

Functional Status of the Elderly in Singapore-The Trend over a Decade

K S Lee,**FAMS, M Med*, T C Tan,***MFOM (Lond)*

Abstract

The study looks at the level and types of functional disabilities of a random sample of elderly individuals in the community through direct interviews using a questionnaire in 1992 and compares the results to that obtained from a similar study done in 1982.

Two hundred and eighty-three elderly aged 60 years and above were studied. In the activities of daily living (ADL) functions category, most elderly individuals were independent in dressing (96.1%), bathing (95.4%), preparing meals (92.6%) and using the toilet (89.4%). There was increasing disabilities in the instrumental activities of daily living (IADL) functions, in ascending order of difficulty—light chores (81.3% independent), shopping (67.8% independent) and heavy chores (60.1% independent). Eight (2.8%) of the elderly were confined to bed most of the time.

Comparing the results with the 1982 cohort, the 1992 cohort was more dependent, with significant increase in difficulty with dressing, using the toilet, bathing, and higher functional activities. There was also significant increase in the number of elderly confined to bed most of the time, from 1% to 2.8%. The only activity that showed a reverse trend was food preparation.

The trend of dependence among the elderly is growing and deserves further specific studies to examine the possible reasons for the increasing disabilities in the elderly population, especially as the population is ageing rapidly.

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Introduction

Concerns for the needs of an ageing population prompted a national survey on senior citizens in 1982 directed by the Committee on Problems of the Aged in Singapore.¹ This was in the form of a personal interview with the help of a structured questionnaire. The survey showed that virtually all respondents could attend to their personal needs independently. Only 1% to 2% of the elderly needed help in feeding, bathing and dressing. Over the last decade, a broad range of services has been developed for the disabled elderly, both in the private and public sectors. The most recent population census in 1990 showed an increase in the elderly population aged 60 years and above from 7.5% in 1980 to 9.1% in 1990.² Twenty-four per cent of the elderly in the 1990 census were aged 75 years and above compared to 12.8% in the 1980 census.

For health care providers, there is a need to re-look at the level and types of disabilities in the elderly population.

The present study looks at the level and types of

functional disabilities of a random sample of the elderly in Singapore through direct interview using a questionnaire and compares the results to that obtained from the national study done in 1982.

Materials and Methods

The elderly sample for this study was taken from all elderly individuals 60 years and above involved in a nationwide survey of arthritic and musculoskeletal diseases. This national study was conducted from September 1991 to November 1992. Eight 1990 electoral and population registers were selected. A total of 1079 households were selected. Out of which, 969 were found to be eligible after excluding shop houses, foreign workers and non-domestic dwellings. Individuals aged 21 years and above were interviewed for the arthritic study. All individuals 60 years and above were interviewed with a questionnaire on their functional status. A total of 748 (77.2%) of eligible households responded and a total of 2478 adults were counted, out of which 2295 (92.6%) responded. There were 283 elderly individuals from those who responded (12.33%). The response rate for the

* Medical Director

Hua Mei Mobile Clinic, Tsao Foundation

** Senior Lecturer

Department of Community, Occupational and Family Medicine

National University of Singapore

Address for Reprints: Dr K S Lee, Hua Mei Mobile Clinic, Community Services Complex Unit #02-01, Alexandra Hospital, 378 Alexandra Road, Singapore 159964.

1982 cohort was 5538 persons out of a total of 7219 individuals sampled (76.7%).

The information on the completed questionnaire were checked, coded and keyed into a database using the Dbase IV programme.

For comparison with the 1982 cohort (which looked at independence in performing a task), the group with “no difficulty” with a particular task was used.

Activities of daily living (ADL) functions in “feeding, bathing, dressing and going to the toilet” (1980 cohort) were compared correspondingly with the ADL functions in “preparing own food, washing and drying whole body, dressing and getting on and off toilet” (present cohort).

For mobility, we compared the “mobile, climb staircase and confined to bed” (1982 cohort) to the “walk from one room to another, walk up and down steps and confined to bed most of the day” (present cohort).

