

Health and Gender: What is the Situation with Older Persons and How Do We Address Healthcare Needs?

K Mitchell-Fearon¹, D Willie-Tyndale², J McKoy-Davis², NK Waldron², D Holder Nevins¹, D Eldemire-Shearer²

ABSTRACT

Objective: To examine the influence of gender on the health-status of older Jamaicans and to identify key health-related determinants.

Methods: Nationally representative data were used to quantify gender differences for 10 chronic diseases and key determinants of health (ie lifestyle, social, financial, biological, and healthcare utilization).

Results: Women generally had higher age adjusted odds of chronic diseases: arthritis (aOR = 3.46), hypertension (aOR = 2.70), depression (aOR = 2.23) and heart disease (aOR = 2.01) showed the greatest gender gradients ($p < 0.01$). Cancer was the only condition for which women had reduced odds (aOR = 0.38) while asthma showed no difference ($p > 0.05$). In terms of determinants, women were more likely to be obese (OR = 4.4), inactive (OR = 1.51), have high cholesterol (OR = 1.8) and to be more financially and socially dependent than men.

Conclusion: The excess disease burden experienced by women places unnecessary strain on families, the health sector and the economy. Measures to reduce modifiable risk factors in older cohorts is critical, especially for older women and warrants gender specific approaches in health promotion and disease prevention.

Keywords: Ageing, gender, health, Jamaica

WIMJ Open 2017; 4 (1): 1

INTRODUCTION

Population ageing, while viewed as an achievement, is accompanied by health and social challenges associated with increasing age that requires specific interventions (1–3), especially to address the increase in chronic diseases (4–6). New concepts such as active ageing and successful ageing have emerged in the discussion on health of older persons. Active ageing, which is “the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age” (7), recognizes gender as one of the two critical cross-cutting determinants of health (8, 9). Similarly, successful ageing, which focusses on the maintenance and promotion of high levels of physical (ie activities of daily living) and social functioning (ie volunteerism and social involvement), also views gender as an important tenet (10). Gender and its impact on both health outcomes and determinants of health, must therefore be considered when developing and implementing health services for ageing populations.

Health is recognized as being affected by social, economic and biological determinants, which many times, are disproportionately distributed between genders (2). Health services utilization (which may be a determinant or outcome of health) is also gendered as men access far less healthcare than women

both in Jamaica (11) and elsewhere, and very often suffer premature death due to late contact with the health services (3). According to the World Health Organization (WHO), information gaps on gender-related health prevent the needed evidence-based response to challenges in ageing (2, 12).

The aim of the study was to identify any existing gender differences in the health-status of older adults (60 years and older) living in Jamaica, and to determine if they hold for the key determinants of health. The findings are considered against the background of studies on the impact of free health-care (13, 14) on access and utilization. Policy implications will also be briefly discussed. The findings from this study may help to design more sensitive ageing programmes, by including gender considerations, which are more responsive to the specific needs of the rapidly growing older population.

SUBJECTS AND METHODS

Study population and sampling strategy

A cross-sectional survey of 2943 people, 60 years and over was undertaken in Jamaica in 2012. A two-stage cluster sampling design was utilized, with the first- and second-stage cluster units being enumeration districts and households, respectively. The study was nationally representative, with

From:¹Department of Community Health and Psychiatry and ²Mona Ageing and Wellness Centre, The University of the West Indies, Mona, Kingston, Jamaica.

Correspondence: Mrs D Willie-Tyndale, Mona Ageing and Wellness Centre, The University of the West Indies, Mona, Kingston, Jamaica. Email: douladel.willie02@uwimona.edu.jm

Table 1: Population and sample distribution by parish

Parish	Population [n, (%)]	No of EDs selected by Parish [n, (%)]	ED Characteristics (= ED % x 0.47)	ED samples as % of National Pop.	Parish Population as % of National Pop. (2697983)
Kingston	89 057 (7)	2 (6)	urban, inner-city	2.7	3.3
St Andrew	573 369 (45)	16 (46)	largely urban	21.5	21.3
St Thomas	93 902 (7)	3 (7)	rural	3.5	3.5
St Catherine	516 218 (41)	14 (40)	mix of rural, urban, semi-urban	18.8	19.1
Total for above	1 272 546 (100)	35 (100)	N/A	47.0	47.2

ED: enumeration district; pop: population; N/A: not applicable

respondents coming from four of the fourteen parishes in the country. These four parishes represent 47% of the nation's population and have a demographic profile that is not significantly different from the 2011 Jamaican Census in terms of gender and urban/rural spread; this allows for enhanced generalizability of the data to the wider population. Table 1 shows sample distribution by parish and enumeration districts. Greater detail has been previously described (15).

