

# Prevention for Better Health among Older Persons Are Primary Healthcare Clinics in Jamaica Meeting the Challenge?

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## ABSTRACT

**Objectives:** The study sought to determine the level and type of preventive care offered to older persons (persons 50 years and over) in the primary healthcare system and to identify the barriers to prevention-related activities.

**Methods:** The study was carried out in three phases utilizing quantitative and qualitative methods. Quantitative data were collected over a six-week period from 738 older patients accessing health centre curative services and from 86 health centre staff. Focus group discussions were used to obtain information from non-users of health centres.

**Results:** The findings showed that while clinical practice was good, there were relatively inadequate levels of prevention care practices and there were barriers to prevention-related activities for older persons in the primary healthcare system. Only 5.1%, 24.5% and 9.6% of older persons reported being advised about smoking, physical activity and alcohol consumption respectively by health centre staff. A higher proportion (56.5%) reported being advised about diet. Older persons did not appear to understand the role of prevention in maintaining health status. Barriers identified include inadequate numbers of staff, overcrowded clinics, rapid staff turnover, high costs of investigations and medications, and poor staff perception of older persons' abilities to care for themselves.

**Conclusion:** Health promotion and secondary prevention for older persons in the primary healthcare clinics need strengthening. Training and facilitation of health workers in age-related age-specific prevention activities are recommended. The provision of appropriate resources for prevention activities among older persons in primary healthcare settings should be addressed.

## Prevención para una Mejor Salud entre las Personas mayores de edad: ¿Están las Clínicas de Atención Primaria a la Salud Dando Respuesta a este Desafío en Jamaica? – Hallazgos de un Estudio Transversal

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## RESUMEN

**Objetivo:** El estudio buscó determinar el nivel y tipo de cuidados preventivos ofrecidos a personas mayores (personas de 50 años y más) en el sistema de atención primaria, e identificar las barreras a las actividades relacionadas con la prevención.

**Métodos:** El estudio se llevó a cabo en tres fases utilizando métodos cuantitativos y cualitativos. Los datos cuantitativos fueron recogidos en un periodo de seis semanas, a partir de 738 pacientes mayores que recibían servicios curativos de centros de salud, y a partir de 86 miembros del personal de atención a la salud. Las discusiones del grupo de foco se usaron para obtener información de no usuarios de los centros de salud.

**Resultados:** Los hallazgos mostraron que aunque la práctica clínica era buena, había niveles relativamente inadecuados de prácticas de cuidados preventivos y había barreras a las actividades relacionadas con la prevención, para las personas mayores en el sistema de atención primaria de salud. Sólo 5.1%, 24.5 y 9.6% de las personas mayores reportaron haber recibido consejos de parte del personal del centro de salud, en relación con el hábito de fumar, la actividad física, y el consumo de alcohol respectivamente. Una proporción más alta (56.5%) reportó haber recibido consejos sobre la

*dieta. Las personas mayores no parecían entender el papel de la prevención en mantener el estado de salud. Las barreras identificadas incluyen: número inadecuado de personal, clínicas abarrotadas, cambio frecuente del personal, alto costo de las investigaciones y los medicamentos, y pobre percepción del personal en relación con la capacidad de las personas mayores para cuidarse a sí mismas.*

**Conclusión:** *La promoción de la salud y la prevención secundaria para las personas mayores en las clínicas de atención primaria de la salud, necesitan ser fortalecidas. Se recomienda el entrenamiento y la capacitación de los trabajadores de la salud en actividades de prevención relacionadas concretamente con edades específicas. Debe abordarse el problema de proveer recursos apropiados para las actividades de prevención entre las personas mayores, en los establecimientos de atención primaria de la salud.*

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## INTRODUCTION

The increasing contribution of chronic diseases to morbidity and mortality in the Jamaican population has been established (1, 2). So has the contribution of lifestyle behaviour to the development of these illnesses (3, 4). Furthermore, the ageing of the Jamaican population has been documented (5, 6).

Chronic diseases, if not adequately managed, will lead to increasing levels of disability, impairment and loss of functional ability. The ageing of the population is therefore accompanied by increasing levels of morbidity and impairment of function as persons live longer with their chronic disease (6, 7).

