

Who are the Residents of a Nursing Home in Singapore?

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ABSTRACT

Aim of study: To describe the residents of a nursing home for the elderly in terms of their socio-demographic profile, mental and physical attributes, functional abilities and existing medical problems.

Method: A random sample of 120 subjects was obtained from a total of 350 residents in a voluntary welfare nursing home. Two subjects were excluded as they did not satisfy inclusion criteria (age ≥ 60 years). The subjects' biodata, social background, medical problems and functional status at the time of admission were obtained by a review of the case records. Each of the subjects was examined with attention to their general condition, hearing and vision, presence of postural hypotension, cognition and ability to perform basic activities of daily living (ADL).

Results: Results were available for 106 out of the 118 subjects as the rest were either discharged in the course of the study or had died. Single (36%), widowed (41%), female (71%) and age ≥ 75 years (73%) consisted the majority. Most subjects (43%) were admitted because of both medical and social factors. Twenty-two percent appeared undernourished and of those who could be assessed, 14% had postural hypotension, 18% were hearing impaired and 53% had visual impairment. Fifty-two per cent suffered from mental problems while 46% and 40% had been diagnosed with hypertension and stroke respectively. Forty-eight percent had probable cognitive impairment (according to ECAQ scores) and 41% were very severely disabled (according to Barthel Index). Fifty-five percent were dependent in bathing, 50% dependent in dressing, 50% incontinent of urine (and requiring diapers), 48% were non-ambulant and 21% dependent in feeding.

Conclusion: With a significant proportion of the population requiring nursing home care in the future, a closer review of the situation is needed.

This study has identified malnutrition, urinary incontinence, falls, functional decline and impaired vision/hearing as issues that deserve greater attention and, where necessary, intervention. Whether implementing recognised effective interventions will truly benefit our nursing home residents would warrant more local studies.

Keywords: nursing home, elderly, ECAQ (Elderly Cognitive Assessment Questionnaire), Barthel index, ADL (Activities of Daily Living)

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INTRODUCTION

Singapore faces an increasing proportion of elderly in the ensuing years. The fast greying of the population could be attributed to ageing of the post-war baby-boomers (cohort born between 1945-55)⁽¹⁾, reduction in birth rates and increased life expectancy. Life expectancy is expected to increase to 78 years for men and 82 years for women by year 2030. Projections indicate that more than 25% of the population will be aged 60 years or older by year 2020 unless immigration influx and natural increase reverse trends⁽²⁾. The consequence of such a demographic change will be fewer working adults supporting more elderly persons as expressed by an increasing "old age dependency" ratio. The "old age dependency" ratio, which was one elderly dependent person to seven working adults in 1994, will be one elderly person to two working adults in 2030⁽³⁾. Inevitably, more elderly will have to cope on their own and when they are unable to, institutionalisation may be the obvious recourse.

There are currently 49 nursing homes in Singapore, comprising 25 private homes and 24 voluntary welfare homes⁽⁴⁾. In total, they provide about 5,680 beds and have an occupancy rate of close to 90%. Seven new voluntary welfare homes are expected to be operational by 2003. For many, the nursing home is seen as "a place of last resort, often stereotyped to be physically unattractive, smelly and populated with people who are frail and demented⁽⁵⁾." Seldom is the need for change or improvement mentioned on the political

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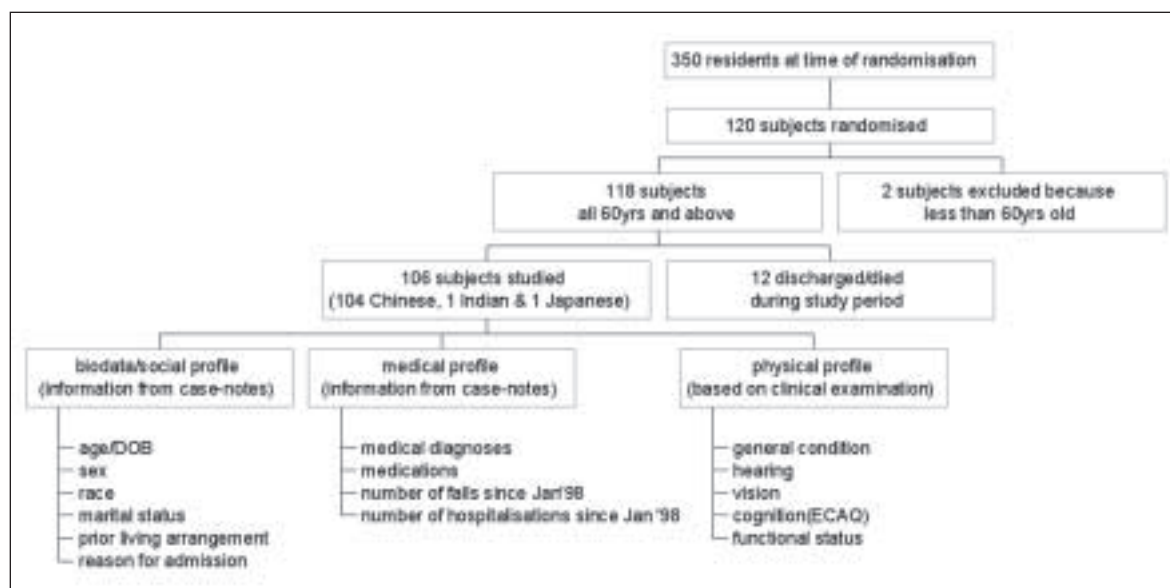