Clinical subsampling

A subsample of 373 participants from the larger survey was randomly selected to participate in further assessment of key clinical parameters. Random selection was undertaken using a table of random numbers. Blood samples were taken from each participant; blood was assessed for haemoglobin, glucose, glycosylated haemoglobin and cholesterol levels. Height, weight and arterial blood pressure were also measured.

Survey instrument and data collection

The data collection instrument was a structured questionnaire consisting of 200 items addressing social relationships, socio-economic factors, lifestyle behaviour and health-status. The questionnaire also included: the Mini Mental State Exam [MMSE] (16), Zung's Self-Rating Depression Scale (17) and the Katz Index of Independence in Activities of Daily living (18). The response rate of this survey was approximately 95%.

Variables

Variables analysed included: i) demographics, ii) health-status, iii) lifestyle risk factors, iv) biological risk factors, v) health services utilization vi) financial risk factors, and vii) social risk factors.

Data analyses

Gender difference as it relates to health-status and other variables were reported using age-adjusted odds ratios (aORs) with 95% confidence intervals. Men were used as the reference group for calculating ORs. For each variable, statistically significant differences by gender were assessed by calculating the Chi-square test for independence; an alpha of less than 0.05 was used as the cut-off for significance.

Ethical procedures

The University Hospital of the West Indies/The University of the West Indies/Faculty of Medical Sciences/Ethics Committee (UHWI/UWI/FMS/Ethics Committee) approved this study. Written informed consent was obtained from all participants. No harm was inflicted on any participant and those with abnormal test results were immediately referred for care.

Strengths and limitations

The major strength of this paper is the use of data from a large, nationally representative survey. Limitations are also acknowledged. Self-reported, doctor-diagnosed disease, could have resulted in lowered precision of disease prevalence, especially in men, as they have worse health-seeking behaviour than women and therefore, fewer opportunities for diagnosis. The use of self-reported doctor diagnoses is, however, not uncommon in health literature and its reliability has been documented (19, 20).

RESULTS

Demographics

Table 2 shows the demographic characteristics of the sample, by gender. The gender distribution of the sample was 48% (n = 1412) male and 52% (n = 1531) female. Women were on average older than men (by 1.5 years), with a progressively larger proportion of women being in the older age groups; 24.4% of women were in the oldest age group compared to only 19.3% of men. Women reported higher levels of education in this cohort; only 4.6% of women report having no formal education compared to 6.9% of men. Less women reported being in a union, however, a larger proportion reported living with another person and living in urban areas ($p < 0.001$).

Health-status

Disease burden was both high in this population and disproportionately distributed between the genders. Men reported a lower disease burden. Overall, chronic disease rates were high: hypertension 61.7%, diabetes 26.2% and arthritis 35% with more females than males reporting disease. The gender difference was steepest for arthritis (aOR 3.46), hypertension (aOR 2.70) and coronary artery disease (aOR 2.01) which were all more than twice as likely to occur in women as in men

($p < 0.01$, Table 3). Cancer was the only condition with a significantly higher prevalence among men ($p < 0.001$). Asthma and glaucoma were the only conditions with no gender differences. In terms of chronic conditions affecting vision, cataract prevalence was 1.63 times higher for women [$p < 0.001$] (Table 3). While overall depression estimates were low (16%), women were 2.23 times more likely to be assessed as having moderate/severe depression (aOR = 2.23; 95% CI: 1.77, 2.81).

