

Hypertension and Diabetes Prevalence in Older Persons in Jamaica, 2012

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ABSTRACT

The Jamaican population is experiencing both a demographic and epidemiological transition. This 2012 study of 2943 community dwelling persons over sixty years of age sought to determine the prevalence of hypertension and diabetes and how it has increased since the earlier 1989 study. Hypertension was the most prevalent non-communicable disease with 61.4% and had increased from 41.4% since 1989. It increased with age and was more common in females than males. Diabetes, at 26.3%, was the third most prevalent; it had increased by 157.1% since 1989. While the majority of affected persons were on medication, control of both diseases was less than adequate. Obesity was associated with both diseases. The paper discusses the implications for healthcare systems.

Keywords: Diabetes, hypertension, non-communicable diseases, population ageing

Prevalencia de la Hipertensión y la Diabetes en las Personas Mayores en Jamaica, 2012

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RESUMEN

La población jamaicana está experimentando una transición demográfica y epidemiológica. Este estudio del año 2012 realizado con 2943 personas de más de sesenta años de edad que viven en comunidades, se propuso determinar la prevalencia de la hipertensión y la diabetes, e investigar en qué medida ha aumentado desde el estudio anterior realizado en 1989. La hipertensión fue la enfermedad no transmisible más prevalente, aumentando hasta un 61.4%, en contraste con el 41.4% del año 1989. La prevalencia aumentó con la edad, y el aumento fue más común en las mujeres que en los hombres. La diabetes, en un 26.3%, fue la tercera más frecuente. Había aumentado a 157.1% desde 1989. Aunque la mayoría de las personas afectadas se encontraban bajo tratamiento medicamentoso, el control de ambas enfermedades estaba lejos de ser adecuado. La obesidad se hallaba asociada con ambas enfermedades. El trabajo analiza las implicaciones para los sistemas de salud.

Palabras claves: diabetes, hipertensión, enfermedades no transmisibles, envejecimiento de la población

West Indian Med J 2014; 63 (5): 416

INTRODUCTION

Non-communicable diseases (NCDs) such as diabetes, hypertension and cardiovascular disease (CVD) are a major cause of mortality and disability internationally. It is estimated that worldwide, NCDs are responsible for almost 60% of all deaths and 43% of all diseases; 79% of NCD-related deaths are documented in developing countries (1–4). Such a high disease burden has resulted in worldwide attention

being focussed on the need to reduce NCDs and their complications. This is especially necessary in developing countries, where, fortunately, researchers are providing the evidence base for action (1–4).

The West Indian Medical Journal in June 2011 highlighted the NCD issue from a regional perspective with the publication of a special issue (5). The Caribbean was influential in getting the United Nations to host a special session on reducing NCDs in 2011 (6, 7). From this meeting, a global NCD action plan to reduce NCD mortality by 25% by the year 2025 was developed; this “25 by 25” goal has subsequently been embraced by both developed and developing countries (8). Non-communicable diseases are a major cause of mortality in Latin America and the Caribbean

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(LAC), accounting for 62% (9–12). Wilks *et al* have described the contribution of increasing obesity and other lifestyle factors to the increasing levels of NCDs (13).

To achieve “25 by 25”, developing countries, including those in Latin America and the Caribbean, must focus on the major contributors to NCD burden, such as diabetes and hypertension, which coincidentally both act as risk factors for other high burden NCDs: cardiovascular disease and chronic renal disease.

A review of hypertension in developing countries found that the prevalence of this disease, inadequate blood pressure control, and cardiovascular disease were all on the rise (10, 14, 15). In fact, three-quarters of persons diagnosed with hypertension are reported to live in developing countries (10), with the condition being a major cause of premature and avoidable disability. The situation is similar for diabetes, with four in five persons with diabetes living in developing countries (16–18); this condition may result in significant morbidity issues such as renal failure, neuropathy and heart disease, and premature mortality (16, 19).

In addition to poorer health outcomes, the management of NCDs is also associated with increased costs both directly from medical care (15) and indirectly due to lost productivity and tax revenue (20–22). Diabetes, for example, cost the LAC region an estimated US \$65 billion in 2000, with 83% due to the indirect costs (22).