Fig.1 Study profile.

platform and the same can be said of the medical profession. Yet nursing home patients, who seem to have been left out in the rapid advancement of medicine, may be the ones with the greatest potential for benefit from even modest systematic efforts.

To our knowledge, with the exception of an unpublished study on two voluntary welfare homes in 1982⁽⁶⁾, there is to date no local study that describes the profile of the nursing home resident or evaluates the level of care provided by nursing homes. Such a study would be helpful in determining the needs of the nursing home resident and identifying areas in medical or nursing care that can be ameliorated. The information can be used to guide reforms to provide better care and help direct resources to the appropriate areas. With such objectives in mind, we embarked on a study of residents in a typical voluntary welfare nursing home. We looked at them from the standpoints of their socio-demographic profile, physical and mental attributes, functional abilities and existing medical problems.

METHODS

Fig. 1 summarises the profile of the study. It was conducted between April 2000 and January 2001. The study population comprised residents in a voluntary welfare nursing home for the elderly. A random sample of 120 subjects was obtained from a total of 350 residents using the software Stata Version 5. Two subjects under 60 years old were excluded from the study as the inclusion criteria was nursing home residents aged 60 years and above. One hundred and six subjects completed the study as the rest were either discharged or had died during the study period.

The subjects' biodata, social profile (including reasons for admission to the nursing home), medical diagnoses and functional status at admission were obtained by reviewing the case-notes. Much of the data was obtained from and followed the format in the standard admission form to nursing homes provided by the Care Liaison Service. Information on the reason for nursing home admission was further categorised into "medical" if the need for nursing home stay stemmed from inability to cope with the subjects' medical ailments and "social" if social factors formed the rationale for nursing home admission. The number of documented falls in the nursing home for each of the subjects since January 1998 and the number of hospitalisations in the acute hospital for the same period were also noted. Physical examination was conducted concurrently by two registrars in geriatric medicine. Attempts to determine the height and weight of the subjects were largely unsuccessful as the majority of them were not able to stand upright without support and a sitting weighing balance was not available. Hence, assessment of nutritional status was only by clinical impression and not by an objective index such as the BMI (Body Mass Index). During physical examination, special attention was paid to the subjects' general condition, physical and mental attributes, functional abilities and the presence of postural hypotension.

Postural hypotension was defined as a drop of more than 20 mmHg systolic pressure from supine to sitting position after three minutes. This was determined only at a single setting and at no particular time of the day. Hearing was assessed to be impaired if the subject was unable to hold a normal conversation

due to poor hearing in spite of using hearing aids. Vision was assessed to be impaired if the subject was unable to read newsprint despite the use of glasses. The Elderly Cognitive Assessment Questionnaire (ECAQ)⁽⁷⁾ was used to evaluate cognitive status. Out of a maximum score of 10, the subjects were classified into probable (<5/10), borderline (5-6/10) and improbable (>6/10) cognitive impairment. The modified Barthel index⁽⁸⁾ was utilised for evaluation of functional status. The subjects were scored out of a total score of 20 and categorised into “very severe disability” (0-4), “severe disability” (5-9), “moderate disability” (10-14), “mild disability” (15-19) and “independent in ADL” (20). In addition, five aspects of functional status, namely, mobility, feeding, dressing, toileting and bathing, were documented in a format similar to that used in the application form for admission to the nursing home for purpose of comparison.