Table 2: Demographic characteristics by gender

Variable	Male (% , n)	Female (% , n)	Total (% , n)
Age (n = 2919)***			
60–69 years	48.0 (673)	40.7 (618)	44.2 (1291)
70–79 years	32.6 (457)	34.9 (529)	33.8 (986)
> = 80 years	19.3 (271)	24.4 (371)	22.0 (642)
Education (n = 2920)**			
None	6.9 (97)	4.6 (69)	5.7 (166)
Primary	70.4 (988)	73.5 (1114)	72.0 (2,102)
Secondary	12.9 (181)	11.9 (181)	12.4 (362)
University/technical	9.8 (138)	10.0 (152)	9.9 (290)
Union (n = 2928)***			
Single	27.3 (383)	38.1 (581)	32.9 (964)
Married/common law	49.2 (690)	26.1 (398)	37.2 (1088)
Divorced/separated/ widowed	23.6 (331)	35.8 (545)	29.9 (876)
Residence (n = 2912)***			
Rural	30.6 (427)	21.2 (321)	25.7 (748)
Urban	69.4 (969)	78.8 (1195)	74.3 (2164)
Live alone (n = 2892)***			
	20.9 (292)	14.0 (209)	17.3 (501)

***significant at $p < 0.001$; **significant at $p < 0.01$

Table 3: Gender differentials in health status (adjusted for age)

Variable	Male (% , n)	Female (% , n)	aOR (95%CI) [^]
Non communicable diseases			
Hypertension***	49.2 (692)	72.5 (1108)	2.70 (2.31, 3.14)
Diabetes ***	19.6 (275)	32.3 (492)	1.90 (1.60, 2.25)
Arthritis***	20.5 (287)	48.4 (735)	3.46 (2.94, 4.08)
Cancer***	7.2 (101)	3.0 (45)	0.38 (0.27, 0.54)
Asthma	6.0 (84)	7.4 (111)	1.28 (0.96, 1.71)
Stroke*	7.1 (99)	9.2 (140)	1.32 (1.01, 1.72)
Coronary heart disease***	3.5 (49)	7.3 (110)	2.01 (1.43, 2.82)
Cataracts***	17.5 (245)	25.7 (389)	1.63 (1.36, 1.96)
Glaucoma	10.7 (150)	12.5 (188)	1.19 (.94, 1.49)
Depression			
None-to-mild	89.6 (1080)	78.5 (974)	1
Moderate-to-severe	10.4 (125)	21.5 (267)	2.23 (1.77, 2.81)

aOR:Age adjusted odds ratio for likelihood of condition in women compared to men. ***significant at $p < 0.001$; **significant at $p < 0.01$; *significant at $p < 0.05$

Lifestyle, social and economic risk factors

Lifestyle risk factors for poor health, were generally high in this population. Table 4 illustrates that women were more likely to be assessed as obese (OR = 4.44; 95% CI: 2.36, 8.34)

and to report being physically inactive (OR = 1.51; 95% CI 1.29, 1.76). However, women had significantly lower likelihood of alcohol use in the last 12 months (OR = 0.11) and of 'ever smoking' (OR = 0.15). Financially, men were more independent than women. A larger proportion of men reported owning their home (75% versus 68%) and planning for retirement than women (62% versus 52%). Almost 70% of men reported being their own primary source of financial support, compared to only 40% of women, who considered the same for themselves. Compared to men, women were 3.75 times more likely to rely on their children for financial support than to be their own financial provider and were 2.55 times more likely to depend financially on a spouse. Health insurance coverage was low (16%) but no gender gradient was found with health insurance ownership.

Healthcare utilization

Overall, healthcare utilization was high at 83.9%. Females were 2.39 times (95% CI: 1.93, 2.96) more likely to have visited a healthcare professional in the last 12 months than males. Females were also more likely than males to have required healthcare in the three months preceding the survey (OR = 1.44; 95% CI: 1.24, 1.67). For those persons who were hospitalized within the three years preceding the survey (22.8%), females were significantly less likely than males to have utilized public facilities.

Social risk factors

In terms of social relationships, women reported better emotional support from their children (OR = 2.98), were more likely to help with grandchildren (OR = 1.27) and less likely to receive emotional support from a spouse (OR = 0.57). Men were more likely to participate in social activities and to have friends (both younger and older) outside the home. Overall, the majority of respondents reported being satisfied with their health (70%), with women being less satisfied than men (Table 4). Satisfaction with life in general was also high (74%) in the population, and no significant gender differences were identified ($p > 0.05$).

