mediated through unmeasured pathways, or less important than characteristics such as age. Distinguishing between these possibilities is important because policies based solely on economic vulnerability could overlook functional-health needs among men outside poorer socioeconomic groups. The research problem concerns whether socioeconomic status itself independently structures functional limitation among Jamaican males or whether demographic and relational characteristics provide greater explanatory power.

A second problem involves the heavy dependence of functional-health scholarship on samples of older adults. Older populations are appropriately important because functional limitation increases with age, but evidence generated exclusively among persons aged 60, 65, 70, or 75 years and older does not necessarily reveal how functional-health differences emerge across a broader male population [5,7,8,10-14]. Jamaican male health may involve occupational exposures, chronic disease, injury, social relationships, and material circumstances well before conventional old-age thresholds are reached. The current analytical sample is useful because the model evaluates age continuously rather than

restricting inference to one older age category. This makes it possible to estimate how the odds of the functional-health outcome change with each additional year while simultaneously adjusting for socioeconomic and social characteristics. The resulting evidence contributes to the literature gap by examining functional health as a process distributed across the observed male sample rather than treating disability exclusively as an issue of old age.

Literature Review

Functional Health and Healthy Ageing

The contemporary concept of functional health is broader than the presence or absence of disease. WHO's healthy-ageing framework defines functional ability in relation to the capabilities that enable people to be and do what they value, with functioning shaped jointly by intrinsic capacity and environmental circumstances [1]. Under this interpretation, two people with similar diagnoses can experience very different levels of functional independence because social support, housing, transportation, assistive resources, healthcare access, and environmental design differ. Functional limitation provides information that disease prevalence alone cannot supply. This distinction is particularly relevant in epidemiological research because socioeconomic groups may differ not only in disease burden but also in their ability to accommodate or compensate for impairments. A central gap in Jamaican research is consequently the limited contemporary evidence concerning which social and demographic factors retain independent relationships with functional health when examined together.

Functional limitation also represents an important equity issue rather than solely an individual clinical outcome. WHO reports that persons with disabilities experience substantial health inequities linked to poverty, discrimination, exclusion, inaccessible health services, and broader structural conditions [2]. Socioeconomic circumstances may affect functional health through cumulative pathways involving nutrition, education, employment, occupation, housing, environmental hazards, healthcare use, health behaviours, and management of chronic disease. These pathways can operate over decades, meaning that current wealth may capture only one component of a much longer socioeconomic history. A non-significant contemporaneous wealth coefficient does not necessarily demonstrate the absence of socioeconomic influence across the life course. This conceptual distinction becomes essential when interpreting the Jamaican regression because it prevents statistical non-significance from being equated with social irrelevance.

Age and Functional Limitation

Age is one of the most consistent predictors of functional limitation across international populations. European SHARE evidence found a particularly strong age gradient, with at least one instrumental activity limitation reported by 23.8% of adults aged 65 years or older overall and by 51.5% of those aged 85 years or older [7]. The same research identified older age alongside lower education, physical inactivity, frailty, multimorbidity, depression, polypharmacy, poorer self-rated health, and lower social-network satisfaction as correlates of IADL limitation [7]. Latin American and Caribbean research likewise identified increased age as an independent correlate of both ADL and IADL difficulties among adults aged at least 75 years [8]. Indian evidence further reports dramatically higher odds of ADL and IADL disability at very advanced ages, reinforcing the consistency of age as a determinant across different socioeconomic settings [12]. The unresolved Jamaican question is not whether age matters conceptually, but whether its effect remains dominant after simultaneous control for economic, educational, residential, household, and relationship factors.

Ageing should nevertheless not be interpreted as an inevitable progression towards disability. WHO's framework emphasises considerable heterogeneity in older adults' capacities and argues that chronological age alone does not adequately capture variations in health, resilience, or functional ability [1]. Social resources and health behaviours may delay functional decline, while chronic conditions, environmental barriers, social isolation, and cumulative disadvantage may accelerate it. An observed age coefficient in regression reflects an average statistical relationship rather than a deterministic biological destiny. This distinction is relevant to Jamaican policy because a strong age association can justify preventive action without implying that functional deterioration cannot be modified. It also creates a basis for future research testing whether age interacts with wealth, chronic morbidity, insurance status, occupation, or social support.

Socioeconomic Position and Functional Health in Britain

British evidence offers one of the clearest male-specific international comparisons with the present Jamaican study. Ramsay and colleagues examined 3,981 British men aged 63 to 82 years from 24 towns and found strong socioeconomic inequalities in ADL disability, IADL disability, and functional limitation [5]. Compared with men in the highest social class, those in social class V initially had odds ratios of 3.13 for ADL disability, 2.87 for IADL disability, and 2.65 for functional limitation [5]. Importantly, behavioural factors and especially comorbidity markedly attenuated these inequalities, reducing the corresponding relative risks towards unity [5]. The findings demonstrate that socioeconomic disadvantage may be strongly associated with functional disability before adjustment yet substantially explained by intermediate behavioural and health conditions. This attenuation is conceptually relevant to Jamaica because the absence of an independent wealth effect in the 2023 model could similarly indicate that socioeconomic circumstances operate through other demographic, behavioural, or morbidity pathways rather than exerting a simple direct effect.

The British findings also reveal why choice of socioeconomic measure matters. Ramsay and colleagues evaluated social class, age at leaving full-time education, house ownership, and car ownership, rather than relying on a single wealth indicator [5]. Some material indicators continued to demonstrate associations even after adjustment, whereas educational associations were weaker after social class was considered [5]. Socioeconomic position is multidimensional, and variables representing consumption quintile, education, occupation, assets, and social class are not interchangeable. The present Jamaican model captures wealth status and education but does not contain a comprehensive lifetime occupational-class measure comparable with the British analysis. The Jamaican finding of a non-significant wealthy-versus-reference coefficient should be interpreted specifically as evidence concerning the available wealth categorisation rather than proof that every dimension of socioeconomic position is unrelated to functional health.

Southern and Wider European Evidence

Research from Southern Europe provides further evidence that socioeconomic inequalities can remain visible in functional health. Serrano-Alarcón and Perelman analysed 9,233 older adults from Portugal, Italy, and Spain and found that subjective poverty was associated with a 3.1-percentage-point greater probability of severe functional limitation [6]. University education was associated with a 3.5-percentage-point lower probability compared with no education, while socioeconomic and gender inequalities became wider at older ages [6]. Severe limitation was also associated with substantially greater use of formal and informal healthcare, demonstrating that

functional-health inequalities have direct service consequences [6]. These findings create a contrast with the Jamaican regression, in which neither secondary nor post-secondary education achieved statistical significance after adjustment. The contrast strengthens the study's central gap because it shows that socioeconomic determinants identified in European populations cannot be presumed to reproduce themselves within a Caribbean male population.