The case-notes were reviewed for any diagnosis of depression at admission as well as at the time of the study. However, with regards to dementia, the case-notes were used only for determining if the diagnosis of dementia had been present at admission. The assumption that patients with ECAQ scores of <5/10 had dementia formed the basis for evaluating dementia in the subjects at the time of the study.

RESULTS

Results were analysed for 106 subjects who had stayed in the nursing home for a median duration of 59 months (range : 3 to 204 months) at the time of study. All calculated percentages were rounded to the nearest whole number.

Demographic/social profile

A summary of the demographic and social profile of the 106 residents is shown in Table I.

Females made up more than two-thirds of the study population and all the subjects, except two, were Chinese. The “old old” i.e. 75 years and above, made up the largest proportion at 73% and almost half of this group consisted of those 85 years and older. The subjects also tended to be widowed (41%) or single(36%).

On admission, 21 (20%) subjects claimed not to have any existing relative while 81 (76%) still had at least one relative.

As regards living arrangement prior to nursing home admission, 18 (17%) subjects stayed alone while 11 (10%) of them lived only with their spouse. Thirty-nine (37%) subjects were living with their children or grandchildren and 7 (7%) were staying with other relatives (e.g. niece, nephew).

Table I. Demographic and social profile (N=106).

		Numbers	Percentage
Sex	Male	33	31
	Female	73	69
Race	Chinese	104	98
	Japanese	1	1
	Indian	1	1
Age	60-64	9	8
	65-74	20	19
	75-84	39	37
	>=85	38	36
Marital Status	Single	38	36
	Widowed	44	41
	Married	20	19
	Divorced/separated	4	4
Existing Relatives	None	21	20
At the time Of admission	At least one relative	81	76
	Not known	4	4
Prior living Arrangement	Alone	18	17
	Child/grandchild	39	37
	Spouse only	11	10
	Other relatives	7	7
	Others (e.g. friend, institution)	24	22
Reason for Admission	Not known	7	7
	Medical reasons only	26	25
	Social reasons only	21	20
	Medical and social reasons	46	43
	Not known	13	12

Table II. Reason for admission to nursing home (N=93).

	Number of subjects*	Percentage
Medical reasons:		
Needs assistance in ADL	49	53
Needs medical/nursing care	46	49
Care person willing but unable to cope with physical care/behavioural problem	30	32
Social reasons:		
Needs accommodation	32	34
Care person working or have other commitments	27	29
Financial difficulty	22	24
Care person unwilling to provide care	3	3
Poor relationship with care person	2	2
Does not want to burden care person	1	1
Others (e.g. vagrancy, prior institution, unable to cope with care)	11	12

*Many have more than one reason.

Table III. Physical profile.

	On admission		At time of study	
	Number	Percentage	Number	Percentage
Hypertension	49	46	49	46
Stroke	38	36	42	40
DM	18	17	22	21
Fractures	17	16	35	33
Hip	13	–	23	–
Spine	2	–	4	–
Colles'	0	–	2	–
Others	2	–	6	–
IHD	13	12	23	22
CCF	13	12	17	16
TB	10	9	10	9
Parkinsons	9	9	12	11
Osteoarthritis	9	9	14	13
COLD/asthma	8	8	11	10
Osteoporosis	6	6	8	8
Myelopathy	6	6	6	6
Hypothyroidism	5	5	5	5
Malignancy	4	4	8	8
Others*	12	11	21	20
Mental illness	39	37	55	52
Depression	15	–	22	–
Dementia	15	–	21	–
Psychosis	9	–	12	–

* Others include bronchiectasis, hyperthyroidism, chronic renal failure etc.

Table IV. Falls and hospital admissions (N=106)

		Number	Percentage
Falls			
Subjects with	Nil	64	60
falls in nursing	≥1x	42	40
home since Jan 1998	≥3x	16	15
Hospital admissions			
Number of	Nil	56	53
admissions	1	17	16
to hospital	2	13	12
since Jan 1998	3	11	10
	≥4	9	9

Pertaining to reasons for nursing home admission, medical reasons (25%) marginally outnumber social reasons (20%). The reasons for admission of 13 (12%) subjects were not obtainable from the case records. Table II shows a breakdown of the various reasons for nursing home admission cited by 93 (88%)

subjects. Most subjects (43%) were admitted due to a combination of medical and social factors, each with an average of almost four reasons. "Requiring assistance in activities of daily living (ADL)" was most common (53%). This was followed by "needs medical or nursing care" (49%), "needs accommodation" (34%) and "care person willing but unable to cope with physical care or behavioural problem" (32%).