Liu *et al* notes that as life expectancy increases and the population ages, NCDs are also expected to increase (18). Hu (17) also links the increase in diabetes to globalization, economic development because of nutrition transitions, and adoption of a sedentary lifestyle. The association between NCD prevalence and population ageing has been reported to be due to longer periods of exposure to risk factors (12, 23–26). This theory is supported by research in Jamaica which shows that the approximately 68% NCD mortality is disproportionately spread among older persons (14, 16, 20). Population ageing along with the NCD burden may seem to be an ominous threat, for which there are few avenues to respond. Studies have shown, however, that ageing and NCDs are not inextricably associated with increased costs (23, 22). It is the level of severity of the chronic disease and its associated complications which are actually costly (9, 27). This highlights the importance of promoting prevention at all ages (including after age 60 years) to reduce the impact and cost of NCDs (28–35). Given that every 10% increase in NCDs is estimated to lower annual economic growth by 0.5% (20), the need for NCD prevention, especially in the rapidly growing older population, is substantial.

Current efforts to reduce the NCD burden in Jamaica are disproportionately focussed on younger populations. Given the rapid ageing of the population, the fact that a person at 60 years is, on average, projected to live another 20 years, and the fact that the impact of NCDs are avoidable, it is critical to have prevention programmes to promote and facilitate good health in older persons (23).

This paper presents data on two major NCDs, diabetes and hypertension, in older persons in Jamaica over the past 25 years. Possible implications of these data were made against the background of an ageing population.

SUBJECTS AND METHOD

A cross-sectional, nationally representative survey of 2943 elderly persons was done in 2012 in four parishes in Jamaica. These parishes are representative of the national population (based on age, gender and geographic distribution). A mixed method approach was used, including quantitative, qualitative and clinical methods.

For recruitment, a two-stage cluster sampling methodology was used, with the first and second stage cluster units being enumeration districts and households, respectively. The sampling strategy was designed in accordance with the cluster selection principles of the Statistical Institute of Jamaica (STATIN), the “World Health Organization (WHO) common cluster survey sampling principles”, and sample size determined with the help of the ‘C-Survey’ software.

Sample size was calculated based on the following parameters:

Attribute proportion	0.69
Number of clusters	35
Design effect	2
One-half length of confidence interval	0.0250
Confidence level	95%

Based on the parameters used, the minimum required sample size was determined to be 2660, with each of the 35 clusters having 76 participants. The minimum requirements were exceeded during data collection, with approximately 85 persons included per cluster and almost 3000 in the entire survey.

Data collection: survey instrument

The 1989 structured, pre-coded, paper-based questionnaire (Eldemire-Shearer D. The epidemiology of ageing in Jamaica [unpublished doctoral thesis]. Kingston: University of the West Indies; 1993) was modified to produce a 2012 questionnaire which was used in this study; basic questions were retained to allow for comparison. Nine NCDs were included in the questionnaire due to: i) being highly prevalent amongst older persons, ii) having high impact on quality of life and/or iii) being of great economic significance. The nine conditions/events were hypertension, diabetes, coronary heart disease, stroke, heart failure, asthma, arthritis, seizures and cancer. Co-morbidity was defined in this study as having more than one of the nine assessed NCDs. Questions about utilization of health services were also included.

Data were collected by trained interviewers, who visited all houses within a cluster until the relevant number of qualified participants was identified. The interviewers administered the instrument on a face-to-face basis between May 2012 and December 2012. In the event that an eligible participant was identified but was incapable of responding to

questions, a knowledgeable household member was interviewed instead. The response rate was approximately 95%.

Clinical data collection

In addition to the questionnaire, clinical assessments were undertaken on a random sub-sample of approximately 400 consenting participants. Clinical measures (*ie* blood pressure readings, height and weight measurements) were taken by a team of four medical doctors.

Data management and analysis

For the purpose of this paper, two conditions of high burden and of great economic impact were analysed, *ie* hypertension and diabetes. Disease prevalence and clinical measures associated with these conditions were assessed. ‘Chi-squared test for association’ was used to determine significant differences between each of these conditions, and the covariates gender, age and area of residence (rural/urban); an alpha of 0.05 was used as the cut-off for significance. Age was assessed as a categorical variable throughout the study, with the ‘young-old’ being between 60 and 69 years, the ‘middle-old’ being between 70 and 79 years, and the ‘old-old’ being 80 years and over. Logistic regression was used to determine key age- and gender-adjusted odds ratios for both conditions. Adjusted odds ratios and 95% confidence intervals were reported for the adjusted models.