Table 4: Lifestyle and socio-economic characteristics by gender

Variable	Male (% , n)	Female (% , n)	aOR (95%CI)
Lifestyle factors			
Ever smoked (n = 2930)***	71.3 (1002)	27.3 (416)	0.15 (0.13, 0.18)
Alcohol use (n = 2873)***	37.6 (523)	6.2 (92)	0.11 (0.08, 0.14)
Physical inactivity (n = 2896)***	31.8 (411)	41.3 (622)	1.51 (1.29, 1.76)
Biological factors			
§ High total cholesterol (n = 368)**	40.0 (64)	54.4 (112)	1.82 (1.19, 2.78)
§ Anaemic (n = 370)***	52.5 (85)	13.6 (28)	14 (0.08, 0.24)
§ Obesity (n = 366)***	12.0 (19)	36.6 (75)	4.44 (2.36, 8.34)
Healthcare utilization			
Seen health professional in last 12 months (n = 903)***	77.9 (1085)	89.4 (1351)	2.39 (1.93, 2.96)

Table 4: Cont'd

Needed healthcare in last three months (n = 2891)***	42.3 (584)	51.3 (774)	1.44 (1.24, 1.67)
Hospitalized in public facility in last three years (n = 26)**	80.1 (523)	71.6 (247)	0.58 (0.39, 0.87)
Financial factors			
Ever worked (n = 2936)***	99.7 (1,404)	97.0 (1482)	0.09 (0.03, 0.26)
Currently working (n = 2878)***	28.9 (405)	14.7 (217)	0.42 (0.35, 0.51)
Planned for retirement (n = 2895)***	61.5 (854)	51.8 (780)	0.67 (0.58, 0.78)
Health insurance (n = 2943)	21.6 (305)	23.5 (359)	1.11 (0.93, 1.32)
Main source of finances (n = 2809)***			
Self	48.2 (653)	39.7 (578)	1
Spouse	24.2 (328)	11.3 (165)	0.57 (0.46, 0.71)
Child	9.5 (129)	23.4 (340)	2.98 (2.34, 3.78)
Other	18.0 (244)	25.6 (372)	1.72 (1.41, 2.10)
Help with grandchildren (n = 2924)**	43.6 (609)	49.5 (756)	1.27 (1.10, 1.47)
Participate in social activities (n = 2893)***	54.0 (755)	45.1 (675)	0.70 (0.60, 0.81)
Volunteer (n = 2778)	32.9 (440)	32.5 (468)	0.98 (0.83, 1.15)
Satisfied with health (n = 2934)**	73.1 (1031)	67.8 (1033)	0.73 (0.60, 0.88)
Satisfied with life (n = 2904)	73.6 (1032)	74.7 (121)	1.11 (0.88, 1.40)

+Odds ratio for likelihood of condition in women compared to men

***Significant at $p < 0.001$; **significant at $p < 0.01$; *significant at $p < 0.05$
 §Clinical subsample

DISCUSSION

The Caribbean region is considered to be one of the fastest ageing regions globally (21). Jamaica is a prime example of such growth, with the 60-year-old and over population experiencing a 15.3% increase compared to 3.5% for the overall population in the period between the last two censuses (22). It is widely acknowledged that the rapidly increasing cohort of persons 60 years and over, has a significantly different health profile in comparison to younger populations. This cohort tends to have significant health concerns (23), utilize relatively more health resources (24, 25) and have a relatively higher non-communicable disease (NCD) burden [usually with co-morbidities] (26). Longevity among older populations is also increasing (27) as technology and standards of living improve. These factors make delivery of care to this cohort relatively resource intensive and expensive.

Gender gradients in health

The study has identified gender differences in health-status with women having significantly higher disease burden than men and reporting less satisfaction with their health-status. All the major chronic diseases except cancer were higher in females.

When compared with studies in 11 European countries, the United States of America (USA) and England (28), the development vs developed country's differences was highlighted. For

arthritis, women were between 1.5 and 2.9 times more likely to report arthritis, whereas in Jamaica, women were 3.5 times more likely to report this condition, even after adjusting for age. The China Health and Retirement Longitudinal study supports these findings (29). They also identified risk factors for arthritis to be high body mass index (BMI) and self-reported cardiovascular disease. With Jamaican women having a 4.4 times higher odds of obesity than their male counterparts, and being more than twice as likely to report heart disease, these may in fact be drivers of the high arthritis rates.