Medical diagnoses, falls and hospital admissions

Table III summarises the medical diagnoses of the 106 residents.

The common medical illnesses on admission were hypertension (46%), stroke disease (36%), diabetes mellitus (17%), ischaemic heart disease (12%) and congestive heart failure (12%). Mental illness (37%) and fractures (16%) were also prevalent at the time of admission. Hip fracture was the most common type of fracture. There was equal prevalence of depression and dementia in the 39 subjects suffering from mental illness while the rest suffered from various forms of psychosis.

For most diseases, the prevalence remained the same or only marginally higher at the time of the study compared to on admission. However, the diagnoses of mental illness, fracture and ischaemic heart disease showed sharp increases from 37%, 16% and 12% respectively on admission to 52%, 33% and 22% at the time of the study.

As shown in Table IV, 42 (40%) subjects had fallen at least once in the nursing home (since January 1998) and of these, 16 (15%) had fallen three or more times. This fall occurrence was over an average study period of 33 months.

Concerning hospital admissions, over an average study period of 28 months, 50 (47%) subjects had been admitted to the acute hospital at least once. Most of them had three or less admissions but 9 (9%) subjects were admitted four or more times.

Physical profile

Table V shows a summary of the physical profile of the 106 residents.

The majority (76%) were noted to be in satisfactory general condition while 23 (22%) subjects appeared undernourished. Of the 92 subjects who were able to sit upright, 13 (14%) had postural hypotension.

Out of 82 subjects who were able to be tested for hearing, 67 (82%) had intact hearing of whom only one was using hearing aids. In total, only two subjects were known to be using hearing aids. All but one of the 15 (18%) subjects who were hearing impaired did not have hearing aids.

Table V. Physical profile.

	Number	Percentage
General condition (N=106)		
Satisfactory	81	76
Undernourished	23	22
Ill	2	2
Postural hypotension (N=92)		
Yes	13	14
No	79	86
Hearing (N=82)		
Intact	67	82
Wears hearing aid	1	1
No hearing aid	66	81
Impaired	15	18
Wears hearing aid	1	1
No hearing aid	14	17
Vision (N=75)		
Intact	35	47
Wears glasses	9	12
No glasses	26	35
Impaired	40	53
Wears glasses	9	12
No glasses	31	41

Out of 75 subjects who could be tested for visual acuity, 35 (47%) had intact vision of whom nine wore glasses. In total, 18 (24%) subjects were known to wear glasses. The majority (78%) of the 40 subjects who were visually impaired did not have glasses.

Cognitive and functional status

Table VI summarises the cognitive and functional status of the 106 residents.

Based on ECAQ scores, 51 of the 78 subjects who could be tested had probable cognitive impairment, seven had borderline impairment and 20 were unlikely to be cognitively impaired. Cognitive testing could not be done on 28 (26%) subjects because of reasons such as severe hearing impairment or dysphasia.

The modified Barthel index revealed 43 (41%) subjects to be very severely disabled while 27 (25%) subjects were still independent in basic ADL. Seventeen (16%) subjects were mildly disabled, 4 (4%) moderately disabled and 15 (14%) severely disabled.

In all five items measuring activities of daily living, a greater proportion of the subjects were

Table VI. Functional status and cognitive profile (N=106).

		On admission		At time of study	
		Number	Percentage	Number	Percentage
Barthel Index	0-4 (Very severe disability)	–	–	43	41
	5-9 (Severe disability)	–	–	15	14
	10-14 (Moderate disability)	–	–	4	4
	15-19 (Mild disability)	–	–	17	16
	20 (Independent in ADL)	–	–	27	25
ECAQ Score	0-4 (probable cognitive impairment)	–	–	51	48
	5-6 (borderline cognitive impairment)	–	–	7	7
	>6 (improbable cognitive impairment)	–	–	20	19
	Cannot be performed	–	–	28	26
Mobility	Ambulant (independent)	41	39	35	33
	Semi-ambulant (aids required)	50	47	20	19
	Non-ambulant/bed-ridden	13	12	51	48
	Not known	2	2	–	–
Feeding	Independent	82	77	59	56
	Need assistance	17	16	25	23
	Totally dependent	3	3	22	21
	Not known	4	4	–	–
Dressing	Independent	44	42	41	38
	Need minimal assistance	26	25	12	11
	Need substantial assistance/dependent	29	27	53	50
	Not known	17	16	–	–
Toileting	Independent	51	48	41	39
	Need assistance to go to toilet	26	24	2	2
	Need bedpan, urinal, commode	7	7	5	5
	Incontinent of urine/requires diapers	15	14	53	50
	Urinary catheter	1	1	5	5
	Not known	6	6	–	–
Bathing	Independent	40	38	36	34
	Need some assistance/supervision	34	32	12	11
	Dependent on staff	24	23	58	55
	Not known	8	7	–	–