A one-sample binomial test was used to determine statistically significant differences between the 2012 disease prevalence and the prevalence of disease identified in the aforementioned 1989 study; the ‘null value’/comparison group was the 1989 study. Data were analysed using the Stata version 11 software.

RESULTS

As shown in Table 1, the three most prevalent self-reported doctor-diagnosed NCDs were: hypertension (61.4%), arthritis (35.0%) and diabetes (26.3). The majority of the sample (76.4%) reported having at least one of the assessed NCDs. A higher proportion of females reported having an NCD as compared to males (86.7% *versus* 65.2%), and females had a 3.5 higher odds of reporting an NCD than men (OR 3.5; 95%

CI 2.9, 4.2). Non-communicable diseases were least prevalent among the young-old. In fact, compared to this group, the middle-old (OR 2.0; 95% CI 1.7, 2.5) were most likely to report an NCD, followed by the old-old [OR 1.7; 95% CI 1.3, 2.1] (Table 2).

Table 2: Adjusted odds ratios for prevalence of non-communicable diseases

	Age/Gender adjusted odds ratio (95% CI)		
	HTN	Arthritis	Diabetes
Age group (years)			
60–69	1.0	1.0	1.0
70–79	1.7 (1.5, 2.1)*	1.6 (1.4, 2.0)*	1.3 (1.1, 1.6)*
≥ 80	1.4 (1.1, 1.7)*	1.8 (1.5, 2.2)*	1.1 (0.9, 1.3)
Gender			
Male	1.0	1.0	1.0
Female	2.7 (2.3, 3.2)*	3.6 (3.0, 4.2)*	1.9 (1.6, 2.3)*

HTN – hypertension; *significant at $p < 0.01$

Hypertension

Hypertension was the most prevalent NCD (61.4%) reported in the population; this represents a significant increase of 41.4% over the 1989 prevalence [$p < 0.001$] (Table 3).

Table 3: Change in prevalence of non-communicable diseases over time

Condition	2012 (%)	1989 (%)	% Change
High blood pressure	61.4	43.4	41.36*
Stroke	8.2	5.3	54.53*
Arthritis	35.0	39.8	(-12.11)*
Diabetes	26.2	10.2	157.06*
Cancer	5.0	2.3	118.27*
Impairment			
Glaucoma	11.6	4.9	136.9*
Cataracts	21.8	16.1	35.3*
Hearing	8.7	12.8	(-5.8)*

* $p < 0.001$

Hypertension was more frequently reported by females than males (72.5% *versus* 49.2%). Even after adjusting for age, the prevalence of hypertension remained significantly higher among females [OR 2.7; 95% C.I 2.3, 3.2] (Table 2).

Table 1: Prevalence of non-communicable diseases by age and gender

Condition	Age group (years) % (n)			Total	Gender % (n)	
	60–69	70–79	≥ 80		Male	Female
Hypertension	54.8 (704)	68.4 (673)	64.0 (410)	61.4 (1787)*	49.2 (692)	72.5 (1108)
Arthritis	27.9 (358)	39.4 (386)	42.7 (276)	35.0 (1020)*	20.5 (287)	48.4 (735)
Diabetes	23.8 (305)	29.7 (292)	26.3 (170)	26.3 (767)*	19.6 (275)	32.3 (492)
Stroke	6.1 (78)	10.4 (102)	9.2 (59)	8.2 (239)*	7.1 (99)	9.2 (140)
Asthma	7.4 (95)	5.4 (53)	7.4 (47)	6.7 (195)*	6.0 (84)	7.4 (111)
CHD	4.5 (57)	5.9 (58)	6.8 (44)	5.5 (159)*	3.5 (49)	7.3 (110)
Cancer	3.5 (45)	5.9 (58)	6.6 (42)	5.0 (146)*	7.2 (101)	3.0 (44)
Heart failure	1.6 (20)	1.3 (13)	2.3 (15)	1.7 (48)*	1.1 (16)	2.1 (32)
Seizures	1.5 (19)	1.4 (14)	1.6 (10)	1.5 (43)*	1.6 (23)	1.3 (20)