Health promotion and disease prevention are the cornerstones of Primary Healthcare (PHC) and to date the focus globally has mainly been on primary prevention (8). Prevention, however, is broader and includes secondary and tertiary related activities which are becoming increasingly important with the ageing of the population (9, 10), given the objective in care of elderly adults of maintaining maximum functional ability (11).

The importance of risk reduction using a lifespan approach through behaviour change interventions is recognized for adults (12, 13) but the 'negative ageing paradigm' found in many countries assumes such programmes are too late for older adults, despite present evidence (14) to the contrary. Consequently, potential benefits of disease prevention and health promotion are not being fully realized. Preventable illness makes up approximately 70 per cent of the burden of illness and its associated costs (15). As early as 1993, preventable causes related to cigarette smoking, lack of exercise and suboptimal diet accounted for the overwhelming majority of leading causes of death in the United States of America (16). Other studies have reported that even when not able to prevent chronic disease, it is possible to lessen the degree of disability and reduce healthcare costs (16–18). The importance of physical activity and diet in cardiovascular health and prevention of falls is well documented (19–22); as is the impact of behaviour modification on the development and progression of Type II diabetes (23, 24). These studies report associated improvement in the quality of life in the later years.

The overt physical manifestations of chronic diseases are not the only important concerns of older persons. Mental health issues such as bereavement, loss of cognitive function and independence and depression become increasingly significant and affect the ability to maintain physical function and need to be included in primary healthcare programmes (25).

Several studies have suggested that the care of older persons in the community is unstructured and demand-based (26, 27) while others have reported inadequate time per patient for effective health education and prevention activities in the primary care setting (28). Reducing the need and demand for medical services can result in better health for the individual and lowering of the medical costs (15). Yet, until effective prevention strategies based upon research findings are applied to community programmes, these latter mentioned goals are unlikely to be attained.

This paper reports findings from a study that examined the care of older persons in primary healthcare centres in St Catherine, Jamaica. The study sought to determine the level and type of preventive care offered to older persons (persons 50 years and over) in the primary healthcare system and to identify the barriers to prevention-related activities. Specific objectives were:

- To document aspects of health and functional status of seniors attending Primary Health Centres
- To determine clinical practice
- To determine the levels of preventive care and lifestyle intervention
- To identify the barriers to the delivery and accessing of healthcare
- To describe knowledge, attitudes and practices of healthcare workers with regard to prevention and its role in the health of older persons.

## METHOD

Ethical approval for the study was granted by the Faculty of Medical Sciences, The University of the West Indies/ University Hospital of the West Indies (UHWI) Ethics Committee. The research was done as part of the Integrated Health Care Systems Response to Rapid Populations Ageing in Developing Countries (INTRA) series of studies, a World

Health Organization (WHO) initiative using a multi-staged approach and mixed methods that are quantitative and qualitative. The INTRA study initiative sought to examine the role and preparedness of the Primary Healthcare (PHC) sector to respond to population ageing, and to make recommendations aimed at improving the delivery of the PHC services to better serve older persons. The research was carried out in three phases. Phase I focussed on users and staff of health centres using a quantitative approach, Phase II focussed on users using a qualitative approach to explain Phase I findings. Phase III focussed on non-users using a qualitative approach (Table 1).

Table 1: Summary of INTRA\* study phases

Phase	Methodology	Studied Groups
INTRA I	Quantitative	PHC Users 50 <sup>+</sup> years-old PHC Providers
INTRA II	Qualitative	PHC Users 50 <sup>+</sup> years-old PHC Providers (PHC Providers)
INTRA III	Qualitative	Non-users 50 <sup>+</sup> years-old of PHC services PHC Providers

\*Integrated Health Care Systems Response to Rapid Populations Ageing in Developing Countries

The parish of St Catherine, Jamaica, was chosen for the study as it has been considered demographically representative of Jamaica given its age profile and urban-rural mix. Additionally, it has a wide network of health centres, hospitals and range of primary care services.

In Phase I, the Type III and IV health centres in the parish which offer curative services were identified. There were seven in total. Four teams of interviewers were chosen and trained and each health centre was visited by two persons on a rotating basis over a six-week period. At the health centre, the Records Officer identified all persons over 50 years who registered on the day of the visit and all persons identified were interviewed. Seven hundred and thirty-eight (738) persons attending the health centres were interviewed.

