Physical health and functional ability of an elderly population in Sri Lanka

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Summary

Demographic changes occurring in the past few decades have resulted in an increase in both the proportion and in the absolute numbers of elderly persons in many developing countries, where services for the elderly are limited. Assessment of physical health and functional ability of this group forms a basis for formulation of policies and programmes for provision of such services.

A community based study aimed at obtaining the above information was carried out in a province in Sri Lanka, using several approaches – self-assessment of health status, self-reported health problems, functional status measures and physical performance measures. The findings indicated the common health problems to be associated with vision, hearing, mastication and mobility. Other conditions requiring long-term care such as arthritis and hypertension were also important. Self-assessment of health, a good predictor of morbidity and mortality was associated with several psychosocial variables. Data indicated that number of years of life expectancy, free of problems associated with activities of daily living, was relatively low.

Programmes aimed at limiting disability among this group have to be considered along with those for provision of care.

Introduction

Aging of the population is a phenomenon present in both developing and developed countries. Sri Lanka, a country which has shown an increasing life expectancy at birth and reducing mortality rates in the past few decades, is likely to experience an increase in the proportion of the elderly population, in the next few years. It is estimated that the population 60 years and over will constitute 8.5% in the year 2000 and 15.2% by the year 2025 (1).

Most of the developed countries have health and social welfare programmes for this age group. Hence a majority of reported studies on health status are from such countries (2, 3). The main concern of these countries at present seems to be, not the provision of services for the requirements of the elderly, but planning approaches to increase healthy life expectancy (4).

In developing countries, the major concern during the latter part of this century has been to develop services aimed at reducing mortality and morbidity. The demographic changes which have resulted from these activities will lead to an increase in the proportion as well as in the absolute numbers of the elderly population. These changes make it necessary that appropriate health and other support services be developed.

Measures of physical health and functional ability of elderly populations based on community studies are likely to provide useful background data for planning such programmes.

Methodology

A descriptive community based study aimed at studying the physical health status and functional abilities in the elderly was carried out in the three districts comprising the Western province of Sri Lanka. Of the total population of the country 26% reside in the area included in the study. A three stage sampling procedure was used to identify the sample of elderly, defined as those aged 60 years and over.

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In each district, 10 urban and 10 rural areas were identified based on census data and using the probability proportional to size technique. From each of the selected areas, one cluster was randomly selected from the electoral wards in the urban areas and from the Grama Niladhari divisions (smallest administrative units) in the rural areas. Using the electoral register for each of the clusters, 20 persons of age 60 years and over were identified. Attempts were made to include an approximately equal number of persons in the age groups 60 - 64 yr, 65 - 69 yr and 70 yr and over. This process enabled inclusion of a sample of 1200 elderly persons.

The main approach for data collection was through an interviewer administered questionnaire. Field level health workers were trained to carry out these interviews. Re-tests were done on a 5% sample to ensure quality of data.

Assessment of health status at community level requires the use of methodologies that are feasible in such settings and also shown to be valid as predictors of mortality and morbidity. Thus, self-reported functional status measures and physical performance measures were used to assess the health status of the elderly population included in the study. Among the self-reported measures were: self-assessment of health based on the reponse to the question "Are you feeling healthy ?", reporting of an accident, injury or illness within the year preceding the survey, information on problems related to mastication and to mobility.

Simple clinical examinations were carried out to identify problems with vision and hearing. Visual problems were detected using a modified Snellen's Chart E version, a score of 18 and over being considered as having 'poor' vision. Hearing disorders were assessed by the following procedure: the interviewer stood 3 metres behind the subject in a quiet room. After 3 test words were repeated to familiarise the subject with the procedure, each ear was tested by saying 3 words at a constant volume. The subject was then asked to repeat the words, and, even if one word was repeated incorrectly, it was recorded as 'impaired hearing'.