CHD – coronary heart disease; *significant difference at $p < 0.05$

There was also a significant relationship between the prevalence of hypertension and age, with this remaining after adjusting for gender (Table 1); the middle-old (OR 1.7; 95% CI 1.5, 2.1) and the old-old (OR 1.4; 95% CI 1.1, 1.7) were more likely to report this condition than the young-old. Though the 60–69-year age group had a fairly high disease prevalence (54.8%), they represented the age group with the lowest burden. Prevalence in fact rose to 68.4% among the 70–79-year age group and fell to 64.0% in the 80 years and over age group; this points to marked development of new cases in the 70–79-year age group.

The prevalence of hypertension did not vary by area of residence ($p > 0.05$).

In terms of cognitive ability, 59.6% of those with severe cognitive impairment reported having hypertension, while 63.6% of those with mild impairment and 59.7% with no impairment reported the same ($p > 0.05$).

Diabetes mellitus

Diabetes was reported by more than one in four (26.3%) older persons; this shows a significant increase of 157.1% over the 1989 prevalence [10.2%; $p < 0.001$] (Table 3). Diabetes was more frequently reported by females than males [32.3% versus 19.6%; $p < 0.001$] (Table 1). Even after adjusting for age, females remained significantly more likely (OR 1.9; 95% CI 1.6, 2.3) to report having diabetes compared to males (Table 2). The prevalence of diabetes did not vary by area of residence ($p > 0.05$).

As was found with hypertension, the middle-old were more likely (OR 1.3; 95% CI 1.1, 1.6) to report having diabetes compared to the reference group (young-old). The old-old, however, did not show a significant difference from the reference group (OR 1.1; 95% CI 0.9, 1.3).

In terms of cognitive ability, those with severe cognitive impairment were more likely to report having diabetes than those without impairment; 33.0% of those with severe impairment reported having diabetes, while 26.8% of those with mild impairment and 23.8% with no impairment reported the same ($p < 0.01$).

Co-morbidity

Almost half (47.5%) of the study population reported having more than one NCD [*ie* co-morbidity] (Table 4). The prevalence of co-morbidity was higher among females compared to males (60% versus 32%; $p < 0.001$); in fact, females were 3.2 times more likely than males to report a co-morbidity [OR 3.2; 95% CI 2.7, 3.7] (Table 4). As compared to the

Table 4: Number of non-communicable diseases among older persons, by gender

Number of chronic diseases	Gender % (n)		Total % (n)
	Males	Females	
Zero	34.8 (490)	13.3 (203)	23.6 (693)
One	32.4 (456)	25.8 (394)	28.9 (850)
Two	19.9 (280)	34.2 (523)	27.3 (803)
Three	9.3 (130)	19.9 (304)	14.8 (434)

young-old, the middle-old (OR 1.8; 95% CI 1.6, 2.2) were most likely to have a co-morbidity, followed by the old-old (OR 1.2; 95% CI 1.4, 2.1).

Hypertension and diabetes mellitus were reported by 21.9% of the study population; 28.2% of females and 15.1% of males reported having both conditions.

Both hypertension and diabetes were significantly associated with the presence of cataracts and glaucoma ($p < 0.001$). Persons reporting glaucoma (69.2%) and cataracts (71.0%) reported particularly high levels of hypertension. In terms of diabetes, those with glaucoma and cataracts reported a prevalence of 36.9% and 32.3%, respectively. Twenty-nine per cent of persons with severe mental impairment had both diabetes and hypertension.