The interview instrument was developed during several WHO meetings and had minor adjustments done locally for language. Interviewers were trained over a two day period. The instrument was pre-tested at a Kingston and St Andrew (KSA) health centre. The instrument included questions concerned with the following broad domains – demographic characteristics of users *eg* (age, gender and marital status); self-reported chronic disease (particularly hypertension and diabetes) and associated complications; advice received and practices regarding smoking, diet, exercise, alcohol consumption and cholesterol; and barriers/problems with clinical care and preventive services. In an attempt to corroborate reported disease and reported complications, respondents were asked who had told them they had these conditions and complications (with 98% indicating that they were so told by a doctor). The questionnaire also elicited information regard-

ing functional limitations; specifically, whether they needed assistance to come to clinic, whether they needed to be accompanied by someone when they visited the clinic and whether they had a physical disability such as a stroke.

Phase II focussed on the main providers of primary care clinic services. It involved a quantitative survey of the 86 available staff members [doctors, nurses and community health aides (CHAs)] from the previously mentioned primary care clinic sites. Information pertaining to clinical practice, advice given to older clients regarding smoking, diet, exercise, alcohol consumption and cholesterol, and barriers/problems of older persons with regard to accessing clinical care and preventive services, was specifically sought.

Phase III sought to obtain insight on the perception of current non-users of primary care health centres, their opinions regarding access and barriers to services at these centres and why they do not use them. Three focus group discussions were held with older non-users of clinic services to explore the aforementioned issues. Focus group members were recruited through community-based organizations (senior citizens clubs, retiree organizations, churches) with a variety of ages and gender represented so as to capture the gamut of older persons.

For the quantitative components, data were entered and analysed using the Statistical Packages for Social Sciences (SPSS) software (version 11.0). As appropriate, relevant frequencies and descriptors were generated. Focus group data were analysed by reviewing scripts, identifying the main themes and the findings used to augment the quantitative results.

## RESULTS

### Sociodemographic profile

The age range was 50–92 years with the median age being 67 years (interquartile range 60–74 years). Users of PHC centres were mostly females [76.4%] (Table 2). The majority

Table 2: Distribution of PHC client sample by age-group and sex (n = 738)

	Under 60 years-old	60–74 years-old	75+ years-old
Male	32	89	53
Female	145	292	127
<b>Total</b>	177	381	180

of PHC centre users (79%) had at least primary education, 42.5% were currently married or cohabiting and 18.1% lived alone. Proportionately, more males (23.5%) than females (16.8%) reported living alone.

The respondents attending did not identify transportation to the clinic as problematic, with 91% reporting having no such difficulty. Those not utilizing clinic services referred to factors such as long waiting time, poor physical environment including noise, lack of proper bathroom facilities and uncertainty about the presence of a doctor as reasons for non-attendance.

**Health Status**

The majority reported having a chronic disease; 65.7% had hypertension, 40.7% diabetes mellitus and 28.4% had both (Fig. 1). Heart disease (15.7%) and cerebrovascular accident

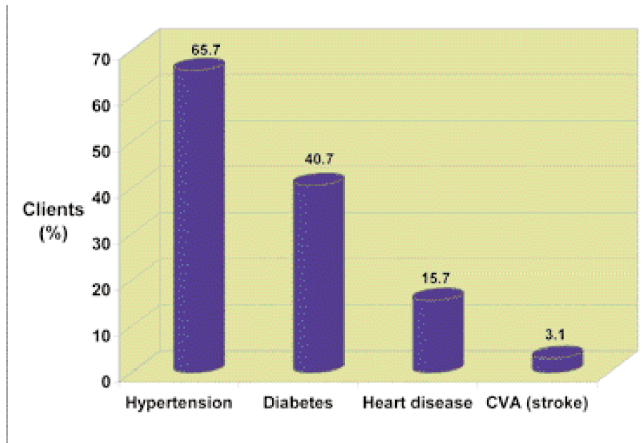


Fig. 1: Commonly reported major chronic disease conditions reported by older clients using PHC centres.