A broader SHARE analysis of 27,491 Europeans aged at least 65 years similarly identified lower education as one of several characteristics associated with having at least one IADL limitation [7]. Functional limitation was also more prevalent among women than men, at 27.1% compared with 17.6%, demonstrating that sex-specific analysis is important in disability research [7]. Considerable variation appeared across European countries, with overall and age-specific prevalence differing substantially between national populations [7]. Such heterogeneity is important because even within a relatively integrated European context, social and functional-health relationships do not occur uniformly. Jamaica's distinctive demographic history, family structure, socioeconomic distribution, healthcare system, and cultural context may alter the magnitude or significance of predictors observed elsewhere. The present male-specific analysis addresses this contextual gap by testing determinants directly rather than importing European coefficients into Jamaican interpretation.

Latin America and the Caribbean

The SABE programme represents a landmark contribution to functional-health research in Latin America and the Caribbean. Its multi-city design included older populations from Bridgetown, Buenos Aires, Havana, Mexico City, Montevideo, Santiago, and São Paulo and was developed partly to address the rapid ageing of populations throughout the region [9]. Cross-national analysis of 3,225 adults aged 75 years or older showed wide differences in functional disability, with IADL difficulty ranging from 12.0% to 33.8% and ADL difficulty from 16.9% to 34.7%.[8] Increased age, fewer years of education, low body mass index, and a greater number of medical conditions were independently related to functional difficulties in pooled analyses [8]. The findings demonstrate that regional ageing is characterised by common risks but substantial country-level heterogeneity. Because Jamaica was not included, however, an important gap persists concerning whether Jamaican men resemble neighbouring Caribbean populations or display a distinctive pattern.

Bridgetown is particularly useful as a Caribbean comparison because Barbados shares some regional historical, cultural, and epidemiological characteristics with Jamaica while maintaining its own institutional and socioeconomic context. Among SABE participants aged 75 years or older, Bridgetown recorded the lowest ADL-difficulty prevalence among the seven study cities at 16.9% [8]. This illustrates that even within a region experiencing population ageing, functional-disability prevalence can vary markedly. Such variation cautions against describing a generic "Caribbean" functional-health pattern. Jamaican-specific multivariable analysis is required to determine whether age, education, income, relationships, and place have the same relative importance identified elsewhere. The present study advances this need but also demonstrates why future harmonised comparisons between Jamaica and Barbados would be particularly valuable.

Jamaica

The earlier Jamaican study by Bourne provides the most direct national precedent for the current analysis. Using a sample of 2,000 men aged 55 years and older, that study examined ADL, IADL, self-reported health, functional capacity, and factors associated with functional health [4]. Its importance lies partly in recognising that male functional health had previously received little direct scholarly attention in Jamaica [4]. The analysis identified age and social or health characteristics as relevant to functional capacity and established that Jamaican male ageing warranted independent study rather than being inferred from mixed-sex populations [4]. Nevertheless, the study's data and publication preceded the 2023 JSLC by more than a decade, and its focus on men aged 55 years and older differs from the broader selected male sample used here. The current investigation extends rather than duplicates that work by testing whether contemporary socioeconomic and relational variables independently predict a binary functional-health outcome.

The contemporary JSLC also offers advantages for examining this unresolved question. The 2023 survey collected information from 4,442 individuals in 1,719 households and included demographic characteristics, consumption and poverty, health, education, housing, and social protection [3]. These dimensions make the JSLC suitable for examining functional health within the social circumstances in which Jamaican men live. Nevertheless, routinely published national summaries do not substitute for multivariable male-specific modelling of functional limitation. Descriptive inequalities can disappear, strengthen, or reverse after confounders are controlled, making adjusted analysis essential for understanding independent correlates. The present study consequently fills a gap between broad national living-conditions surveillance and explanatory epidemiological research focused specifically on Jamaican males.

Asia

Asian evidence further complicates assumptions about a universal socioeconomic gradient. Lai and colleagues followed 1,590 community-dwelling Chinese adults aged at least 70 years in Hong Kong and evaluated education, monthly income, longest-held occupation, social isolation, and later ADL impairment [10]. Lower income predicted greater social isolation, but a clear socioeconomic gradient in subsequent ADL impairment was not indicated [10]. Evidence that social isolation mediated the socioeconomic-functional impairment association was likewise unclear [10]. These findings resemble the Jamaican results more closely than several European studies because socioeconomic disadvantage did not translate straightforwardly into an independent functional-health gradient. The comparison suggests that social and economic determinants may operate differently according to welfare institutions, family arrangements, morbidity patterns, measurement strategies, and population composition.

Indian studies, by contrast, provide strong evidence of socioeconomic inequalities in functional health. Singh and colleagues analysed WHO Study on Global AGEing and Adult Health data and found that poor economic status accounted for 38.5% of explained socioeconomic inequality in IADL deficiency, with illiteracy contributing an additional 22.5% [11]. Patel and colleagues also reported substantial functional disability among older Indian adults, with advanced age strongly increasing ADL, IADL, and impairment risks and with education and wealth explaining much socioeconomic inequality in IADL limitation [12]. These results differ from the Jamaican model, where age was strongly significant, but wealth and educational attainment were not independently significant. The international comparison suggests that age may operate relatively consistently across settings while the socioeconomic gradient is more context-sensitive. This distinction is one of the most important contributions of the present

Jamaican study because it identifies both a globally convergent determinant and a locally divergent socioeconomic result.

Africa

Evidence from Ghana also indicates that socioeconomic disadvantage can accompany functional disability. Amegbor and colleagues analysed 4,107 Ghanaian adults aged 50 years and older from WHO-SAGE and reported that chronic conditions and socioeconomic characteristics were associated with basic and intermediate self-care limitations [13]. Participants with less education and lower incomes were more likely to experience functional disabilities, reinforcing an inequality pattern similar to that found in parts of Europe and India [13]. More recent longitudinal research involving Ghana and South Africa found that food insecurity was associated with higher odds of functional disability over time, with adult education and childhood socioeconomic circumstances operating as relevant pathways [14]. Such evidence illustrates how current functional health may embody cumulative socioeconomic exposures extending across the life course rather than merely contemporaneous wealth. The Jamaican model raises an important unresolved question concerning whether life-course socioeconomic measures would identify inequalities that are not visible through the current wealth categorisation.

Synthesis of the Literature Gap

The reviewed evidence reveals three related gaps that justify the present study. First, socioeconomic inequality in functional health is well documented internationally but inconsistent in magnitude and persistence after adjustment, with strong gradients reported in Britain, Southern Europe, India, and Ghana but less clear evidence in some Chinese older populations [5,6,10-14]. Second, the Caribbean remains underrepresented in contemporary cross-national functional-health scholarship, and historic regional studies do not establish how current Jamaican males fit within the wider pattern [8,9]. Third, Jamaican male-specific evidence exists but is comparatively old and concentrated on men aged 55 years and older, leaving a contemporary gap concerning whether wealth, education, union status, residence, household position, and age independently predict functional limitation [4]. The literature supports neither the assumption that wealth must independently predict Jamaican male functional health nor the opposite assumption that socioeconomic position is unimportant. The present multivariable analysis directly addresses this unresolved issue and uses global comparison to determine which Jamaican findings converge with or diverge from international evidence.