Assessment of functional ability was made on the responses to 11 questions on the ability to perform "activities of daily living (ADL)" (5). Seven of these activities are related to personal activities, hence termed as "personal activities of daily living (PADL)" – ability to eat, dress, take care of appearance, walk, go to toilet, get in/out of bed, take a bath. Other 4 activities are referred to as "instrumental ADL (IADL)" and included ability to travel outside, go shopping, prepare own meals and handle money.

A limited number of tests of physical performance for assessing the functioning of upper and lower extremities were carried out, using standard procedures. These included: semi tandem stand, full tandem stand, rising from chair without using arms and shoulder external rotation (full).

A younger member of the household present at the time of the interview was identified as an "informant". At each interview where an informant was present, assessment of the informant of the health status of the elderly person was obtained.

Results

The non-response rate for the study was only 1.7%. In response to the question "Are you healthy ?", 49% of males and 38% of the females said that they felt healthy. A consistent decrease in the proportion of healthy was seen with age for both sexes (Table 1).

Prevalence of visual, hearing, dental problems and problems related to mobility increased with age and was commoner among females within each age group (Table 2). Visual problems were the commonest and was found in 65% of the total group and the problems of hearing and mastication were present in 21% and 30% respectively.

Health problems reported ranged widely, the commonest being "arthritis", which was reported by 32% of the total group. High blood pressure (22%), heart (14%) and lung diseases (14%) were the next common reported health problems.

Table 1. Number and percentage of persons "feeling healthy" within each age/gender group

Sex	60 –	65 –	70 –	75 –	80 +	Total
Males	127 (43)	81 (28)	46 (15)	25 (8)	17 (6)	296 (49)
Females	89 (41)	54 (25)	41 (18)	17 (8)	17 (8)	218 (38)

Table 2. Percentage of persons who had identified problems by age and gender

1. Males

Problem	Age in years 60 – n = 217 %	65 – n = 158 %	70 – n = 115 %	75 – n = 70 %	80 – n = 52 %	Total n = 612 %
Visual problems	57	60	79	67	74	64
Hearing problems	10	18	25	22	45	19
Dental prosthesis	12	18	8	7	9	9
Difficulty in chewing	21	26	31	32	53	28
Problems with feet	4	7	9	4	8	6
Difficult to walk 300 metres	7	8	14	28	35	23

2. Females

Problem	Age in years 60 – n = 217 %	65 – n = 152 %	70 – n = 107 %	75 – n = 70 %	80 – n = 52 %	Total n = 588 %
Visual problems	61	69	63	73	84	67
Hearing problems	16	22	25	32	51	24
Dental prosthesis	13	17	16	16	4	14
Difficulty in chewing	26	30	30	49	42	32
Problems with feet	5	4	11	6	7	6
Difficult to walk 300 metres	11	21	27	35	49	23

82% of the males and 76% of the females were able to carry out all seven PADL activities without help. However, performance in IADL activities was much lower in all age groups (Table 3). The number of persons able to carry out individual activities varied, with some differences between the genders (Fig. 1). In general, males performed better than females in all activities except in "preparation of own meals". This may be due to the tradition in Sri Lankan society, where preparation of meals is considered a woman's responsibility.

Table 3. Number and % (in parenthesis) within each age/gender group who could carry out "activities of daily living"

Activity	Age in years 60 –	65 –	70 –	75 –	80 +	Total
All PADL						
males	193	174	92	48	18	525
	(89)	(88)	(79)	(71)	(45)	(82)
females	148	154	71	37	19	429
	(87)	(79)	(74)	(67)	(40)	(76)
All IADL						
males	101	69	34	11	5	220
	(49)	(35)	(29)	(16)	(15)	(34)
females	95	67	26	12	3	203
	(56)	(35)	(28)	(22)	(6)	(36)