(3.1%) were other common cardiovascular conditions reported. Seventeen per cent (17%) reported perceiving that they had eye problems related to hypertension. The majority of users (93%) who attended the clinics reported no major limitations in physical function that would make it difficult for them to access clinic services nor did they report compulsorily needing accompaniment to attend the clinic (92%).

**Clinical Practice**

The majority (87.4%) had their blood pressure checked and a similar percentage had their urine checked for glucose at their current clinic visit. During the last year, 73.1% reported being advised to have a blood test for ‘sugar’. Only 23.6% stated that they were advised to check their blood cholesterol levels. The majority (80%) was weighed and ninety-one per cent (91%) saw the doctor during their clinic visit. Ninety-one per cent (91%) of hypertensive persons were advised to control their blood pressure; but as subsequently documented in this paper, advice on lifestyle changes and behaviour modification was neither uniformly nor consistently emphasized. Among the 485 hypertensive clients in the study, 54.4% were taking two to three prescribed medications. Only 6.4% of hypertensive clients were being managed without prescribed medication while 12.1% was taking in excess of three prescribed drugs (Fig. 2).

**Risk Factors**

Only 4.7% admitted being current smokers while 16.8% previously smoked. Regular physical activity (defined as ‘walking each day’ by most users) was reported by 64.3% (Fig. 3).

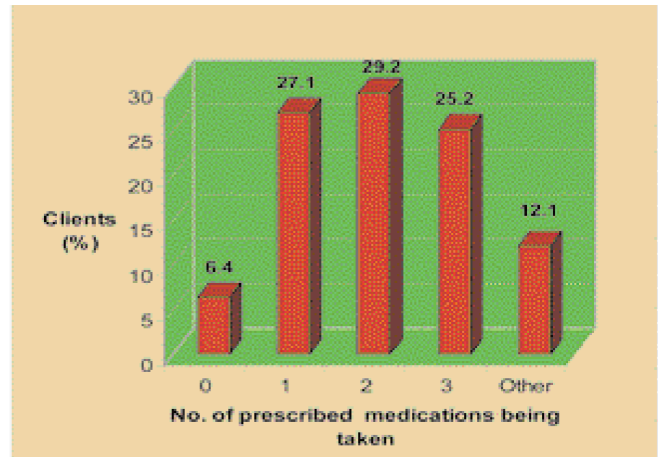


Fig. 2: Distribution of number of prescribed medications being taken among older hypertensive clients using PHC centres.

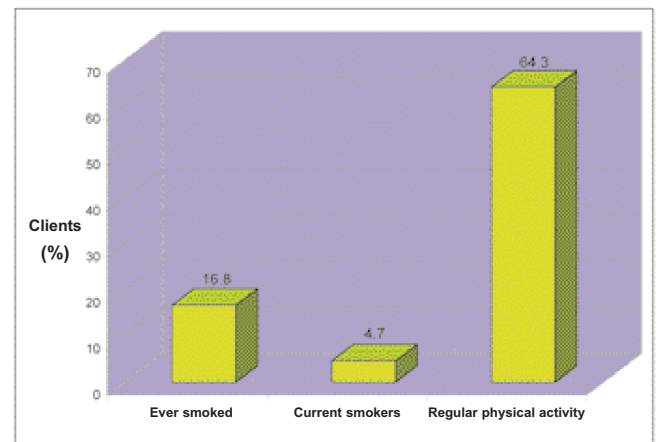


Fig. 3: Smoking and Physical Activity practices as reported by older persons using PHC centres.

**Risk Factors and Advice Given**

A minority (5.1%) of the older persons surveyed at health centres reported being advised by health staff about smoking habits (Fig. 4). Overall, 24.5% reported being advised about

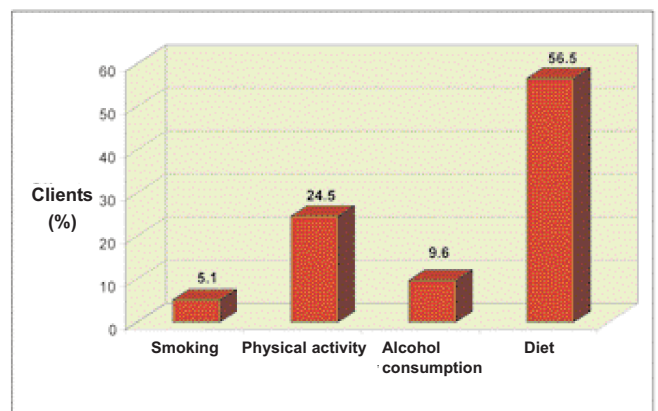


Fig. 4: Advice given by health staff as reported by older patients/clients using PHC centres.