Conceptual Framework

This study is guided primarily by the social determinants of health perspective combined with WHO's functional-ability framework. The social determinants perspective proposes that health is shaped by unequal distributions of resources, opportunities, risks, living conditions, education, work, social relationships, and healthcare rather than exclusively by individual biological characteristics [2]. The functional-ability framework similarly recognises that effective functioning reflects interactions between intrinsic capacity and the social and physical environment [1]. Together, these perspectives predict that age, economic position, education, residence, and relational circumstances may independently or jointly influence functional health. They also predict that socioeconomic influences may be mediated through chronic disease, healthcare, occupation, health behaviour, nutrition, or social support and become attenuated when overlapping characteristics are controlled. This combined framework is particularly suitable for investigating why wealth may show descriptive health differences yet fail to remain an independent predictor in a fully adjusted model.

A life-course interpretation additionally strengthens the framework. Functional limitation observed in adulthood can reflect exposures accumulated over decades, including childhood deprivation, educational opportunity, occupation, income security, nutritional conditions, chronic illness, and repeated environmental risk. Recent research from Ghana and South Africa demonstrates that childhood and adult socioeconomic characteristics can help explain later functional disability, supporting the importance of cumulative rather than exclusively contemporaneous socioeconomic measures [14]. The Jamaican wealth variable represents only one point within a potentially much longer social trajectory. A non-significant wealth coefficient cannot eliminate the possibility that earlier socioeconomic circumstances influenced current functional status indirectly. Future Jamaican research should consequently test life-course mechanisms explicitly rather than treating current socioeconomic group as a complete representation of socioeconomic history.

Study Objectives

The primary objective was to determine the independent demographic and socioeconomic predictors of functional-health limitation among Jamaican males using the 2023 JSLC. A second objective was to establish whether wealthy socioeconomic status remained independently associated with functional health after controlling for area of residence, union status, educational attainment, household headship, and age. A third objective was to estimate adjusted odds ratios and 95% confidence intervals for each predictor so that both statistical significance and effect magnitude could be evaluated. A fourth objective was to assess the overall explanatory, calibration, and classification performance of the binary logistic regression model. A fifth objective was to compare the Jamaican results with functional-health evidence from Europe, Latin America and the Caribbean, Asia, and Africa. The final objective was to use these comparisons to clarify the literature gap and identify priorities for Jamaican male-health policy and future research.

Research Questions

1. Do area of residence, union status, educational attainment, household headship, age, and socioeconomic status collectively predict functional-health limitation among Jamaican males?
2. Which characteristics retain statistically significant independent associations after simultaneous adjustment?
3. Does wealthy socioeconomic status independently predict functional health limitation?
4. How large are the adjusted associations between the explanatory variables and functional health?
5. How well does the model classify males with and without the functional-health outcome?
6. How do the Jamaican findings compare with evidence from other world regions?

Hypotheses

H01: Area of residence is not independently associated with functional-health limitation among Jamaican males.

H02: Union status is not independently associated with functional-health limitation among Jamaican males.

H03: Educational attainment is not independently associated with functional-health limitation among Jamaican males.

H04: Household headship is not independently associated with functional-health limitation among Jamaican males.

H05: Age is not independently associated with functional-health

limitation among Jamaican males.

H06: Socioeconomic status is not independently associated with functional-health limitation among Jamaican males.

Methods

Research Design and Data Source

The study used a quantitative cross-sectional secondary-data design based on the 2023 Jamaica Survey of Living Conditions. The national JSLC is jointly associated with Jamaica's official socioeconomic monitoring infrastructure and examines demographic circumstances, poverty and consumption, health, education, housing, and social protection [3]. The wider 2023 survey included 4,442 individuals from 1,719 households and used computer-assisted personal interviewing during data collection from July 2023 through March 2024 [3]. The current study did not analyse the entire national file but instead used the selected male analytical sample supplied for this investigation. The initial selected sample consisted of 1,770 males, of whom 1,299 had complete information for the binary logistic regression. Accordingly, the findings apply to the analysed male sample and should not be interpreted as unqualified estimates for every Jamaican male without consideration of the underlying sampling, selection, and missing-data processes.

Analytical Sample and Missing Data

Of the 1,770 selected males, 1,299 were included in the complete-case regression analysis, and 471 were excluded because of missing information. Thus, 73.4% of selected cases contributed to the final model, whereas 26.6% were excluded. This level of complete-case loss is methodologically important because regression estimates may be biased when missingness is systematically related to predictors or the outcome. The supplied output does not provide a missing-data mechanism analysis, multiple-imputation model, or comparison of complete and incomplete cases. The study treats missing data as a limitation and avoids claiming that complete-case results are necessarily identical to estimates that would have emerged from all 1,770 males. Future analyses should investigate missingness patterns and consider multiple imputation or sensitivity analyses where statistically appropriate.

Dependent Variable

The dependent variable was a binary functional-health variable coded internally as 0 and 1. The supplied SPSS output identifies the dependent variable as DummyFunctional_Health, with .00 internally coded as 0 and 1.00 internally coded as 1. Within the analytical framing supplied for the study, category 1 represents the modelled functional-health limitation outcome and category 0 represents its absence. In the complete-case model, the baseline classification table contained 1,068 observations in category 0 and 231 in category 1, meaning that the outcome was imbalanced towards category 0. This imbalance is important for interpreting classification accuracy because a model can achieve apparently high overall accuracy simply by predicting the majority category well.

Independent Variables

The independent variables were urban residence, semi-urban residence, single status, visiting relationship, common-law relationship, secondary education, post-secondary education, household headship, age in years, and wealthy socioeconomic status. These variables capture geographical, relational, educational, household, demographic, and material dimensions repeatedly identified in international functional-health research [5-14]. Age was entered continuously, so its AOR represents the multiplicative change in odds associated with each additional year. The remaining explanatory variables were represented through binary indicator variables relative to omitted reference categories. The substantive labels of several reference categories are not displayed in the supplied regression output, and they are deliberately not invented in this study. This approach protects interpretive validity by distinguishing what the statistical output explicitly establishes from what would otherwise be unsupported reconstruction of the original coding.

Statistical Analysis

Binary logistic regression was used because the dependent variable had two categories and the objective was to estimate the independent association of multiple predictors with the probability of category 1. The general model may be represented as: $\log[p/(1-p)] = \beta 0 + \beta 1X1 + \beta 2X2 + ... + \beta kXk$, where p denotes the probability of functional limitation, β0 is the intercept, β coefficients represent changes in log odds, and X terms represent predictors. Exponentiating each regression coefficient produces Exp(B), or the adjusted odds ratio, which expresses the multiplicative change in odds associated with a one-unit increase or category change while the remaining predictors are held constant. All predictors were entered simultaneously using SPSS's Enter procedure. Statistical significance was assessed using Wald tests and $P<.05$, while 95% confidence intervals were used to evaluate the precision of AOR estimates. Model evaluation incorporated the likelihood-ratio omnibus test, −2 Log Likelihood, Cox and Snell R^2, Nagelkerke R^2, Hosmer-Lemeshow test, and classification statistics.