The odds of reporting hypertension in the current study was more in line with that observed in Europe. Six of the assessed countries reported significantly higher odds among women, ranging from 1.27 in France to 1.6 in Spain (28). The Canadian Health Measure Survey (CMHS) found that after age 60 years, the gender trend was to a higher health burden in women. In fact, after age 70 years, women were significantly more likely to have a higher resting blood pressure (30). Jamaica reported a similar trend with women being 2.7 times more likely to report being hypertensive. Again, this finding may be related to the high levels of obesity that disproportionately affect older women (31). This finding strengthens the importance of including gender specific lifestyle change strategies in management programmes, furthermore the study findings support the need for gender targeting from midlife to help reduce the increase in disease in the older age groups.

In terms of heart disease, Crimmins *et al* reported higher odds amongst males in all countries studied (28). This is in contrast to findings in Jamaica which found women to be 2.1 times more likely to report having heart disease. This unusual occurrence may be due to the predominance of known risk factors of heart disease among older women in Jamaica; with them being 4.4 times more likely to be obese, 2.7 times more likely to have hypertension, 1.8 times more likely to have high cholesterol and 1.5 times more likely to be inactive than their male counterparts.

Cancer being more prevalent in men than women is consistent with international findings, which show higher male burden for this group of diseases. Data from the USA show a high male-to-female ratio for many common cancers such as: colorectal cancers, lung and bronchus cancers and bladder cancer (32, 33). The higher disease burden amongst Jamaican men may be due to differences in cancer screening uptake among men and women given the aggressive promoting of prostate cancer screening (34) while female specific screens are less accessible. Mammograms for example, are not available to women *via* the public sector, while papanicolaou smears are inconsistently offered due to resource constraints. A recent report of cancer screens among older Jamaicans found a 35.1% uptake on prostate screens as compared to 11.3% mammograms and 9.6% papanicolaou smears (35).

Policy recommendations and implications

Active and successful ageing principles are important in preserving the health and independence of populations as

they age, beginning at birth. The case has already been made for health promotion and disease prevention to use the life course approach (36). This study now provides evidence for a gender-specific component to also be built in at all stages, paying special attention to gender-specific facilitators and barriers. Increased physical activity plus weight reduction may help to increase functionality for those with arthritis and to lower the associated risk with hypertension and heart disease. Stressing the need for increased physical activity and proper diet during health visits may be critical. Having exercise clubs and cooking demonstrations at health facilities on elder/chronic disease days may help to improve self-efficacy and willingness to change among this older cohort. Training in gender-specific needs is needed for healthcare professionals.

CONCLUSION

Older women are more likely to live longer than men and as such have a relatively prolonged period of morbidity. Health systems in developing countries are for the most part unprepared for this increasing demand by older persons, especially older women. Individual and national costs will continue to increase if health systems are not re-oriented to be more age and gender sensitive in the delivery of services and in reducing the factors that drive excess preventable disease among older women. It should be acknowledged that the basis for action exists as Jamaica and other Caribbean countries, pursuant to the Port-of-Spain and United Nations (UN) meetings (37), have been implementing programmes to reduce the burden of NCDs. Equally important is that older persons are accessing healthcare and so are within reach of interventions. Incorporating age and gender-specific approaches in all programmes is now needed.

ACKNOWLEDGEMENTS

This project was supported by a grant from the National Health Fund (Jamaica).

AUTHORS' NOTE

K Mitchell-Fearon led data analysis and wrote the manuscript. D Willie-Tyndale participated in data analysis and edited the manuscript. J McKoy Davis performed literature review and edited the manuscript. NK Waldron participated in study design and edited the manuscript. D Holder-Nevins performed literature review and edited the manuscript. D Eldemire-Shearer participated in study design, conceptualized and edited the manuscript. The authors declare that they have no conflicts of interest.