Clinical measurements

Hypertension

Clinical measurements from the sub-sample indicated that control of hypertension was poor, with 68% having elevated blood pressure, of which 34% had stage two hypertension based on the Seventh Report of the Joint National Committee

Table 5: Blood pressure distribution by gender and self-reported doctor-diagnosed hypertension by level of blood pressure

Blood pressure category by JNC VII	Gender % (n)		Doctor-diagnosed HTN % (n)	
	Male	Female	No	Yes
Normal	3.1 (5)	1.4 (3)	2.8 (4)	1.8 (4)
Pre-HTN	31.1 (50)	29.0 (61)	35.9 (51)	26.0 (59)
Stage 1	31.7 (51)	35.7 (76)	33.1 (47)	34.8 (79)
Stage 2	34.2 (55)	33.8 (71)	28.2 (40)	37.4 (85)
All categories			38.5 (142)	61.5 (227)

JNC VII – Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure; HTN – hypertension; $\chi^2 (3) = 1.73$; $p = 0.625$

on Prevention, Detection, Evaluation and Treatment of High Blood Pressure [JNC VII] (Table 5). More than sixty per cent (61.5%) of those with elevated blood pressure reading were aware that they had hypertension, while 38.5% of older persons with elevated blood pressure were unaware of their status. A higher number of uncontrolled males than females were unaware of having the disease. Of those with elevated blood pressure readings, 41.9% also had elevated sugar levels.

Among persons with self-reported hypertension, 27.4% were overweight (body mass index (BMI) 25–29.9) and 28.7% were obese (BMI 30 and over); this is not significantly different from those who did not self-report as being hypertensive ($p > 0.05$). The percentage of those who were assessed as overweight did not vary much compared to the 1989 prevalence of 24.2%. Obesity levels, on the other hand, were almost double those of the 1989 survey (16.2%).

Diabetes mellitus

The clinical findings for diabetes differed from that of hypertension, as most persons (61.7%) had normal fasting glucose levels, with 38.3% having elevated levels, indicating poor control (Table 6). A greater proportion of females than males

Table 6: Age-specific prevalence of glycated haemoglobin (HbA_{1C}) levels

HbA _{1C} level	Age group (years) % (n)			Total % (n)
	60–69	70–79	≥ 80	
Normal (≤ 6.4%)	58.4 (97)	62.7 (74)	67.1 (51)	61.7 (222)
High (> 6.4%)	41.6 (69)	37.3 (44)	32.9 (25)	38.3 (138)
All categories	100 (166)	100 (118)	100 (76)	100 (360)

$\chi^2 (3) = 1.7; p = 0.419$

(43% vs 31.8%) had poor control. Interestingly, 30.7% of persons with elevated fasting glucose levels had not been previously diagnosed.

As with hypertension, a large proportion of persons who self-reported as being diabetic were assessed as being overweight or obese. Among self-reported diabetics, 24.2% were assessed as being overweight, 29.3% as being obese and 43.4% as having a normal BMI. The percentage of persons who were overweight is actually less than the 29.8% identified in 1989. But the percentage of those obese is higher than the 19.5% identified in 1989. Body mass index values did not differ significantly between persons with and without diabetes ($p > 0.05$).

Other findings

Almost half of the sub-sample had elevated cholesterol, a key risk factor for vascular disease (Table 7).

Overall, levels of obesity were high; 26.2% of the sample was overweight and 25.4% obese. This has increased

Table 7: Abnormal blood lipids and constituent factors by gender

Variable (mmol/L)	Gender % (n)		Total
	Male	Female	
Cholesterol (> 5.2)	40.0 (64)	54.8 (114)	48.4 (178)
Triglycerides (> 2.0)	8.8 (14)	16.8 (35)	13.3 (49)
HDL (< 0.9)	6.9 (11)	2.9 (6)	4.6 (17)
LDL (> 3.6)	42.8 (68)	57.3 (118)	51.0 (186)

HDL – high-density lipoprotein; LDL – low-density lipoprotein

since 1989 when 21.6% was overweight and 12.2% obese. Obesity was lowest in the old-old (Table 8).

Table 8: Distribution of body mass index (BMI) within age groups

BMI category	Age group (years) % (n)			
	60–69	70–79	≥ 80	All ages
Underweight	6.5 (11)	5.1 (6)	7.9 (6)	6.4 (23)
Normal weight	39.6 (67)	40.2 (47)	50.0 (38)	42.0 (152)
Overweight	27.8 (47)	23.1 (27)	27.6 (21)	26.2 (95)
Obese	26.0 (44)	31.6 (37)	14.5 (11)	25.4 (92)
Total	100 (169)	100 (117)	100 (76)	100 (362)