An attempt was also made to compare higher functional activities, but this was less reliable as the questions were phrased quite differently. In the question on “shopping”, our present study emphasised the ability to carry a full bag of grocery, which was not stated in the 1982 study. “Light chores” in our study (an example cited was vacuuming) was compared to “cleaning the house” in the 1982 study. “Heavy chores” in our study was compared to “laundry” in the 1982 study. This was because in the 1982 study the elderly had more difficulty with “laundry” than “cleaning the house”.

Results

Age and sex distributions are shown in Table I. The elderly in our sample is younger with 13.4% aged 75 years and above compared to 24.1% who were 75 years

TABLE I: SEX AND AGE DISTRIBUTION

Age(y)	Male (%)	Female (%)	Total (%)
60 to 75	123	122	245 (86.6%)
>75	16	22	38 (13.4%)
Total	139 (49.1%)	144 (50.9%)	283 (100%)

and above in the 1990 census. However, this is not much different from the 1982 cohort (13.8% aged 75 years and above). The sex distribution of 46.5% males and 53.5% females in the 1982 cohort was also comparable to our sample. In the ADL functions (Table II), most elderly individuals were independent in dressing (96.1%), bathing (95.4%), using the toilet (89.4%) and preparing own food (92.6%).

Comparison with the 1982 cohort (Table III) showed that the 1992 cohort was significantly more disabled in the following: dressing, 3.9% versus 2% (odds ratio 1.98, $P < 0.05$), bathing, 4.6% versus 2.6% (odds ratio 1.8, $P < 0.05$) and in using the toilet, 10.6% versus 2.2% (odds ratio 5.28, $P < 0.001$).³ Food preparation showed a reverse trend, with the 1982 cohort being more dependent, 7.4% versus 16.4% (odds ratio 0.41, $P < 0.001$).

For mobility, eight persons (2.8%) gave a history of being confined to bed most of the time. As expected, walking up and down steps and walking a quarter mile were more difficult than walking from one room to another (Table IV). Standing from an armless chair was as difficult as walking from one room to another.

Comparison with the 1982 cohort is shown in Table V. There was no significant difference in mobility in the two cohorts. However, looking at the elderly “not confined to bed”, the 1992 cohort was more disabled compared to the 1982 cohort, 2.8% versus 1.0% (odds ratio 3.94, $P < 0.01$).

In the higher functional activities category (Table VI), although 81.3% were independent with light chores, only 60.1% were independent with heavy chores. Shop-

TABLE II: ACTIVITIES OF DAILY LIVING (ADL)

ADL	Some difficulty or unable	Don't know/not applicable	No difficulty
Dressing	9 (3.2%)	2 (0.7%)	272 (96.1%)
Preparing own food	18 (6.3%)	3 (1.1%)	262 (92.6%)
Washing and drying whole body	8 (2.8%)	5 (1.8%)	270 (95.4%)
Getting on and off toilet	15 (5.3%)	15 (5.3%)	253 (89.4%)

TABLE III: RELATIVE RISK OF INABILITY TO PERFORM ACTIVITIES OF DAILY LIVING (ADL): COMPARISON BETWEEN THE PRESENT STUDY AND THE 1982 STUDY

ADL	Present Study		1982 study		Odds ratio (range)	P value
	With difficulty to unable	No difficulty	With difficulty to unable	No difficulty		
Dressing	11	272	79	3879	1.98 (1.04 to 3.74)	<0.05
Preparing own food	21	262	649	3309	0.41 (0.26 to 0.65)	<0.001
Washing and drying whole body	13	270	103	3855	1.8 (0.9 to 3.3)	<0.05
Getting on and off toilet	30	253	87	3871	5.28 (3.3 to 8.1)	<0.001

ping was also shown to be a difficult activity, with only 67.8% independent in this activity. Comparison with the 1982 cohort showed more disabilities in the 1992 cohort with significant differences in all 3 activities studied (Table VII), for light chores (18.7% versus 10.9%), heavy chores (40% versus 17.5%) and shopping (32.2% versus 18.8%).

There was also a general trend of increasing disabilities in the older age groups (Table VIII). This was also present in the 1982 study.