Model Evaluation Considerations

Logistic-regression interpretation requires more than determining whether the omnibus model is statistically significant. Pseudo-R^2 statistics provide an indication of explanatory improvement but should not be interpreted identically to ordinary least-squares R^2 because logistic regression models probabilities rather than continuous outcomes. Classification accuracy is likewise influenced by the prevalence of the outcome and requires separate evaluation of correctly classified category 0 and category 1 observations. The Hosmer-Lemeshow statistic provides one indication of calibration by comparing observed and expected outcomes across risk groupings, although it should not be interpreted in isolation. The supplied model also contains dummy indicators belonging to common categorical constructs, and correlations among such indicators should be interpreted in relation to their coding rather than automatically treated as independent continuous predictors. These considerations are incorporated into the interpretation to prevent overstatement of the model's predictive performance.

Results

Case Processing and Baseline Classification

The complete-case analytical sample consisted of 1,299 males, representing 73.4% of the selected 1,770 cases. The remaining 471 observations, or 26.6%, were excluded because of missing data. Before predictors were introduced, the intercept-only model classified every observation as category 0 and achieved an overall accuracy of 82.2%. It correctly classified 100% of category 0 observations but none of the 231 category 1 observations. The high baseline accuracy resulted primarily from outcome imbalance rather than useful discrimination between functional-health categories.

Overall Model Significance

The model containing the ten predictors was statistically significant relative to the intercept-only model. The omnibus likelihood-ratio test produced $\chi^2(10)=220.788$, $P<.001$, indicating that the predictor set collectively improved model fit. The initial −2 Log Likelihood

was 1,216.086, while the final model produced −2 Log Likelihood=995.298. Cox and Snell R^2 was .156, and Nagelkerke R^2 was .257, showing meaningful but incomplete explanatory improvement. These results establish that the combined demographic and social variables contained statistically useful information about functional health status even though several individual predictors were not significant.

Table 1: Binary Logistic Regression Model Fit and Classification Statistics for Functional Health Among Jamaican Males, JSLC 2023

Model statistic	Result
Initial selected sample, N	1,770
Complete cases included, n (%)	1,299 (73.4)
Missing/excluded cases, n (%)	471 (26.6)
Initial −2 Log Likelihood	1,216.086
Final −2 Log Likelihood	995.298
Omnibus χ^2	220.788
df	10
P	<.001
Cox and Snell R^2	.156
Nagelkerke R^2	.257
Hosmer-Lemeshow χ^2	15.671
Hosmer-Lemeshow df	8
Hosmer-Lemeshow P	.047
Baseline overall classification	82.2%
Final overall classification	84.1%
Correctly classified category 0	97.3%
Correctly classified category 1	22.9%

Note: The classification threshold was .500, and the model converged after five iterations.

Calibration and Classification

The final model improved overall classification accuracy from 82.2% to 84.1%. Category 0 was classified correctly in 97.3% of observations, whereas only 22.9% of category 1 observations were classified correctly. This large difference demonstrates that the model was substantially more successful at identifying males without the modelled limitation than those with the limitation. The Hosmer-Lemeshow statistic was $\chi^2(8)=15.671$ with P=.047, crossing the conventional threshold for statistical significance and providing evidence of some discrepancy between observed and expected probabilities. The model should be regarded as statistically explanatory rather than as a highly calibrated clinical or population-screening prediction tool.

Multivariable Predictors of Functional Health

Only age and single status were statistically significant individual predictors after simultaneous adjustment. Age produced B=0.061 and an AOR of 1.063 (95% CI, 1.050-1.075; P<.001), meaning that each additional year was associated with a 6.3% increase in the adjusted odds of category 1. Single status produced B=0.439 and an AOR of 1.551 (95% CI, 1.065-2.260; P=.022), representing 55.1% greater adjusted odds relative to the omitted union-status reference category. Household headship approached statistical significance with AOR=0.706 (95% CI, 0.472-1.055; P=.090), but its confidence interval included unity. Urban residence, semi-urban residence, visiting relationships, common-law relationships, secondary education, post-secondary education, and wealthy status did not independently predict the functional-health outcome.

Table 2: Multivariable Binary Logistic Regression Predicting Functional-Health Limitation Among Jamaican Males, JSLC 2023

Predictor	B	SE	Wald χ^2	P	AOR	95% CI for AOR
Area of residence						
Urban	0.274	0.200	1.878	.171	1.315	0.889-1.946
Semi-urban	−0.205	0.204	1.006	.316	0.815	0.546-1.216
Union status						
Single	0.439	0.192	5.224	.022	1.551	1.065-2.260
Visiting relationship	−0.455	0.299	2.319	.128	0.635	0.353-1.139
Common-law relationship	−0.343	0.328	1.091	.296	0.710	0.373-1.350
Educational attainment						

Secondary education	−0.265	0.321	0.681	.409	0.767	0.409-1.439
Post-secondary education	−0.426	0.329	1.679	.195	0.653	0.343-1.244
Household characteristic						
Head of household	−0.348	0.205	2.881	.090	0.706	0.472-1.055
Age						
Age, years	0.061	0.006	99.108	<.001	1.063	1.050-1.075
Socioeconomic status						
Wealthy	−0.052	0.178	0.086	.769	0.949	0.670-1.345
Constant	−4.293	0.512	70.409	<.001	0.014	—

Note: *n*=1,299 complete cases; B=logistic regression coefficient; SE=standard error; AOR=adjusted odds ratio; CI=confidence interval. Bolded estimates identify statistically significant independent predictors at *P*<.05. Reference-category labels are not supplied in the available SPSS table and are not inferred. All predictors were entered simultaneously using the Enter method.

Socioeconomic Status

The principal socioeconomic finding was the absence of an independent wealthy-status effect. Wealthy males had an estimated AOR of 0.949 relative to the omitted socioeconomic reference group, corresponding to approximately 5.1% lower estimated odds of functional limitation. However, the 95% confidence interval ranged from 0.670 to 1.345 and included unity, while *P* =769 provided no evidence against the null hypothesis. Socioeconomic position thus did not independently distinguish the odds of the functional-health outcome after the other demographic and social variables were held constant. This result is central to the study because it diverges from much international literature in which poor economic circumstances remain closely associated with functional disability.

Educational Attainment

Neither secondary nor post-secondary education achieved statistical significance. Secondary education had AOR=0.767 (95% CI, 0.409-1.439; *P*=.409), while post-secondary education had AOR=0.653 (95% CI, 0.343-1.244; *P*=.195). Both point estimates were below 1.0 and were directionally compatible with lower odds relative to their omitted reference category, but their confidence intervals were wide and crossed unity. The model consequently does not establish an independent protective educational effect among these Jamaican males. This finding contrasts with multiple international studies reporting lower functional disability among people with greater educational attainment.