physical activity and the proportion reporting being so advised decreased with increasing age. Among persons 75 years and over, only 16.5% reported being asked about physical activity and only 15.2% of the 75 years+ age-group indicated being given advice about physical activity. When advice was given, doctors were the usual source of advice.

Only 9.6% stated they were advised about alcohol consumption and advice was usually not to drink with medication. In comparison, persons more frequently indicated they were asked about diet (52.7%) and given related advice (56.5%).

Diabetics commonly reported being asked about diet (72.1%) when they visited the clinic. Among diabetics, the reporting of dietary advice given decreased with increasing age, 82% for diabetics under age 60 years *versus* 61.3% for those over 75 years and older. Less than eight per cent of clinic users surveyed reported being asked about depression or depression-related symptoms.

### Staff Responses

Eighty-six health centre staff were interviewed: doctors (10.5%), nurses (21%) and CHA (64%). Among the total staff interviewed, length of service in the health sector was equally divided: a third was under five years; another third, five to ten years and one-third over 10 years. All doctors interviewed had less than five years length of service.

While 88.1% reported asking about smoking, only 19% said they did so all the time. With regards to alcohol, 22.9% reported always asking about alcohol intake while 69.9% said sometimes. Concerning physical activity, 20.5% always asked about it, 41.7% always asked about diet, and the likelihood of a person asking about these increased with length of service. While less than a third (31.3%) asked about depression-related questions most times, only 7.2% always asked such questions.

Of the 19% of staff members who reported asking about smoking all the time, 97% were doctors. A similar statistic was noted for those staff members who said they asked about alcohol all the time and who said they asked about physical activity all the time. With regard to diet, of the 41.7% who indicated that they asked about this all the time, 47.8% were doctors and 39% were nurses. Community Health Aides reported least commonly (13.2%) asking about this all the time, a likely reflection of their limited perceived or limited prescribed role in clinical care during curative visits to clinics

### Barriers to preventive care

Patients, staff and non-users identified the barriers to providing preventive care. These were staff-related and non-staff related. These included:

#### *Staff-related barriers*

- Too many patients for the staff employed
- Waiting time is too long

- Doctors do not have enough time for each patient
- Rapid doctor turnover; patients do not see the same doctor at each visit
- Poor perception by staff of the older person's ability to care themselves

#### *Non-staff related barriers*

- Unavailability of medication
- Transportation costs
- Cost of investigations
- No service in evenings/nights
- Older persons only want to see and listen to the doctor

The focus group discussions identified another barrier – the older person's lack of understanding and perceptions of the determinants of health/ill-health. They reported in the focus group:

*"Health is spiritual, it is from God"*

*"Only God can determine when you die"*

*"My friend is 80 and smokes"*

*"Street people eat garbage and are well".*

Cognizance of the relationship between prevention and health was not always evident as the following quote illustrates:

*"Healthy people do not need a doctor".*

Among service providers, there were negative perceptions of the value of prevention and the ease with which prevention can be effected in older persons as illustrated by the following responses.

*"Most of the damage has been done"*

*"They are miserable, difficult and set in their ways".*

There was a thinking from 32.2% of nurses and 49% CHAs that seniors could not change their lifestyle; and 68.3% of providers were of the view that seniors had "no will" to do exercise. One reported advising against physical activity – *"I do not want them to fall and break a hip"*. Finance (89.9%) and poor memory (83.7%) were reasons identified as contributors to decreased compliance with medication, the appropriate use of which can thwart, delay or mitigate complications of disease (secondary and tertiary prevention).

### Training

Knowledge of standards, norms and management guidelines for hypertension (83.7%), diabetes (87%) and obesity (70%) were high. Only 50% of nurses reported receiving training on cholesterol reduction. This survey found that 53.5% of the staff reported receiving specific training on the different management guidelines for seniors.

