Falls and other geriatric syndromes in Blantyre, Malawi: a community survey of older adults

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Abstract

Background: The prevalence of geriatric syndromes (falls, immobility, intellectual or memory impairment, and incontinence) is unknown in many resource-poor countries. With an aging population such knowledge is essential to develop national policies on the health and social needs of older people. The aim of this study was to provide a preliminary survey to explore the prevalence of falls and other geriatric syndromes and their association with known risk factors in people aged > 60 years in urban Blantyre, Malawi.

Methods

This was a cross-sectional, community survey of adults aged > 60 years. Subjects were recruited at home or in the waiting areas of chronic care clinics. They were interviewed to complete a questionnaire on age-associated syndromes and comorbid problems. The Abbreviated Mental Test (AMT) and Timed Up and Go (TUG) tests were carried out.

Results

Ninety-eight subjects were studied; 41% reported falling in the past 12 months, 33% of whom (13% of all subjects) were recurrent fallers. Twenty-five percent reported urine incontinence, 66% self-reported memory difficulties, and 11% had an AMT score < 7. A history of falling was significantly associated with urine incontinence (p=0.01), self-reported memory problems (p=0.004) and AMT score < 7 (p=0.02).

Conclusions

Geriatric syndromes, including falls, appear to be prevalent in older people in Blantyre, Malawi. Falling is associated with cognitive impairment and urinary incontinence. There is an urgent need for more understanding of geriatric problems in this setting to develop national policies on health and social needs of older people. It is likely that many of the contributory factors to falls would be amenable to multifactorial interventions similar to those found to be effective in developed countries.

Introduction

Geriatric syndromes (falls, immobility, intellectual or memory impairment, and incontinence) are commonly present in the aging population but are frequently overlooked during general medical care, as they are not part of conventional medical diagnosis.[1] These syndromes tend to be chronic, to present as decreased functional capacity, and to be of multifactorial aetiology. They can have a significant impact on quality of life, independence, and overall health. The prevalence of these problems has been documented in developed countries,[2-6] but their extent and impact has not been widely studied in resource-poor southern African countries. There have been several descriptive surveys of the social situation and health status of older adults in Sub-Saharan Africa (SSA), including reports from Zimbabwe,[7] Tanzania,[8] and Botswana[9]. Ability of older adults to perform activities of daily living have been reported from Zimbabwe,[7] Tanzania,[8] and Botswana[9]. Dementia prevalence has been more widely documented,[10-12] although this is hampered by lack of culturally appropriate screening tools.[10-13]

Malawi is facing a demographic shift, with a rapidly increasing older population. Socioeconomic and demographic changes will increase demand for appropriate health services for older people. Currently 2.7% of the Malawian population is aged over 65 years.[14] Life expectancy has improved from 37 to 53 years since 2003,[15] and the adjusted life expectancy for Malawians who survive to age 60 is 77 years.[16] The projected number of Malawians aged over 60 will be > 1 million by 2030 and > 2 million by 2050.[17] There is no social welfare system for the elderly in Malawi. Lack of knowledge about health problems in older adults in this region of Africa has resulted in inadequate planning and allocation of health resources towards geriatric services and lack of emphasis on geriatric issues in the medical curriculum.[18] The aim of this study was to assess the prevalence of falls and other geriatric syndromes in people aged 60 years and over in urban Blantyre, Malawi. The association of these syndromes with known risk factors was also examined.

Methods

Study Population and setting

This was a cross-sectional study in adults aged over 60 years. Blantyre is the largest city in the Southern Region of Malawi, with a population of approximately 1 million, of whom 67% live in urban areas. Random sampling was based on allocation of numbers on paper slips and random withdrawal from a container. The Blantyre District Health Office has six urban health centres, each with catchment populations greater than 70,000, and each comprising up to 40 areas administered by village chiefs. Three of these health centres–Bangwe, Ndirande and Zingwangwa–were randomly selected by drawing names from a bowl. Within the three selected health centres, areas for recruitment were identified by randomly selecting Health Surveillance Assistant (HSA) catchment areas.

Within each catchment area, households were identified by systematic sampling. The total number of households was determined and those where an elderly person was known to live was identified by the HSA. These households were assigned numbers and one number was picked at random. This household was marked to be the first one. Thereafter every third household in the village with an older person was sampled. When a subject refused, the next (adjacent) subject's household was approached. This was done with the help of the HSA of that area who accompanied the investigators at all times.