Area of Residence and Household Headship

Geographical residence did not independently predict the outcome. Urban residence had AOR=1.315 (95% CI, 0.889-1.946; *P*=.171), while semi-urban residence had AOR=0.815 (95% CI, 0.546-1.216; *P*=.316). Household headship had AOR=0.706 and approached but did not reach statistical significance (*P*=.090). The results offer insufficient evidence that geographical location or household headship exerted independent effects once age, union status, education, and socioeconomic status were simultaneously controlled. This differs from some earlier Jamaican and international evidence and suggests that contextual effects require further investigation using more detailed environmental and household measures.

Comparative Summary of Jamaican and International Evidence

Table 3: Comparative Interpretation of Functional-Health Predictors Across Selected World Regions

Setting	Population/evidence	Major reported pattern	Comparison with Jamaican males
Jamaica, 2023 JSLC	1,299 male complete cases	Age and single status significant; wealth and education non-significant	Reference study
Jamaica, earlier study[4]	2,000 men aged ≥55 years	Age and social/health factors associated with functional capacity	Supports importance of age; provides earlier national precedent
Britain[5]	3,981 men aged 63-82 years	Strong social-class gradients, largely attenuated by behaviours/ comorbidity	Greater crude socioeconomic gradient than current Jamaican model
Portugal, Italy, Spain[6]	9,233 older adults	Poverty increased severe limitation; university education protective	Socioeconomic effects stronger than Jamaican adjusted results
Wider Europe[7]	27,491 adults aged ≥65	Older age and lower education associated with IADL limitation	Age converges; education diverges
Latin America/Caribbean[8,9]	Adults in seven cities	Wide geographical variation; age and lower education important	Age converges; education less consistent in Jamaica
Hong Kong, China[10]	1,590 adults aged ≥70	Clear socioeconomic gradient in ADL impairment not indicated	More similar to Jamaican wealth result

India[11,12]	Older adults	Poor economic status and education contribute strongly to functional inequality.	Strong contrast with Jamaican adjusted wealth/education results
Ghana[13]	4,107 adults aged ≥50	Low income and education associated with functional disability	Stronger socioeconomic gradient than Jamaica
Ghana/South Africa[14]	Longitudinal older-adult samples	Food insecurity predicted functional disability; life-course SES pathways important.	Suggests socioeconomic pathways may be missed by current wealth measure

Discussion

Principal Findings

The current study produced three principal findings concerning functional health among Jamaican males. First, the multivariable model was statistically significant, indicating that the included demographic and socioeconomic variables collectively improved explanation of functional-health status. Second, age was overwhelmingly the strongest individual predictor, with each additional year associated with a 6.3% increase in adjusted odds. Third, single status was the only other statistically significant independent predictor, whereas wealth, educational attainment, geographical residence, and household headship were not independently significant. The present model suggests that functional health in this sample was more strongly differentiated by demographic ageing and one dimension of relationship status than by current socioeconomic classification. This pattern simultaneously confirms part of the international literature and challenges another important part of it.

Age as the Dominant Predictor

The strong age association represents the clearest point of convergence between Jamaica and the international literature. European, Caribbean, Latin American, Indian, and earlier Jamaican studies consistently demonstrate increased functional limitation with advancing age [4,7,8,12]. The current Jamaican AOR of 1.063 indicates that the odds multiply by approximately 1.063 with every additional year, holding the other variables constant. Because this effect accumulates across years, the contrast between substantially younger and older men can become considerable even though the one-year change appears modest. The finding supports healthy-ageing approaches that identify functional capacity before severe disability becomes established rather than waiting until late old age. It also confirms that contemporary Jamaican male health remains strongly shaped by ageing despite changes in socioeconomic circumstances and healthcare over time.

The result should not be interpreted as suggesting that functional decline is biologically unavoidable. WHO emphasises that functional ability emerges from interaction between intrinsic capacity and environmental conditions, meaning that ageing trajectories can be modified by supportive environments, disease prevention, rehabilitation, physical activity, assistive technologies, and social participation [1]. The regression identifies chronological age as a statistical marker but does not reveal the biological, behavioural, occupational, or disease pathways responsible for its effect. Chronic conditions were not included in the supplied multivariable model, despite international evidence showing that multimorbidity substantially contributes to functional limitation [5,7,12,13]. Part of the strong age coefficient may capture age-related accumulation of diseases or exposures omitted from the specification. Future Jamaican modelling should test whether the age coefficient attenuates after chronic morbidity, physical activity, occupational exposure, and health-service variables are included.

Why the Non-significant Wealth Effect Matters

The absence of an independent wealth effect is arguably the study's most theoretically interesting finding. Wealthy status produced an AOR extremely close to unity at 0.949, with a wide confidence interval and P=.769, offering little evidence of an independent association after adjustment. This differs markedly from British evidence showing major social-class inequalities and from Indian and Ghanaian evidence identifying economic disadvantage as an important contributor to functional disability [5,11-13]. Southern European evidence similarly links subjective poverty to more severe functional limitation [6]. The Jamaican finding cannot be comfortably absorbed into a universal narrative in which economic disadvantage invariably predicts functional limitation independently. Instead, it supports a more context-sensitive interpretation in which economic position may operate differently across national settings or through variables not directly represented in the current model.

One possible explanation involves demographic confounding, particularly age. Socioeconomic groups can differ substantially in their age composition, and functional limitation rises sharply with advancing age. Once age is entered continuously into the model, some apparent crude socioeconomic differences may disappear because they reflect differences in demographic structure. The age Wald statistic of 99.108 was vastly larger than that of wealth status, indicating that age contributed far more clearly to distinguishing the outcome within the fitted specification. This interpretation is consistent with the central contribution of multivariable analysis because descriptive differences do not necessarily represent independent socioeconomic effects.

A second explanation is that current wealth status may inadequately represent cumulative socioeconomic exposure. British research measured social class and material ownership, Indian research has examined economic status and literacy, and recent African longitudinal work demonstrates the relevance of childhood and adult socioeconomic pathways [5,11,14]. Jamaican males may have experienced occupational hardship, childhood deprivation, unstable employment, inadequate nutrition, or limited healthcare access even when their current socioeconomic categorisation is relatively favourable. Some men classified in poorer groups may benefit from social support, family resources, community networks, or other protective factors not captured by wealth status. The non-significant coefficient can coexist with socioeconomic mechanisms operating indirectly across the life course. This interpretation reinforces rather than eliminates the research gap because future Jamaican studies require richer socioeconomic histories.

Comparison with British Men

The comparison with British men is especially important because both studies provide male-specific analyses. Ramsay and colleagues found pronounced socioeconomic differences in disability among British men, but adjustment for behavioural factors and comorbidity markedly reduced those inequalities

[5]. Their results demonstrate that socioeconomic position may influence functional health through modifiable intermediary conditions rather than through an irreducible direct pathway. The Jamaican model arrives at a similarly attenuated endpoint for wealth, although it does so use a different predictor set and should not be interpreted as a direct replication. In Britain, socioeconomic inequality was evident before extensive adjustment, whereas the present Jamaican model establishes primarily that wealth did not remain significant within the supplied specification. A future Jamaican analysis including chronic disease and health behaviours would permit a more rigorous test of whether socioeconomic differences are mediated in ways like those documented among British men.