### DISCUSSION

The study was conducted in the parish of St Catherine which is typical of Jamaica in terms of sociodemographic and health service mix. The findings are thus likely to be

generalizable to the rest of the island. The quantitative data were collected among users of health centre services and quantitative data for non-users is not available, a limitation of the study. However attempts were made to obtain insights on non-users through the use of focus groups. Another limitation is that the diseases and conditions documented, for example, hypertension and diabetes were based on self-report. While this study did not clinically confirm these reported conditions, the users were attending curative clinics for a chronic disease condition, increasing the likelihood of high correlation between self-reported conditions and truly having the diseases. Additionally, 98% of those who self-reported diseases said that they were so told by a doctor.

Studies have already established the high level of chronic diseases in the Jamaican population over 50 years old and the presence of several risk factors. This study demonstrates that the practice of prevention-related activities, particularly secondary prevention, is low for seniors in the primary healthcare system. Given that the primary healthcare system is the first point of contact between persons and the healthcare systems and therefore one of the earliest points for intervention regarding problems associated with chronic disease, morbidity and mortality reduction would be optimized if effective prevention was practised by all age groups including seniors.

There is enough evidence that the disability associated with chronic disease can be reduced. As the population of older adults increases, there are also the associated healthcare costs which are increasing, providing yet another reason to strengthen prevention activities for these age groups.

Disease prevention for older persons stresses the importance of early detection of illness with prompt and continuous management. The WHO has been recommending this paradigm shift in the protocols for chronic disease management (20). It is done by health checks not only for the chronic diseases but for conditions referred to as the geriatric giants such as memory disturbances, falls, incontinence, immobility and depression. Health checks therefore should include mini-mental status examination, functional and fall assessments, and have the necessary follow-up available as well as depression screens. A toolkit including a 10-minute screen to be used by CHAs has been developed and piloted to facilitate this. The screen identifies the potential problem for further investigation and provides tools for the doctors to carry out further assessment and management (29). This will require a reorientation of the health centre staff, and staff having adequate time allocated per geriatric patient. A major problem which will have to be addressed is the shortage of human resources. The current system of seeing large numbers of persons using few medical providers will not allow adequate geriatric care.

While there is a role for pharmacotherapy, especially aspirin and cholesterol-lowering drugs, changes in lifestyle are critical. The study suggests several obstacles not the least of which is the older person's lack of appreciation of the

importance of prevention. While prevention and health promotion should be a part of every healthcare encounter, it will take even more time as first the senior has to understand the importance of prevention and then be given the information. Reinforcement and follow-up need to be done at subsequent visits.

The study findings support the assertion that there is inadequate knowledge and sensitivity of healthcare workers to elderly related care. The health centre staff needs some reorientation and retraining to understand ageing-related issues and to have the knowledge, skills, and attitudes to effect behaviour change in seniors. Existing healthcare curricula need to include gerontology and geriatrics at all levels from basic training to continuing education. Age-appropriate knowledge is needed to help patients with behaviour change and there are specific tools and techniques to use with older persons especially in the areas of adherence to regimes and self-management. Healthcare staff also need time and an environment conducive to such activities to be effective and the study shows this is not the situation. Policymakers need to examine the situation and facilitate where possible such activities or at very least begin the discussion.

The study highlights the problem associated with gender where female attendance/utilization of clinic services towers over that of the inadequately low figures for males. The above discussion will not advance health-promoting changes in persons not accessing care and these are more likely to be men. Even in the national data, women attend health centres more than males (3:1) (2) [Table 3]. This

Table 3: Total health centre and curative visits: 1996–2000

Year	Total health centre visits	Curative visits		
		Total	Male	Female
1996	1 736 253	*809 824	–	–
1997	1 804 940	831 527	330 460	501 067
1998	1 887 365	899 287	358 090	541 197
1999	1 848 292	883 904	348 576	535 328
2000	1 684 222	738 711	258 607	480 104

Source data: Ministry of Health, Planning and Evaluation Branch, Jamaica, 2001 \* data not gendered

needs to be changed and suggestions have already been made to take healthcare to where the boys and men are (30).