Within this community sample, anyone over the age of 60 was recruited, provided that they were not acutely unwell on the day of assessment and were resident in the selected areas for at least one year. If age was unknown it was estimated, within 5 years, by asking the individual's life history and age of their children. Only one subject was recruited per household.

Using a similar "one-third" manual randomisation procedure, additional subjects were recruited at the chronic care clinics (diabetes, hypertension and general medicine) at Queen Elizabeth Central Hospital (QECH), Blantyre. QECH is the largest hospital in the country and provides some primary and all secondary care to the population of greater Blantyre. Patients or their guardians were recruited in the outpatient waiting area. Patients are arranged by hospital clerks in a line on benches waiting for clinic to start. Those over 60 years of age were assigned numbers (both eligible patients and guardians). These numbers were put in the box and the first

subject was identified by picking out a number. Thereafter, subjects were identified by taking every third subject on the line. Those who were seriously ill, were admitted into the hospital or who lived outside of the Blantyre urban area were excluded.

Data collection

The assessment included both self-reported and objective parameters. A one-to-one interview was carried out using a structured questionnaire (Appendix). All subjects were asked about falling in the last year, using a standard case definition of falling.[19] Other areas addressed included self-reported memory problems, continence, mobility, comorbidities and medication use. Objective measures included a modified form of the abbreviated mental test (AMT), adapted for locally appropriate knowledge and a three-metre Timed Up and Go test (TUG).[20] The primary outcome was the prevalence of falls in the preceding 12 months. Data was collected in December 2011 and January 2012.

Ethical considerations

The Malawi College of Medicine Research Ethical Committee (COMREC) granted approval for the study. All participants gave informed consent.

Statistics

The data were analysed using Epi info® version 3.5.3. The sample size was calculated based on the predicted prevalence of the primary outcome (having fallen in the previous 12 months). The prevalence of falls in Malawi was assumed to be between 10% and 30% based on the prevalence of falls in Zimbabwe (14%) and United Kingdom (30%), giving a minimum sample size of 62. A chi-square test was used to compare proportions between groups for categorical variables, and unpaired t-tests for between-group comparisons of continuous variables.

Results

The sample comprised 98 subjects (age range 60-114; mean 72 years), 15 from clinic waiting areas and 83 from the community. Sixty-nine (70.4%) were female, 44 (26 women and 18 men) were still working. Thirty-six women and six men received financial support from their children and 12 had another income (e.g. pension or alms). Twenty-seven females and no males were without formal education; 39 females and 26 males had attended primary school; two females and three males had attended secondary school. Only one subject (female) had attended tertiary education.

The prevalence of falls and other age-associated syndromes is shown in Table 1. Forty people (41%) reported a fall in the 12 months prior to the study, and 13 of these 40 (33%) had fallen more than once. The majority of fallers, 24/40 (60%), reported fear of falling. Four subjects, who were immobile on the day of study, were excluded from the Timed Up and Go (TUG). In the remaining 94 subjects, the time taken for the TUG test varied from eight to 53 seconds (median 15 s). A cut-off of TUG > 16 seconds has been associated with falls risk in other settings; 30% of subjects met this criteria.

Incontinence and poor memory were also widely reported as problems. Twenty-five percent of subjects, 21% of women and 31% of men, reported problems with urinary incontinence. The range of AMT scores was 1 to 10 (median 10), with only 11 subjects—all women—scoring < 7. Mean AMT scores were significantly lower in women than men (8.54 ± 0.23 vs 9.41 ± 0.17, p = 0.020). Those who had self-reported memory problems had slightly lower AMT scores than those with no reported problem (mean AMT ± SEM = 8.57 ± 0.22 vs 9.24 ± 0.27, p = 0.066).

The proportion of subjects who fell was significantly higher among those reporting memory problems and those with AMT < 7 (p = 0.004 and 0.02 respectively) (Table 2). Falling was also more frequent among those reporting urinary incontinence (p = 0.01). The mean time for the TUG test did not differ significantly between fallers (mean ± SEM = 17.31 ± 1.26 s) and non-fallers (15.65 ± 0.82 s) p = 0.44. Age, gender, alcohol use (n =11, subjects who fell = 1), smoking (n = 5, subjects who fell = 2), antihypertensive medication (n = 31, subjects who fell = 15) and other comorbid conditions were not associated with falls.