Comparison with Southern Europe

The Southern European comparison produces a stronger divergence. Older adults reporting subjective poverty in Portugal, Italy, and Spain had a greater probability of severe functional limitation, while university education was protective [6]. Neither socioeconomic status nor education independently predicted the outcome in the Jamaican model. Differences in age range, outcome construction, socioeconomic measurement, gender composition, and welfare context could account for part of the contrast. Southern European studies frequently focus exclusively on older adults, whereas the Jamaican selected male sample spans a broader age distribution. The divergence demonstrates why the international literature should inform Jamaican hypotheses without determining Jamaican conclusions in advance.

Comparison with Wider Europe

The wider European SHARE evidence similarly confirms age but challenges the Jamaican educational result. Portela and colleagues found that older age, lower education, multimorbidity, frailty, depression, physical inactivity, polypharmacy, and poorer social-network satisfaction were associated with IADL limitation [7]. The Jamaican model reproduced the age relationship but not an independent educational association. This difference may indicate that education operates partly through occupation, income, health literacy, healthcare access, or health behaviour rather than directly. It may also reflect statistical power or coding, because educational categories in the Jamaican model were represented by indicator variables whose confidence intervals were relatively wide. The comparison again suggests that determinants of functional health should be conceptualised as interacting pathways rather than isolated universal risk factors.

Comparison with Latin America and the Caribbean

The Caribbean and Latin American comparison provides both convergence and divergence. SABE research found age and lower education associated with disability but also documented large differences in functional limitation between individual cities [8]. The Jamaican age result is consistent with the pooled regional evidence, while the absence of an educational effect differs from it. The wide variation between Bridgetown, Santiago, São Paulo, and Montevideo demonstrates that functional-health patterns can differ even within geographically related populations [8]. Jamaican results should consequently be understood as a distinct national contribution rather than judged merely by whether they reproduce a pooled regional coefficient. The remaining gap is the absence of a genuinely harmonised modern Caribbean comparison using identical measures and age structures.

Comparison with Asia

The Asian literature demonstrates why the Jamaican finding should not be considered anomalous. In Hong Kong, Lai and colleagues found that lower income was associated with greater social isolation, yet a clear socioeconomic gradient in ADL impairment was not established [10]. The authors also found unclear evidence that social isolation mediated the socioeconomic-functional impairment relationship [10]. This resembles the Jamaican result in showing that socioeconomic disadvantage does not necessarily remain directly associated with functional impairment once relevant pathways are considered. Indian evidence, however, moves in the opposite direction because economic disadvantage and education make substantial contributions to functional inequality [11,12]. Asia itself contains heterogeneous patterns, reinforcing the broader conclusion that socioeconomic gradients cannot be presumed universal.

Comparison with Africa

The African evidence generally demonstrates stronger socioeconomic patterning than the current Jamaican regression. Ghanaian older adults with lower education and income were more likely to experience functional disabilities in basic and intermediate self-care activities [13]. Recent longitudinal evidence from Ghana and South Africa also associates food insecurity with increased functional disability and identifies childhood and adult socioeconomic circumstances as relevant pathways [14]. These studies suggest that material disadvantage may become more visible when measured through food insecurity, income, educational history, or life-course conditions rather than broad current wealth classification. It would be premature to conclude from the Jamaican model that economic conditions have no relationship with male functional ageing. The more defensible conclusion is that wealth did not independently predict the supplied binary functional-health outcome after adjustment for the variables in this specific model.

Single Status and Functional Health

Single status was the only social characteristic besides age to retain statistical significance. Single males had 55.1% higher adjusted odds of functional limitation than males in the omitted union-status reference category. This result is compatible with literature suggesting that intimate relationships and wider social networks can influence health through emotional support, instrumental assistance, monitoring, economic cooperation, and encouragement of healthcare use [6,7,10]. However, visiting and common-law relationships were not statistically significant, demonstrating that the relationship between union status and functional health is more complex than a simple partnered-versus-unpartnered distinction. The substantive meaning of the single-status coefficient must also remain cautious because the exact omitted reference-category label is not displayed in the supplied output. Future Jamaican research should examine living arrangements, social isolation, relationship quality, household size, and practical caregiving support rather than relying solely on formal union classifications.

The finding nevertheless raises a potentially important male-health issue. Men may rely differently on spouses, partners, relatives, friends, churches, and community networks for assistance with illness recognition, healthcare utilisation, medication adherence, diet, emotional regulation, and daily activities. Earlier Jamaican research also suggested that social factors such as church attendance were associated with better functional status among older men [4]. The current finding creates continuity with an older national literature indicating that functional capacity has a social as well as biological dimension. It also resembles international work in which social-network satisfaction or social isolation is examined alongside functional limitation [7,10]. A key research priority is thus to determine whether the single-status association reflects

social isolation, household support, selection into relationships, age differences not fully captured by a linear term, or other unmeasured factors.

Education

The absence of statistically significant educational effects requires careful interpretation. Both secondary and post-secondary education had AORs below unity, but neither confidence interval excluded 1.0. This means that the estimated direction was compatible with lower odds relative to the omitted educational reference category, yet the data did not establish a statistically reliable independent association. International studies from Southern Europe, India, Ghana, and pooled Latin American and Caribbean settings frequently report poorer functional health among people with less education [6,8,11-13]. Education may influence functional health through occupational opportunities, lifetime income, health literacy, prevention, healthcare navigation, and access to healthier environments. The Jamaican results suggest either that these pathways were captured by other model variables, that educational effects are weaker in this sample, or that the available categories did not measure the relevant educational gradient with sufficient precision.

Geographical Residence

Urban and semi-urban residence did not independently predict functional limitation. This finding is noteworthy because place can influence functional health through transportation, healthcare availability, environmental accessibility, walkability, employment patterns, social networks, and exposure to occupational or physical risks. Indian studies have identified rural residence as contributing to some dimensions of health inequality, and earlier Jamaican work also considered area of residence relevant to male functional capacity [4,11]. The absence of a significant contemporary association may indicate that broad residential categories conceal important within-area differences. Urban disadvantage and rural disadvantage can coexist but operate through different mechanisms that are not adequately represented by a single geographical indicator. Future research should incorporate parish, neighbourhood infrastructure, healthcare travel time, road conditions, built environment, and community socioeconomic context.