dependent at the time of the study compared to on admission. The proportion of non-ambulant subjects rose from 12% on admission to 48% at the time of the study. Similarly, those totally dependent with respect to feeding, dressing and bathing rose from 3% to 21%, 27% to 50% and 23% to 55% respectively. At the time of admission, 14% of the subjects were incontinent of urine and 1% required an indwelling urinary catheter. In contrast, 50% were incontinent of urine and required diapers and 5% were on indwelling urinary catheters at the time of the study.

DISCUSSION

Who are the nursing home residents in Singapore? Our study shows that the majority of the residents are single or widowed females who are above 75 years of age. These characteristics have been shown to be predictive of nursing home admissions^(9,10). Given that the number of single/widowed and proportion of "old old" would be greater in the ensuing years, nursing home beds would proportionately need to be increased. It is estimated that Singapore would need 22,400 nursing home beds by the year 2030⁽¹¹⁾. Can the community of the future be empowered to provide long-term care so as to offset the anticipated load on nursing homes?

The American Nurses Association believes that most long-term care can be provided by a community-based system⁽¹²⁾. The results of a recent systematic review suggest that home visits to older people can reduce mortality and admission to long term institutional care⁽¹³⁾. Keeping the elderly in the community would entail more carer education and training. Carer training can involve learning about the physical and psychological needs of the elderly as well as acquiring techniques on how to nurse an incapacitated patient. The results of our study suggest that social reasons alone do not explain why the elderly are admitted to nursing homes. More importantly, it is a combination of social and medical factors that lead them to the often last recourse of staying in the nursing home. Amongst the commonest reasons cited for admission are "requiring assistance in ADL", "needs medical or nursing care" and "care person willing but unable to cope with physical care or behavioural problem". One can possibly surmise that many families appear to be willing to care for the ailed elderly if only they knew how. However, as opined by Chan et al in a study that examined nursing home applications⁽¹⁴⁾, the choice of "willing but unable to cope" instead of "unwilling to provide care" as the reason for nursing home admission may be a way in which care persons hide their rejection of the elderly. Nonetheless, the obvious conclusion

is nursing and medical support must be made more accessible and available to the functionally disabled elderly in their homes if they are to be kept in the community for as long as possible.

On admission, the study subjects already had a high prevalence of stroke disease, mental illnesses and fractures. More subjects developed these diseases in the course of nursing home stay. Many were also incontinent in respect of their urinary needs (50%) and required much assistance in activities of daily living. Similar to the findings of other studies, our study reveals that cognitive impairment, incontinence and functional decline are strong factors in determining whether one entered a nursing home^(9,15). The future cohort of elderly is envisaged to be more educated and financially independent. They can thus be advised early on preventive strategies, health promotion programmes and family/social/mental health programmes to delay the inevitable. Common medical problems with potential complications of functional disabilities should be the ideal targets for preventive strategies in the overall healthcare provision. Hypertension with its high prevalence (46%) is one ideal target. In addition, efforts should be targeted at engaging the elderly in society for as long as their health allows to avert development of chronic physical and mental disabilities.

In order to provide the minimum standard of care needed in a nursing home, the goals of nursing home care must first be recognised. The key goals of nursing home care are 1) provide a safe and supportive environment; 2) restore and maintain the highest level of functional independence; 3) maximise quality of life, perceived well being and life satisfaction; and 4) stabilise and delay progression, whenever possible, of chronic medical conditions⁽¹⁶⁾. It can thus be seen that the essence of nursing home care is consistent with the objective of geriatric care: to maintain functional well-being and maximise quality of life.