$\chi^2 (6) = 8.08; p > 0.05$

Table 9 presents the gender distribution of BMI found in the sample, and shows that significant BMI differences exist between genders ($p < 0.001$). The most distinct

Table 9: Gender-specific distribution of body mass index (BMI)

BMI category	Gender % (n)	
	Male	Female
Underweight	9.4 (15)	3.9 (6)
Normal weight	50.9 (81)	34.8 (72)
Overweight	27.7 (44)	25.1 (52)
Obese	11.9 (19)	36.2 (75)
Total	100 (159)	100 (207)

$\chi^2 (6) = 30.92; p < 0.001$

differences were seen when comparing those with a 'normal weight' and those who were 'obese' by gender. A larger proportion of males had a normal weight compared to females (50.9% versus 34.8%) and a larger proportion of females were obese compared to males (36.2% versus 11.9%). Only a very modest gender difference was identified in relation to being overweight (27.7% of males versus 25.1% of females). Body mass index did not vary significantly by age ($p > 0.05$).

Utilization of primary care

Almost all of the study participants reported having a routine primary care provider (92.9%). Given the clinical and

prevalence findings in this study, the quality of care being received in these settings and/or patient compliance with instructions will need further evaluation. Access and utilization of a routine primary care provider increased significantly over 1989 figures (92.9% versus 77.0%; $p < 0.0000$). Most older persons (83.9%) reported having seen a health professional in the 12 months preceding the study, with an average of three visits.

Medication

The majority reported having had medicines prescribed and the percentage is consistent with the reported levels of disease (Table 10). The majority reported that they were

proved to be the NCD with the greatest increase in prevalence, while hypertension showed a more modest but still significant increase in prevalence.

In the 2012 survey, a significant relationship between age and hypertension was identified, even after adjusting for gender ($p < 0.05$). The age group reporting the highest burden of hypertension was the middle-old (70–79 years), which had an increase of 20.5% over the young-old (60–69 years). There are therefore new cases of disease in the population over 70 years which current programmes do not target. While similar to other studies (32, 34), the level of persons unaware of their high blood pressure is of concern and specific efforts are needed to improve control. Adequate

Table 10: Distribution of self-reported prescribed medication by gender and age

Variable	Gender % (n)		Age groups (years) % (n)		
	Male	Female	60–69	70–79	≥ 80
High blood pressure	43.0 (599)	67.5 (1030)***	48.0 (615)	62.6 (615)***	61.1 (395)
Diabetes	18.3 (256)	31.3 (475)***	23.0 (294)	27.8 (272)*	25.6 (165)
Heart condition	5.5 (76)	11.0 (167)***	6.7 (85)	9.3 (91)	10.4 (67)**
Arthritis	9.4 (131)	27.0 (409)***	12.8 (163)	22.8 (223)	24.0 (154)***
Asthma	3.1 (43)	4.1 (62)	3.5 (45)	3.3 (32)	4.3 (28)
High cholesterol	9.0 (126)	22.1 (335)***	13.5 (173)	20.3 (199)***	13.2 (85)
Glaucoma	7.4 (103)	9.3 (141)	5.2 (66)	9.2 (90)	13.5 (87)***
Sleep	1.8 (25)	4.7 (71)***	3.2 (41)	3.4 (33)	3.4 (22)
Constipation	1.4 (19)	2.8 (43)**	1.3 (17)	2.2 (21)	3.6 (23)**
Nerves	2.0 (28)	5.7 (86)***	3.9 (50)	3.9 (38)	4.0 (26)

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

taking the medications; 76.6% reported that medications were always available to them, while only 37.2% reported that they were always affordable (Figure).

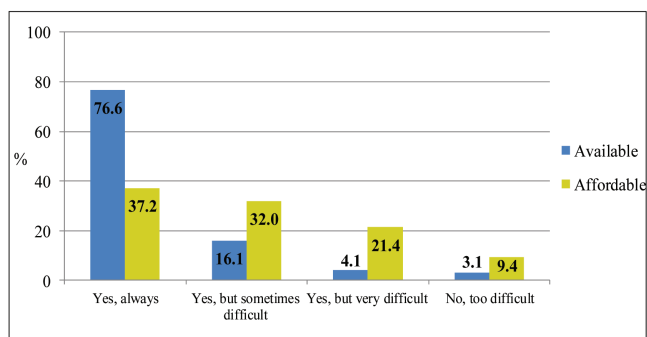


Figure: Distribution of older persons' experience re: availability and affordability of medications.