Health promotion and prevention are emphasized in a PHC based health system as exists in Jamaica because doing so is cost-effective, equitable and can empower communities. Much success has been accomplished in Maternal and Child Health (MCH) programmes providing a blueprint for it to be done. Another example is the programme (the Integrated Health Programme) introduced in a health centre in the parish of St Ann for staff and patients two years ago and which was extended to the hospital and infirmary staff. This programme fosters, facilitates and promotes physical activity and exercise among staff and older persons.

The PHC system is appropriate for providing “age-friendly” care as it is wider in scope than just providing health service. Its inter-sectoral approach is particularly helpful to older persons who often have social and economic needs that impinge on health.

The critical area of available and appropriate resources will need strategic interventions to ensure not only availability, but broadening of primary healthcare services by addressing some of the barriers identified. With the renewal of PHC being currently promoted by WHO, it is an even more appropriate time to examine how “elder care” can be better incorporated into existing healthcare services.

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## REFERENCES

1. PAHO. Special Topic: The ten leading causes of death in countries of the Americas. In: Pan American Health Organization, Health Statistics from the Americas 2006 Edition. Washington, DC: Pan American Sanitary Bureau, Regional Office of the World Health Organization, 2007, p 1–3. 2007 [cited 2008 January 08]. Available from [http://www.paho.org/English/DD/AIS/HSA2006\\_ST.pdf](http://www.paho.org/English/DD/AIS/HSA2006_ST.pdf).
2. Ministry of Health, Jamaica. Ministry of Health Annual Report (Jamaica) 2002. Policy Planning and Development and Evaluation Branch, Ministry of Health: Kingston; 2003.
3. Figueroa JP, Ward E, Walters C, Ashley DE, Wilks RJ. Jamaica Healthy Lifestyle Survey Report 2000. [Unpublished survey report to the Ministry of Health, Jamaica]. Ministry of Health Kingston, Jamaica.
4. Figueroa JP, Ward E, Walters C, Ashley DE, Wilks RJ. High risk health behaviours among adult Jamaicans. *West Indian Med J* [serial on the Internet]. 2005 [cited 2007 Jan 09]; 54(1): 70–76. Available from: [http://caribbean.scielo.org/scielo.php?script=sci\\_arttext&pid=S0043-31442005000100014&lng=en](http://caribbean.scielo.org/scielo.php?script=sci_arttext&pid=S0043-31442005000100014&lng=en).
5. Eldemire-Shearer D. Ageing a new challenge to health care in the new millennium. *West Indian Med J* 2001; 56: 95–9.
6. Pan American Health Organization. Jamaica. 2002 Sep [cited 2008 Jan 05]. Available from: [http://www.paho.org/English/DD/AIS/cp\\_388.htm](http://www.paho.org/English/DD/AIS/cp_388.htm).
7. Eldemire D. Ageing in Jamaica. Report prepared for the World Health Organization, 2002. [Unpublished]. Department of Community Health and Psychiatry, University of the West Indies.
8. Ministry of Health. National policy for the promotion of healthy lifestyles in Jamaica. [Kingston]; 2004; 20–2.
9. World Health Organization. Preventing chronic disease: A vital investment: WHO Global Report. Department of Chronic Diseases and Health Promotion, Geneva: World Health Organization; 2005 [cited 2008 Jan 05]. Available from: [http://www.who.int/chp/chronic\\_disease.pdf](http://www.who.int/chp/chronic_disease.pdf).
10. NSW Department of Health. NSW Department of Health Chronic Disease Prevention Strategy 2003–2007. 2003 [cited 2007 Jan 01]. Available from: [http://www.health.nsw.gov.au/pubs/2003/\[df/chronic\\_disease.pdf](http://www.health.nsw.gov.au/pubs/2003/[df/chronic_disease.pdf).
11. World Health Organization. Active Ageing: A Policy Framework. Geneva: Noncommunicable Disease Prevention and Health Promotion Department, Ageing and Life Course Ageing and Life-Course; 2002, pp. 12–14 and 33–43. Available from: [http://whqlibdoc.who.int/hq/2002/who\\_NMH\\_NPH\\_O2.8.pdf](http://whqlibdoc.who.int/hq/2002/who_NMH_NPH_O2.8.pdf).