Discussion

This is the first description of the prevalence of falls in older adults from Malawi or similar countries in Sub-Saharan Africa. The prevalence of self-reported falls in the past year was high at 40.8%. For a population of community living people aged 60 and above the figure is higher than that reported from more developed countries where approximately 30% of adults fall annually.[4,6] The only previous survey of falling from this region was from Zimbabwe.[7] In that survey 14% of adults aged over 60 reported that they had "had problems with falls" in the past year. The wording of the question in the Zimbabwe survey may explain the lower number, since some falls, which were considered not to be a problem may not have been reported, whereas in our survey, subjects were asked to recall all falls using a rigorous definition.[19] The number of recurrent fallers, 13/98 (13.3%) was similar to that described in studies from developed countries where 13.5% report recurrent falls[4].

Risk factors for falling are well described in high-income countries.[4,6] Based on these, there are many challenges that face older adults living in countries like Malawi that could account for the higher falls rate. Geographic and environmental factors in and around the home are undoubtedly important and may contribute up to 44% of falls risk. Footwear is often poorly fitting and may be a trip hazard, and walking aids are not readily available. In addition, the physical demands on older people are high. Economic pressures require that old people keep working throughout their lifespan, even when illness and chronic morbidity intervene. Almost half our respondents were still working. Transport costs are high, so many people walk long distances and even those who are not in paid employment are frequently caring for grandchildren or sick adult children. Unmet health needs are another contributing factor to falling.[5,6] We did not collect detailed data on this in our study but uncorrected visual impairment, uncorrected pain and medical conditions such as neuropathy, Parkinson's disease, stroke and heart failure are all known to increase falls risk and are more likely to be undiagnosed and untreated in low income countries.[7,10] In this context it is interesting to note that falls were significantly associated with self-reported urine incontinence, memory problems and lower AMT score, which are all recognized risk factors for falling. The association may be that: (a) both problems relate to a single underlying condition, such as stroke, (b) it is a reflection of a high burden of comorbidities and functional impairment in patients at risk of falling, or (c) that one condition, e.g. cognitive impairment (lack of awareness of risk) or incontinence (rushing to the toilet), make falling more likely. Performance in the Timed up and

Go (TUG) test may indicate a relationship between physical impairment and falling. We found that subjects who reported a fall performed the TUG test two seconds slower than non-fallers. This is a clinically meaningful difference, though not statistically significant, possibly related to the sample size, which although adequate to detect the primary outcome of falling, may be inadequate to show statistically significant differences in secondary analyses. The observation suggests that fallers were more physically impaired, although it is not possible to know whether this is a cause, or an effect of falling. There were very few subjects in our survey who drank alcohol or took medication that might be implicated in falling. Immobility was uncommon, an observation also made in Zimbabwe[7] and Tanzania[8]. This may be explained by a high mortality rate in immobile individuals or by immobile individuals relocating to rural homes, where it may be easier for family members to provide care. The consequences of falling include physical injury and the psychological syndrome of fear of falling. Six to 24 percent of falls may result in fracture or other serious injury,[5,6] but we did not collect data on falls-related injuries in our survey. We did, however, enquire about fear of falling. This is a psychological syndrome which predisposes to reduced mobility, impairment in activities of daily living, depression, reduced quality of life and further falling.[21,22] Although a formal assessment tool[23] was not used, the majority of fallers in our survey (60%) reported fear of falling. It is relevant to note that fear of falling is amenable to intervention, which can reverse the downward spiral of reducing mobility and increasing dependency.[24]

Information on dementia prevalence in Africa is very limited, with models based on existing data suggesting the prevalence lies between 2.4 and 19.7%.[10] Memory problems were frequently reported in our survey, 66.3% on self report and 11.2% with an AMT < 7. In other similar community surveys of older adults, self-reported memory difficulties were reported in 2.5%[8]and in 6.4-21.6%, using more rigorously applied criteria in Tanzania.[10] Screening with the AMT in people aged over 60 in Zimbabwe found 46% with AMT scores < 7[25] and in Botswana, short term memory loss was judged to be present by the doctor in 23% of community dwelling over-60s.[9] These studies illustrate that memory loss is a common and unrecognised problem, but the wide discrepancy between these studies exemplifies the need for better assessment tools as suggested by Prince and colleagues.[13] There are no services to assess and manage these problems for older adults in the community.