REFERENCES

1. Eldemire-Shearer D, Mitchell-Fearon K, Laws H, Waldron N, James K, Holder-Nevins DL. Ageing of Jamaica's population-what are the implications for healthcare? *West Indian Med J* 2014; **63**: 3–8.
2. World Health Organization. Women, ageing and health: a framework for action. [Internet]. Geneva; WHO. Geneva: World Health Organization; 2007. Available from: https://www.unfpa.org/webdav/site/global/shared/documents/publications/2007/women_ageing.pdf [accessed 13 March 2014]
3. World Health Organization. Men, ageing and health: Achieving health across the lifespan [Internet]. Geneva: World Health Organization; 2001. 1–63 p. Available from: http://apps.who.int/iris/bitstream/10665/66941/1/WHO_NMH_NPH_01.2.pdf
4. Caribbean Community (CARICOM). Communique Issued at the Conclusion of the Regional Summit of Heads of Government of the Caribbean Community (CARICOM) on Chronic Non-Communicable Diseases [Internet]. 2007. Available from: <http://caricom.org/media-center/communications/communiqués/communique-issued-at-the-conclusion-of-the-regional-summit-of-heads-of-gove>
5. United Nations. Political declaration of the high-level meeting of the general assembly on the prevention and control of non-communicable diseases [Internet]. 2011. Available from: http://www.un.org/ga/search/view_doc.asp?symbol=A/66/L.1
6. Ministry of Health Jamaica. National strategic and action plan for the prevention and control of non-communicable diseases (NCDS) in Jamaica 2013-18 [Internet]. 2013. p. 1–99. Available from: National strategic and action plan%0Afor the%0aprevention and control%0anon-communicable diseases (NCDS)
7. World Health Organization. Active ageing: a policy framework. Geneva: World Health Organization; 2002.
8. Kalavar J, Jamuna D. Aging of Indian women in India: the experience of older women in formal care homes. *J Women and aging* 2011; **23**: 203–15.
9. Roy K, Chaudhuri A. Influence of socioeconomic status, wealth and financial empowerment on gender differences in health and health-care utilization in later life: evidence from India. *Soc Sci Med* 2008; **66**: 1951–62.
10. Park SM, Jung SN, Kim DH. Gender differences as factors in successful ageing: a focus on socioeconomic status. *J Biosoc Sci* 2010; **42**: 99–111.
11. Morris C, James K, Laws H, Eldemire-Shearer D. Health status and health-seeking behaviour of Jamaican men fifty-five years and over. *West Indian Med J* 2011; **60**: 322–9.
12. Boender C, Santana D, Santillan D, Hardee K, Greene ME, Schuler S. A summary of the "So What?" report. A look at whether integrating a gender focus into programmes makes a difference to outcomes. TT - [Inter-net]. Washington, DC; 2004. Available from: http://www.prb.org/igwg_media/thesowhatreport.pdf
13. Eldemire-Shearer D. Ageing: the response yesterday, today and tomorrow. *West Indian Med J* 2008; **57**: 577–88.
14. Caribbean Policy Research Institute. Fee or Free? A Survey of the No-User Fee Policy in Public Hospitals in Jamaica. Kingston; 2013.
15. Mitchell-Fearon K, Waldron N, James K, Laws H, Holder-Nevins D, Eldemire-Shearer D. Hypertension and diabetes prevalence in older persons in Jamaica, 2012. *West Indian Med J* 2014; **63**: 1–27.
16. Folstein MF, Folstein SE, McHugh P. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res* 1975; **12**: 189–98.
17. Zung W. A self-rating depression scale. *Arch Gen Psychiatry* 1965; **12**: 63–70.
18. Katz S, Downs TD, Cash HR, Grotz RC. Progress in development of the Index of ADL. *Gerontologist* [Internet]. 1970;10(1 Part 1):20–30. Available from: http://gerontologist.oxfordjournals.org/cgi/doi/10.1093/geront/10.1_Part_1.20
19. Martin LM, Leff M, Calonge N, Garrett C, Nelson DE. Validation of self-reported chronic conditions and health services in a managed care population. *Am J Prev Med* [Internet]. 2000; 18: 215–8. Available from: <http://www.sciencedirect.com/science/article/pii/S0749379799001580>
20. Skinner KM, Miller DR, Lincoln E, Lee A, Kazis LE. Concordance between respondent self-reports and medical records for chronic conditions: experience from the Veterans health study. *J Ambul Care Manage* 2005; **28**: 102–10.
21. Kinsella K, Phillips DR. Global aging: The challenge of success. *Popul Bull* 2005; **60**: 1–44.
22. Statistical Institute of Jamaica. Population and Housing Census 2011. Kingston; 2011.
23. Suzman R, Beard J. Global Health and Aging. NIH Publ no 117737 [Internet]. 2011; **1**: 273–7. Available from: <http://links.jstor.org/>