12. Department of Health. Improving chronic disease management. 2004 Mar [cited 2008 Jan 12]. Available from: [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4075214](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4075214).
13. Khaw KT, Wareham N, Bingham S, Welch A, Luben R et al. (2008) Combined Impact of Health Behaviours and Mortality in Men and Women: The EPIC-Norfolk Prospective Population Study. *PLoS Medicine* [serial on the Internet]. 2008 Jan 08 [cited 2008 Feb 8] 5, (1): e12 doi:10.1371/journal.pmed.0050012. Available from: <http://doi:10.1371/journal.pmed.0050012>.
14. Yates LB, Djoussé L, Kurth T, Buring JE, Gaziano JM. Exceptional Longevity in Men: modifiable factors associated with survival and function to age 90 years. *Arch Intern Med* 2008; 168: 284–90.
15. Fries J, Koop E, Sokolov J, Beadle C, Wright, D. ‘Beyond Health Promotion: Reducing Need and Demand for Medical Care’. *Health Affairs*, 1998; 17: pp 70–84.
16. McGinnis J, Foege W. “Actual Causes of Death in the United States”. *JMA* 1993; 270: 2207–12.
17. US Department of Health Human Services. Promising practices in chronic disease prevention and control: A public health framework for action. Atlanta: Centers for Disease Control and Prevention, US Department of Health and Human Services; 2004 [cited 2008 Jan 27]. Available from: [http://www.hpclearinghouse.ca/downloads/Promising\\_Practices\\_cdc.pdf](http://www.hpclearinghouse.ca/downloads/Promising_Practices_cdc.pdf)
18. Kaneda T. Health care challenges for developing countries with aging populations. Population Reference Bureau [monograph on the Internet]; 2006 Apr [cited 2008 Jan 05]. Available from <http://www.prb.org/Articles/2006/HealthCareChallengesforDevelopingCountrieswithAgingPopulations.aspx>.
19. World Health Organization. Secondary Prevention of Noncommunicable Diseases in Low and Middle Income Countries Through Community-Based and Health Service Interventions World Health Organization, Wellcome Trust Meeting Report, August 1–3, 2001 Geneva: World Health Organization; 2001.
20. World Health Organization. Innovative care for chronic conditions: building blocks for action: global report. Geneva: WHO; 2002. (WHO Document No. WHO/NMC/CCH/02.01).
21. Appel LJ, Moore TJ, Obarzanek E, Vollmer WM, Svetkey LP, Sacks FM et al. A clinical trial of the effects of dietary patterns on blood-pressure. *N Engl J Med* 1997; 336: 1117–24.
22. American Geriatrics Society and American Academy of Orthopaedic Surgeons Panel on Falls Prevention. Guidelines for the prevention of fall in older persons. *Jour Amer Geriatrics Society* 2001; 49: 644–72.
23. Tuomilehto J, Lindstorm J, Eriksson JG, Valle TT, Hamalainen H, Ilanne-Parikka P et al. (Finnish Diabetes Prevention Study Group). Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med* 2001; 344: 1343–50.
24. Knowler WC, Barrett-Connor E, Fowler SE, Humman RF, Lachin JM, Walker EA. (Diabetes Prevention Programme Research Group). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Engl J of Med* 2002; 346: 393–403.
25. Paluska SA, Schwenk TL. Physical activity and mental health: current concepts. *Sports Med* 2000; 29: 167–80.
26. Gaziano TA, Galea G, Reddy KS. Scaling up interventions for chronic disease prevention: the evidence. *Lancet* 2007; 370: 1939–46.
27. Jachuck SJ, Mulcahy JR. Minimum data set necessary to promote the care of the elderly in general practice. *Jour Ryl Coll of Gen Phys*, 1987; 37: 207–9. Available from: <http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1710778&blobtype=pdf>.
28. Yarnall KS, Pollak KI, Ostbye T, Krause KM, Michener JL. Primary Care: Is There Enough Time for Prevention? *Am J Public Health*, 2003; 93: 635–41.
29. Mona Ageing & Wellness Centre and World Health Organization. ‘Toolkit of Clinical Competence, 2007. [Unpublished]. Mona Ageing and Wellness Centre, University of the West Indies.
30. Eldemire-Shearer D. Ageing males: an emerging area of concern. *West Indian Med J* 2002; 51: 140–2.