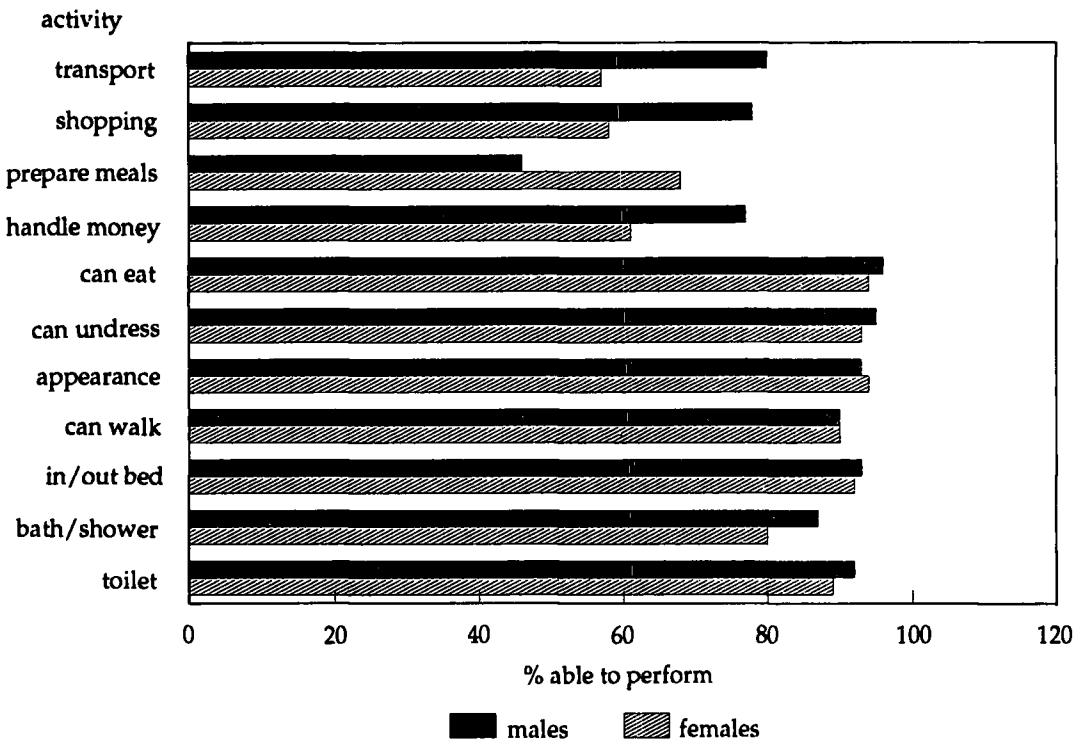

Fig. 1. Ability to perform ADL. Analysis by gender

Table 4. Number and % (in parenthesis) in each age/gender group able to carry out physical performance tests

Test	Age in years					Total
	60 –	65 –	70 –	75 –	80 +	
Semi tandem stand	313 (82)	289 (73)	122 (57)	68 (55)	28 (32)	822 (68)
Full tandem stand	297 (77)	260 (66)	113 (53)	58 (47)	24 (28)	740 (63)
Able to rise without using arms	320 (84)	311 (71)	147 (69)	72 (59)	33 (38)	870 (74)
Shoulder external rotation	266 (69)	252 (64)	122 (57)	57 (46)	31 (36)	728 (61)

Performance based measures were carried out by 1038 (83.5%) of the total group, others not being able to do so, due to injury or an illness. Best performance was in "standing from chair without using arms" (84%), semi tandem stand was completed by 78% and full tandem stand by 72%. The poorest performance was in shoulder external rotation (69%). The proportion able to carry out these tests decreased with increasing age (Table 4).

Some psychosocial factors and indicators of health service use was studied in relation to "self-assessed" health status (Table 5). It was seen that more of those who felt healthy had adequate contacts with their relatives and participated in family decisions. They were also satisfied with their environment and financial status and more of them worked outside home. Use of health care services was significantly lower among those who reported themselves to be healthy. Better health status was significantly associated with increased ability to complete the physical performance tests and in carrying out ADL (Table 6).

Informants were present in 1167 (97%) of the interviews. Comparison of the physical health rating made by the informant with 'self-assessment' indicate that the elders rate their level of health to be marginally lower when compared with that of the informant (Table 7). Only 66% of the elders whose health was assessed as "good" by the informant said that they felt healthy, compared with the 93% who agreed with the informants when their health status was assessed as "poor".