DISCUSSION

The prevalence of NCDs in the older Jamaican population (*ie* those 60 years and over) has significantly increased since the first survey of older persons in 1989. In 1989, NCD prevalence was reported by approximately half of the study population, while in 2012, it increased to over three-quarters of older persons, and close to 90% of females. Diabetes

hypertension control is well established as an effective prevention tool for vascular conditions such as stroke. One study found as much as a 38% reduction in stroke due to the systematic treatment and management of hypertension (31). Given that stroke is often a consequence of hypertension in the Jamaican population, it should be seen as an important reason for interventions.

The findings that diseases, such as hypertension and diabetes mellitus, continue developing after age 60 years suggests that somewhat different approaches from those currently being used may be needed for the prevention of these conditions. The findings suggest that there is a need to specifically target older persons in efforts to reduce hypertension and diabetes. Health promotion messages that consider print size, colour, visual aids and verbiage should be included in current campaigns.

While there is evidence of the effectiveness of prevention even in older ages, there is also evidence that older patients were less likely to receive same (35).

The “INTRA” (The Integrated Response of Countries to Rapid Ageing) study, a WHO study on countries' response to rapid ageing from 2002–2006, in Jamaica found that improvement in prevention efforts must begin with the training of health professionals as there is inadequate promotion of healthy lifestyles for older persons. This was determined

to be due to inadequate knowledge of ageing on the part of health providers and disbelief that older persons cared or would change behaviour (35, 36).

Healthcare utilization patterns and its associated costs are also important considerations for the control and management of NCDs such as hypertension and diabetes. Utilization of a primary care source did not prove to be an issue in the 2012 study, as 83% of older persons reported accessing care regularly. The study found, however, that in spite of regular access to care, NCDs were poorly controlled in this population. Effective control was considered lacking, as the majority of hypertensives and a third of diabetics were found to be uncontrolled, potentially leading to increased health, financial and human costs associated with NCD complications. Barriers other than access to a regular source of care must therefore still exist. One such barrier may be access to medications. This is plausible, as in spite of the removal of user fees from the government health system, reports of difficulties accessing medication due to perceived high costs are still prevalent among older persons. In fact, only 37.2% of older persons reported always being able to afford their prescribed drugs. Affordable and accessible medications are a fundamental component of treatment and control of NCDs; improved access is needed. The approach to chronic disease management needs review as most older persons have at least one co-morbidity and/or a sensory deficit (especially hearing and vision), making an integrated management programme which simultaneously addresses several diseases and conditions an appropriate response. This approach is the basis for the 'Age-Friendly Approach' which includes geriatric screening for the geriatric giant, NCDs and their risk factors (37), and which was piloted in Jamaica by WHO. Currently, several health providers manage specific complaints of the older patient, with little coordination and information sharing occurring between providers and levels of care, thus increasing risks for missed diagnosis and poly-pharmacy.

Finally, the findings of the 2012 study point to the need to consider and develop community-based, long-term care programmes for older persons who are at risk of complications which reduce the capacity for independent living. The reduction in family size and migration in Jamaica have added to the need for such programmes, as the pool of family caregivers continues to be reduced. The increase in older persons in government-run facilities (infirmaries) over the period 2002 to 2012 (38) is indicative of the potential problems associated with this phenomenon. Early community interventions have the potential to reduce the need for institutional care, which can be quite costly. Interventions should include age-specific activities such as falls prevention (39) in addition to the usual elements of home care, physiotherapy and provision of aids (wheelchairs, walkers, incontinent pads). Such interventions are expected to be cheaper alternatives to long-term residential facilities such as infirmaries.

There is another 15 years before the maximum effect of the ageing of the population is felt (23). By 2030, one in four persons in Jamaica will be over 60 years of age, pointing to the urgent need to plan and implement appropriate medium and long-term health service programmes to reduce NCDs and accompanying disability in this population, with special emphasis on those over 80 years. Immediate short-term activities that target the individual are also necessary if NCDs such as diabetes and hypertension are to be prevented and/or be properly controlled.

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