Limitations of the study

There are several limitations of this study. The sample size was relatively small and although it had power to detect the prevalence of falling, significant associations in other analyses may have been missed. A small number of subjects were recruited from chronic care clinic waiting areas. This included carers and spouses of those attending clinics as well as patients. This group did not differ from subjects recruited at home and are likely to be representative of older urban adults. The subjects comprised 70% women. In Malawi women outnumber men in this age group,[26] although not to this extent. The disparity may reflect that men are more likely to be out of the home working during the day, even in this age group. By recruiting subjects at home, we may have biased the sample to those who stay at home for other reasons, such as ill health or physical dependency. The survey was based on self-reported, retrospectively recalled falls which may lead to inaccurate reporting, although, if anything this can lead to under-reporting of falls.[27] Likewise, with the exception of the AMT score and TUG, we relied on self-report. However, the biological plausibility of our observations, prevalence rates similar to reports from other settings, and consistencies between measures all suggest that our observations are likely to be close to the true situation. Finally the use of a modified AMT in our population is not validated, so these results should be viewed with caution and may account for the gender difference in AMT scores observed.

Conclusions and recommendations

We have demonstrated that falls and other geriatric syndromes appear to be common in older adults in urban Blantyre. The burden of morbidity and mortality associated with falls in Malawi is not known, however, worldwide falls are one of the 10 leading causes of death in the elderly. There is an urgent need for more understanding of geriatric problems in our setting. This call was succinctly made in 1997,[28] but the state of knowledge has progressed little since then. Further research is needed to develop assessment tools appropriate for our setting and use these to prospectively collect data on falls and their consequences, as well as on other geriatric syndromes. The risk factors for these problems need to be defined as it is likely that many of the contributory factors to falls would be amenable to multifaceted interventions similar to those that have been successful in developed countries.[29] This knowledge needs to be used to develop national policies on the health and social needs of older people.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Table 1 Prevalence of age-associated syndromes in older people

Variable	Number (percentage, 95% confidence interval) of subjects with the problem		
	all n=98	females n=69	males n=29
Fall(s) in past 12 months	40 (40.8, 31.3-50.7)	31 (44.9, 33.2-56.6)	9 (31.0, 14.2-47.8)
Immobility (self reported)	4 (4.1; 0-7.9)	3 (4.3, -0.5-9.1)	1 (3.4, -3.2-10.0)
Timed up and go (TUG) > 16 sec	28 (29.8, 20.9-39.1)	24 (34.8, 23.6-46.0)	4 (13.8, 1.3-26.4)
Urine incontinence	24 (24.5, 16.0-33.0)	15 (21.7, 12.0-31.4)	9 (31.0, 14.2-47.8)
Stool incontinence	3 (3.1, -0.4-6.4)	2 (2.9, -1.1-6.9)	1 (3.4, -3.2-10)
Self reported memory loss	65 (66.3, 55.9-74.7)	49 (71.0, 60.3-81.7)	16 (55.2, 37.1-73.3)
AMT* (< 7)	11 (11.2, 5.0-17.4)	11 (15.9, 7.3-24.5)	0

*Abbreviated mental test

Table 2: Association of falls with other syndromes

Variable	Number of subjects with problem	Number (%) of subjects with problem who had fallen	Number of subjects without problem	Number (%) of subjects without problem who had fallen	Chi^2 p-Value for proportion of fallers in those with the problem compared to those without
Self-reported memory problems	65	33 (50.8)	33	7 (21.2)	0.004
AMT* (< 7)	11	8 (72.7)	87	32 (36.8)	0.02
Urinary incontinence	24	15 (62.5)	74	25 (33.8)	0.01
Immobility	4	1 (25.0)	94	39 (41.9)	0.51
TUG** (> 16 sec)	28	13 (46.4)	70	27 (38.6)	0.44

*Abbreviated mental test ** Timed Up and Go