Interpretation of Model Performance

The model's statistically significant omnibus test should not be confused with strong individual-level prediction. Although overall classification improved from 82.2% to 84.1%, most of that performance came from accurate prediction of category 0. Only 22.9% of category 1 observations were classified correctly, meaning that more than three-quarters of men with the modelled functional-health limitation were not correctly identified at the .50 threshold. This limitation is partly attributable to outcome imbalance, since category 1 represented a minority of complete cases. For epidemiological explanation, the model remains informative, but for screening or targeted case identification its sensitivity to the minority outcome would be inadequate without further optimisation. Future work should examine receiver-operating-characteristic performance, alternative thresholds, sensitivity, specificity, and potentially additional predictors.

The Hosmer-Lemeshow result similarly requires caution. A statistically significant value of P=.047 suggests evidence of discrepancies between observed and model-predicted probabilities across the test's risk groupings. The result does not invalidate every coefficient, but it indicates that model calibration is not ideal. Omitted non-linearities, interactions, chronic conditions, health behaviours, or alternative coding of predictors could contribute to the lack of fit. Age in particular was entered linearly, although functional deterioration may accelerate at later ages rather than increase at a constant log-odds rate across the entire lifespan. Future models should consider non-linear age terms, age categories, splines, interactions, and additional clinically relevant variables.

Theoretical Implications

The findings favour a multidimensional rather than economically deterministic theory of functional health. Social determinants frameworks appropriately recognise material circumstances as important, but the Jamaican results show that not every socioeconomic indicator necessarily retains an independent coefficient in every population. Age dominated the statistical model, while single status introduced a relational dimension and wealth, education, and place were non-significant after adjustment. This suggests that functional health may emerge through intersecting pathways rather than through a simple poor-to-rich gradient. Such pathways can include cumulative disease, occupation, behaviour, healthcare, household assistance, social networks, and environmental accommodation. The study supports theories that treat socioeconomic position as one component within a broader system of determinants rather than as a universally dominant direct cause.

The findings also emphasise the value of distinguishing direct statistical associations from indirect social causation. Wealth can influence education, healthcare access, nutrition, housing, occupation, chronic-disease detection, and opportunities for healthy ageing even when the final adjusted wealth coefficient is non-significant. Similarly, education may operate through lifetime occupation or health behaviours and disappear once correlated variables are introduced. International differences in coefficients can reflect differences in causal pathways, measurement, age structure, health systems, or model specification rather than contradictory biological processes. The Jamaican findings encourage future mediation analysis rather than binary conclusions that socioeconomic status either "matters" or "does not matter." This theoretical refinement represents an important contribution to the research gap because it shifts attention from whether inequality exists towards how inequality may be generated.

Public-Health and Policy Implications

The strong association with age provides a clear policy signal for Jamaica. Health planning for men should increasingly include prevention of functional decline, not merely management of acute disease or mortality. Routine assessment of mobility, daily functioning, falls, sensory limitations, physical activity, chronic disease, and rehabilitation needs could identify deterioration before severe dependence occurs. WHO's healthy-ageing framework supports interventions that preserve intrinsic capacity and create environments enabling people to function effectively despite health conditions [1]. Such strategies are likely to become increasingly important as Jamaica's population continues to age. The current findings indicate that age-sensitive functional-health policy should extend across socioeconomic groups because wealth status did not independently identify a low-risk population.

The single-status finding additionally supports greater attention to men's social environments. Health services could incorporate questions concerning living arrangements, available caregiving support, social isolation, and practical assistance rather than assuming that functional need can be inferred from medical diagnosis alone. Community organisations, churches, primary-

care services, and men's-health initiatives may all have roles in identifying socially isolated men experiencing emerging functional difficulties. Earlier Jamaican evidence linking social participation with functional health lends additional plausibility to this approach [4]. Nevertheless, policy should not treat all single men as inherently vulnerable because the regression identifies a population-level association rather than deterministic individual risk. More detailed national research is required before designing highly targeted relationship-status interventions.

The non-significant wealth effect has equally important policy implications. It would be inappropriate to infer that poorer Jamaicans do not face health inequalities, particularly because socioeconomic differences exist across many dimensions of healthcare access and chronic disease. Instead, the finding shows that functional limitation cannot be targeted solely through a simple poor-versus-wealthy classification. Men with greater material resources may still experience substantial age-related or disease-related functional difficulty and require prevention, rehabilitation, or social support. Universal age-sensitive services can complement targeted policies addressing material deprivation and healthcare access. This combined approach is more consistent with the multivariable evidence than either exclusively poverty-targeted or entirely socioeconomic-neutral policy.

Contribution to Knowledge

The study contributes to knowledge in several distinct ways. First, it supplies contemporary male-specific Jamaican evidence using 2023 living-conditions data, thereby updating a literature in which an important earlier national male study was published in 2009 [4]. Second, it demonstrates that age remains strongly associated with functional limitation after socioeconomic, educational, residential, household, and relational variables are simultaneously controlled. Third, it identifies single status as an independent correlate deserving greater attention in Jamaican men's health research. Fourth, it finds no independent wealthy-status effect, challenging the assumption that the socioeconomic gradients documented in Britain, Southern Europe, India, and Ghana must reproduce themselves directly in Jamaica [5,6,11-13]. Fifth, its international comparison shows that the Jamaican pattern is not simply anomalous because some Asian evidence similarly reports unclear socioeconomic gradients after multivariable consideration [10]. The contribution is both empirical and comparative: it adds Jamaican data while demonstrating why theories of functional-health inequality require contextual qualification.

Strengths

One strength is the use of a contemporary national living-conditions data source containing demographic, socioeconomic, and health information. The 2023 JSLC provides a substantially more recent social context than the earlier Jamaican male functional-capacity literature [3,4]. A second strength is the use of multivariable logistic regression, which permits simultaneous adjustment and prevents simple bivariate socioeconomic differences from being mistaken for independent effects. A third strength is the reporting of AORs and 95% confidence intervals rather than reliance on P values alone. A fourth strength is the examination of calibration and classification, including explicit recognition that overall accuracy can be misleading when the dependent variable is imbalanced. Finally, the comparative review extends interpretation beyond Jamaica and places the findings within empirical patterns observed in Europe, the wider Caribbean and Latin America, Asia, and Africa.

Limitations

The study also has important limitations. The cross-sectional design prevents determination of temporal sequence or causality, meaning that associations should not be interpreted as evidence that age or relationship status directly caused functional limitation. Complete-case analysis excluded 26.6% of the selected cases, and the absence of a formal missing-data analysis leaves open the possibility of selection bias. The significant Hosmer-Lemeshow test and low correct classification of category 1 indicate that the model is not optimally calibrated for individual prediction. The supplied model also lacks several internationally established functional-health determinants, including multimorbidity, physical activity, body composition, depression, occupation, social-support intensity, health behaviours, and detailed healthcare access [5,7,12,13]. These omissions mean that the model should be viewed as an important but incomplete explanation of functional-health differences.