- sici?scii=0095-9006(196024)1:4%3C273:HAA%3E2.0.CO;2-C
24. Nie JX, Tracy CS, Moineddin R, Upshur RE. Health care service utilization among the elderly: findings from the study to understand the chronic condition experience of the elderly and the disabled (SUCCEED project). *J Eval Clin Pract* 2008; **14**: 1044–9.
 25. Dou L, Liu X, Zhang T, Wu Y. Health care utilization in older people with cardiovascular disease in China. *Int J Equity Health* [Internet]. 2015; **14**: 59. Available from: <http://www.scopus.com/inward/record.url?eid=2-s2.0-84938236847&partnerID=tZOtx3y1>
 26. Beard JR, Biggs S, Bloom DE, Fried LP, Hogan P, Kalache A et al, eds. Global population ageing: peril or promise [Internet]. Geneva: World Economic Forum; 2011. Available from: http://www3.weforum.org/docs/WEF_GAC_GlobalPopulationAgeing_Report_2012.pdf
 27. World Health Organization. Global Health Observatory (GHO) data [Internet]. 2016. Available from: http://www.who.int/gho/mortality_burden_disease/life_tables/situation_trends_text/en/
 28. Crimmins EM, Kim JK, Solé-Auró A. Gender differences in health: Results from SHARE, ELSA and HRS. *Eur J Public Health* 2011; **21**: 81–91.
 29. Li C, Liu T, Sun W, Wu L, Zou ZY. Prevalence and risk factors of arthritis in a middle-aged and older Chinese population: the China health and retirement longitudinal study. *Rheumatology (Oxford)* 2015; **54**: 697–706.
 30. Statistics Canada. Blood pressure of adults, 2013 to 2013 [Internet]. 2014. Available from: <http://www.statcan.gc.ca/pub/82-625-x/2014001/article/14101-eng.htm#n2>
 31. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension* 2003; **42**: 1206–52.
 32. Cook MB, Dawsey SM, Freedman ND, Inskip PD, Wichner SM, Quraishi SM et al. Sex disparities in cancer incidence by period and age. *Cancer Epidemiol Biomarkers Prev* 2009; **18**: 1174–82.
 33. Siegel R, Naishadham D, Jemal A. Cancer Statistics, 2012. *CA Cancer J Clin* 2012; **62**: 10–29.
 34. Morrison BF, Aiken WD, Mayhew R. Current state of prostate cancer treatment in Jamaica. *Ecancermedicalscience* 2014; **8**: 1–7.
 35. Mitchell-Fearon K, Willie-Tyndale D, Waldron N, Holder-Nevins D, James K, Laws H, et al. Cardio-vascular disease and cancer: a dichotomy in utilization of clinical preventive services by older adults in a developing country. *Gerontol Geriatr Med* [Internet]. 2015; **1**. Available from: <http://ggm.sagepub.com/lookup/doi/10.1177/2333721415611821>
 36. Edelman C, Mandle C, Kazer M. Health promotion throughout the lifespan, 7th Edition [Internet]. Nursing Faculty Book Gallery. 2009 [cited 2016 Dec 16]. Available from: <http://digitalcommons.fairfield.edu/nursing-books/53>
 37. Samuels TA, Hospedales CJ. From Port-of-Spain summit to united nations high level meeting CARICOM and the global non-communicable disease agenda. *West Indian Med J* 2011; **60**: 387–91.

Submitted 02 Feb 2017

Accepted 08 Mar 2017

Published 20 Jun 2017

Online: <http://myspot.mona.uwi.edu/wimjopen/article/10324>

© Mitchell-Fearon *et al* 2017.

This is an open access article made freely available under Creative Commons Attribution 4.0 International (CC BY 4.0). Users are free to share, copy and adapt this work as long as the copyright holder (author) is appropriately and correctly credited. See http://creativecommons.org/licenses/by/4.0/deed.en_us for more information.