Using the data from the present study, measures of active life expectancy were developed using the available methods (6). Even though years of total life expectancy at 65 years was 13.2 years for males and 14.72 years for females, years of life expectancy free of problems with ADL activities was relatively low for both genders (Table 8).

Discussion

Identification of health problems and functional ability of an elderly population is of importance to health planners and policy makers, as such data are likely to provide guidelines in deciding the appropriate options for a service for care of the elderly.

Several longitudinal studies have shown that self-assessment of health status is a good predictor of morbidity and mortality (7, 8, 9). Using this index, the proportion "feeling healthy" was 43% which is low when compared with similar observations made in other countries in the region: 56% in Myanmar, 84% in Indonesia and 62% in Thailand (10). It was

Table 5. Self-assessed "health status" by some psychosocial factors and indicators of use of health services

Variable	Self-assessment of health	
	healthy (n = 513) %	not healthy (n = 647) %
Psychosocial factors		
Visits relations enough	49	38 **
Visited by relatives often	52	42 *
Works outside the house	21	12 *
Has enough money	58	47 *
Participates in family decisions	61	42 **
Satisfied with environment	47	37 *
Health care use (during past month)		
No visits to doctor	73	45 **
Not taken traditional medications	86	75 **
Not taken prescribed medications	79	52 **
Not taken over the counter medications	81	75 **

The level of statistical significance between the two groups using x^2 statistic are given as follows:
* $p < 0.005$ ** $p < 0.0001$

Table 6. Persons able to perform physical tests and activities of daily living, by self-assessed health status

	Feeling healthy		
	Yes (n - 518) %	No (n = 664) %	p value (using x^2)
Physical performance test			
Semi tandem stand	85	55	
Full tandem stand	81	46	
Able to sit up without using arms	87	63	for all
Shoulder external rotation	78	47	comparisons
Ability to do activities of daily living (ADL)			$p < 0.00001$
all PADL	52	29	
all IADL	94	70	
all ADL	47	30	

Table 7. Comparison of informant assessment of health status with self-assessment

Informant assessment		Self-assessment healthy n	Self-assessment not healthy n	% agreement
Good	n = 652	431	221	66
Fair	n = 351	71	280	20 **
Poor	n = 164	12	152	93

** % agreement for this group has been calculated taking the informant assessment of health "fair" as indicating satisfactory health status.

Table 8. Life expectancy measures at age 65

	Males	Females
Total life expectancy in years (LE)	13.2	14.72
Years of life expectancy free of problems with PADL	12.32	13.43
Years of LE free of problems with all ADL	7.81	8.33
% of total LE free of problems with PADL	93.3	91.2
% of total LE free of problems with all ADL	59.2	56.6

shown that those who assessed their health status as "poor" had reduced functional abilities and used health services to a greater extent. These observations when taken together with the relatively high proportion of elderly persons who reported themselves "not healthy" should be taken into account in planning appropriate programmes.

This study indicates that most of the common problems in this age group require long-term care and supportive services, (e.g. arthritis, problems with vision) some of which need collaboration with sectors outside the health sector.

In most developed countries where the health services for the elderly are well organised, the emphasis at present is to reduce disability and prolong "healthy life expectancy" (11). In countries like United States of America, concern has been expressed at national level that unless dependence among elderly is reduced, there will be more people needing care than those who are able to provide care (12).

The observation that the number of years of healthy life expectancy is low compared with total life expectancy indicates the need for paying attention to programmes aimed at preventing and postponing disability and dependency. Such emphasis is essential for improving the quality of life of the elderly, even in developing countries. Thus, in addition to provision of curative services, other services such as development of appropriate screening programs, improvement of supportive care at institutional and field level, will have to be considered in planning programs for the elderly.

Monitoring of health problems in the elderly have to be a component of health services for

this group, as changing patterns of health problems could arise, as cohorts of differing 'exposures' enter the age group considered as elderly.

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