Measurement limitations also constrain international comparison. The Jamaican binary dependent variable is not necessarily identical to the ADL, IADL, Barthel Index, functional-deficiency, or severe-dependence measures used in the international studies reviewed here. Age ranges likewise differ substantially, with many comparison studies restricted to populations aged 50, 60, 65, 70, or 75 years and older. Socioeconomic indicators vary from wealth and income to subjective poverty, social class, education, housing ownership, food insecurity, and lifetime occupation. Direct comparison of prevalence percentages or effect sizes would be inappropriate without harmonisation. The present study instead compares the direction, persistence, and relative importance of determinants while acknowledging measurement differences. Future cross-national work should employ identical functional-health instruments, predictor definitions, and age structures.

Recommendations for Future Research

Future Jamaican research should first replicate the model using a richer set of health covariates. Chronic diseases such as hypertension, diabetes, arthritis, cardiovascular disease, respiratory disease, depression, and multimorbidity should be incorporated because international research demonstrates their close relationships with functional limitation. Health insurance, healthcare utilisation, physical activity, employment, occupation, smoking, alcohol consumption, body mass index, and social support should also be evaluated as potential explanatory or mediating factors [5,7,12,13]. A hierarchical modelling strategy could enter demographics first, socioeconomic variables second, and morbidity or behavioural variables subsequently to determine when socioeconomic coefficients attenuate. Such an approach would make the Jamaican analysis more directly comparable with the British evidence on pathways explaining socioeconomic inequalities [5]. It would also clarify whether age remains dominant after morbidity is comprehensively controlled.

A second priority is longitudinal research. Repeated observation would distinguish predictors of incident functional limitation from characteristics that merely coexist with limitation at one point in time. Longitudinal analysis could test whether poor socioeconomic circumstances accelerate functional decline, whether declining function subsequently reduces income and employment, or whether both processes occur simultaneously. Life-course indicators should include childhood socioeconomic conditions, education, occupational history, income trajectories, pension security, food security, and cumulative healthcare access. The recent Ghana-South Africa evidence demonstrates how early-

and later-life socioeconomic circumstances can form pathways to functional disability. Jamaica currently lacks sufficiently developed male-specific evidence of these life-course mechanisms [14].

A third priority is explicit modelling of interactions. The non-significant overall wealth coefficient may conceal socioeconomic differences that emerge only at advanced ages, within residential environments, or among men with chronic disease. Interactions between age and wealth, age and education, wealth and residence, union status and age, and socioeconomic status and health insurance should be evaluated. Non-linear age terms should also be investigated because the log odds of limitation may accelerate in later life rather than rise by a constant amount per year. Stratified analyses by age cohort could complement interaction models and improve substantive interpretation. These analyses would directly extend the present research gap from asking whether socioeconomic status matters towards identifying when and for whom it matters.

A fourth priority is improved predictive modelling without sacrificing interpretability. The low 22.9% correct classification of category 1 indicates that substantial information relevant to functional limitation remains outside the current predictor set. Alternative probability thresholds, ROC analysis, area under the curve, sensitivity, specificity, positive predictive value, and negative predictive value should be reported. Penalised regression or carefully validated machine-learning models could be explored as supplementary approaches where adequate sample size permits. However, predictive performance should not replace theoretically informed epidemiological analysis because accurate prediction and causal explanation are different objectives. External validation using another JSLC wave would be especially valuable for determining whether identified predictors generalise across time.

A fifth priority is direct Caribbean comparison. Harmonised analyses should compare Jamaican men with counterparts in Barbados, Trinidad and Tobago, Guyana, The Bahamas, Cuba, the Dominican Republic, and other Caribbean societies where comparable data are available. The historic SABE findings demonstrate substantial variation between Caribbean and Latin American cities, making country-specific evidence particularly important [8,9]. Such studies could determine whether Jamaica's weak adjusted wealth gradient is unusual or part of a wider Caribbean pattern. They could also examine how differences in health systems, social protection, family arrangements, migration, and economic inequality shape functional ageing. This comparative agenda would transform Caribbean evidence from isolated national studies into a coherent regional literature.

Research-Gap Reassessment

The study addresses the original gap but does not completely close it. Before this analysis, international evidence suggested that age and socioeconomic disadvantage frequently predict functional limitation, while Jamaica had limited contemporary male-specific multivariable evidence establishing whether those associations remained independent [4-13]. The current findings establish that age and single status independently predicted the binary functional-health outcome, whereas wealthy status, educational attainment, household headship, and geographical residence did not. This answers the immediate empirical question but creates a more sophisticated second-generation gap concerning why socioeconomic gradients evident elsewhere were attenuated in the Jamaican model. Possible explanations include age structure, life-course socioeconomic pathways, morbidity, healthcare access, social support, measurement differences, and incomplete model specification. Future research should move from documenting whether an inequality exists towards testing mechanisms that might create, suppress, or mediate it.

The comparative literature also changes how the Jamaican result should be interpreted. If every international study indicated an independent wealth gradient, Jamaica might appear exceptional, but the reviewed literature actually demonstrates substantial heterogeneity [5-14]. British, Southern European, Indian, and Ghanaian research frequently identifies socioeconomic inequalities, while Hong Kong evidence demonstrates that a clear gradient in functional impairment does not always emerge [10]. Regional SABE findings further show large geographical differences even when broadly comparable methodologies are used.] The Jamaican pattern is plausible within a global literature characterised by both common ageing effects and context-specific socioeconomic effects. This strengthens the argument for locally grounded research rather than weakening the relevance of international comparison [8.

Conclusion

This study examined the independent association of demographic, relational, educational, geographical, household, and socioeconomic characteristics with functional-health limitation among Jamaican males using the 2023 Jamaica Survey of Living Conditions. The binary logistic regression model was statistically significant, and its predictor set explained meaningful variation in functional health, although calibration was imperfect and classification of the minority outcome was limited. Age was the dominant independent predictor, with each additional year increasing the adjusted odds of functional limitation by 6.3%, while single status was associated with 55.1% higher adjusted odds relative to the omitted union-status reference category. Wealth, educational attainment, residence, and household headship did not independently predict functional limitation at the conventional $P<.05$ threshold. These findings demonstrate that functional health among Jamaican males cannot be adequately understood through a simple socioeconomic-gradient model. Instead, contemporary male functional health appears strongly age-structured and partly relational, while the mechanisms connecting socioeconomic position with functional capacity require deeper investigation.

The global comparison substantially strengthens this conclusion. Age emerges as a remarkably consistent determinant across Jamaica, Europe, Asia, Africa, Latin America, and the wider Caribbean, whereas socioeconomic associations vary considerably according to population, measure, model, and national context [4-14]. The Jamaican non-significant wealth result contrasts with evidence from Britain, Southern Europe, India, and Ghana but resembles literature demonstrating that socioeconomic gradients can attenuate or become unclear after related social and health characteristics are considered [5,6,10-13]. The appropriate conclusion is not that socioeconomic inequality is absent from Jamaican men's health, but that current wealth status did not independently predict the functional-health outcome within this particular multivariable specification. This distinction creates a clear agenda for longitudinal, life-course, chronic-disease, social-support, and cross-Caribbean research. As Jamaica continues to confront population ageing and chronic disease, preserving functional ability among men should become a core component of healthy-ageing policy across socioeconomic groups.

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