TABLE IV: MOBILITY

Activity	Some difficulty to unable	Don't know/ not applicable	No difficulty
Walk up and down steps	31 (11%)	3 (1.1%)	249 (88%)
Walk from one room to another	15 (5.3%)	2 (0.7%)	266 (94%)
Stand from armless chair	13 (4.6%)	8 (2.8%)	262 (92.6%)
Walk a quarter mile	30 (10.6%)	3 (1.1%)	250 (88.3%)

TABLE V: COMPARISON OF MOBILITY

Activity	Present Study	1982 Study	Odds ratio (range) <i>P</i> value
Mobile	266 (94%)	3722 (94.0%)	1.01 (0.88 to 1.15) >0.05
Walk up and down steps	249 (88%)	3545 (89.6%)	1.2 (0.83 to 1.73) >0.05
Not confined to bed	275 (97.2%)	3929 (99.0%)	3.94 (1.79 to 8.67) <0.01

TABLE VI: INSTRUMENTAL ACTIVITIES OF DAILY LIVING (IADL)

IADL	Some difficulty to unable	Don't know/ not applicable	No difficulty	1982 study No difficulty
Getting in or out of car	22 (7.8%)	3 (1.1%)	258 (91.2%)	Not available
Light chores	38 (13.4%)	15 (5.3%)	230 (8 1.3%)	89.1% (clean house)
Heavy chores	92 (32.5%)	21 (7.4%)	170 (60.1%)	82.5% (laundry)
Shopping (lifting and carrying a full bag of grocery)	72 (25.5%)	19 (6.7%)	192 (67.8%)	8 1.2% (shopping/marketing)
Ran errands and shop	40 (14.1%)	9 (3.2%)	234 (82.7%)	Not available
Walk a quarter mile	30 (10.6%)	3 (1.1%)	250 (88.3%)	Not available

TABLE VII: RELATIVE RISK OF INABILITY TO PERFORM INSTRUMENTAL ACTIVITIES OF DAILY LIVING (IADL) IN COMPARISON WITH THE 1982 SAMPLE

Activity	Present Study		1982 study		Odds ratio (range)	<i>P</i> value
	With difficulty to unable	No difficulty	With difficulty to unable	No difficulty		
Light chores	53	230	431	3527	1.9 (1.4to2.6)	<0.001
Heavy chores	113	170	693	3265	3.1 (2.4to4.1)	<0.001
Shopping	91	192	744	3214	2.05 (1.56to2.68)	<0.001

Discussion

A longitudinal study provides accurate reflection of the changes within a cohort over time. However, a longitudinal study can be very exacting, laborious and expensive. A community-based cross-sectional study of two or more age groups can be retested after a few years to form a second cross-sectional study. This re-testing of previously tested age groups adds to the longitudinal data and tests new age groups to add to the cross-sectional data.⁴

In this study, an attempt was made to compare the change in functional status of the elderly in Singapore using a repeat cross-sectional study after a time lapse of a decade.

Although, the age structure of the elderly has changed over the last decade with population ageing, the age structure of the sample population was similar to the 1982 cohort. Thus we made comparisons in the 2 samples without division into specific age groups.

TABLE VIII: RESPONDENTS WHO CAN INDEPENDENTLY ATTEND TO ACTIVITIES OF DAILY LIVING (ADL) BY AGE GROUPS (PERCENTAGE)

ADL	Age groups (y)	60 to 64	65 to 69	70 to 74	275	All age groups
Dressing		97.6	98.5	96.2	86.8	96.1
Prepare food		94.4	98.5	94.3	73.7	92.6
Bathing		96.8	97.1	96.2	86.8	95.4
Going to the toilet		97.6	98.5	90.6	86.8	95.1

Certain assumptions were made as stated in the materials and methods. Some bias may be related to the difference in sampling methods and the way the questions were phrased. For example, "going to the toilet" is not as specific as "getting on and off toilet". However, the trend in the change of disabilities was significant and worth consideration.

One activity that showed a reversal in the trend was food preparation. A plausible explanation may be that modern conveniences like the microwave oven may have made food preparation a much easier task.

For health care planners who make long-term projections for provision of services to keep the elderly within the community, epidemiological data of the ageing of the population have to be considered together with changes in the trend of disabilities.

As an example, the present study highlights increasing disability in instrumental activities of daily living such as "shopping". Solutions to this problem may include services such as home delivery, home help serv-

ices, and even handicap-friendly shopping centres.

There is also a need to study the reasons for the increasing disabilities, be it related to disease, socio-cultural or environmental factors.

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