Examination of the study subjects revealed that about 22% of them were notably undernourished. This was however based only on clinical impression and not on any objective indicator for malnutrition. Malnutrition is often unrecognised or unevaluated in long-term care settings. There was no documentation of any regular assessment of nutritional status in our subjects. Among institutionalised patients, it has been shown that anywhere from 30-80% of them will have serious nutritional deficit at some juncture⁽¹⁷⁾. Several studies have shown that nursing home staff consistently underestimate how much patients are eating, leading to under-diagnosis and under-

management of this problem. Abbasi and Rudman surmise that low quality of care is an important factor in the development and persistence of severe nutritional problems in the institutionalised elderly⁽¹⁸⁾. Therefore, nursing homes should institute policies to identify undernourished residents and provide measures to improve outcomes. Attention to the daily oral intake of the residents and regular weight monitoring or determination of body mass index are simple means by which the problem may be identified early.

The high prevalence of falls in the subjects demands attention. Forty-two (40%) subjects had fallen at least once (within an average study period of 33 months) and 16 had fallen three or more times within the same period. As falls are more likely in those who are ambulant, the proportion of fallers among only ambulant subjects must surely be greater. Sub-group analysis to determine what proportion of the fallers were ambulant, had visual impairment, postural hypotension etc would be useful. This is however beyond the scope of this paper but would require a separate paper to evaluate the risk factors for falls. The causes of fall are heterogeneous but among them are some potentially reversible or preventable factors. These include poor vision, postural hypotension and environmental factors.

Visual impairment can contribute significantly to falls in the elderly. In addition, they have a negative impact on the quality of life for the nursing home resident. Horwitz found significant visual impairment present and unrecognised in nearly 25% of nursing home residents⁽¹⁹⁾. One study showed cataracts to be the commonest cause of blindness in the nursing home and the authors judged that about 20% of functional blindness and 37% of functional visual impairment could have been remedied with appropriate therapy⁽²⁰⁾. Our study shows an even higher prevalence of visual impairment with only 35 (47%) subjects having intact vision. Out of the 40 (53%) subjects with visual impairment, only nine wore glasses. It is likely that many subjects might benefit from prescription of glasses following optometric testing. Similarly, cognisant of the high prevalence of cataracts in the elderly⁽²¹⁾, some of the residents' vision could be improved by cataract surgery. The same could be surmised for those with hearing impairment. Given the importance of vision and hearing in the quality of life and functioning of the nursing home resident, more attention should be paid to these areas. A protocol that includes initial and periodic visual and hearing assessments for all nursing home admissions could be established.

Our study detected postural hypotension in 13 (12%) subjects. This was based on blood pressure measurement in a single setting and may represent just the tip of the iceberg. In one study of 911 nursing home residents, orthostatic hypotension was an isolated episode in 18%, variable in another 19% and persistent in a further 13% of the subjects⁽²²⁾. Thus, unless more than one blood pressure measurement is made, the diagnosis may be missed in many patients. Orthostatic hypotension is associated with a two-fold increase in subsequent falls among nursing home residents with previous falls⁽²³⁾. Although blood pressure is regularly measured in the residents of the nursing home studied, routine evaluation for orthostatic hypotension is not practised. It would be useful to have routine evaluation for orthostatic hypotension especially in residents who are ambulant.

The aim of fall prevention is to avert its dire consequences, of which fractures must rank foremost. Eighteen subjects had sustained new fractures during their stay in the nursing home. The prevalence of osteoporosis in nursing home residents, which consist mainly of elderly females, is expectedly high. The low figure of only 8 (8%) subjects with documented osteoporosis in our study only highlights the issue that osteoporosis is often overlooked and under-evaluated. To our knowledge, there has yet to be any protocol established to screen for osteoporosis in local nursing homes. An overseas study on the prevalence of osteoporosis in 22 very elderly nursing home patients found all of them to suffer from the condition and the majority, 77%, had severe stage IV osteoporosis⁽²⁴⁾. Given the high prevalence of osteoporosis in nursing home residents, a falls-prevention protocol incorporating osteoporosis screening with other strategies such as physical conditioning, exercise and environmental modification may be beneficial.

Urinary incontinence is a much-studied subject in the elderly and the nursing home resident is no exception. Fifty-three (50%) subjects were purportedly on diapers because of urinary incontinence. Although studies have shown a high prevalence of bladder overactivity in residents in long term care⁽¹⁶⁾, it is still unclear how much to attribute actual incontinence to this condition. Nursing homes residents with mobility problems and cognitive deficits need systematic help to get to the toilet⁽²⁵⁾. Without systematic toileting assistance, incontinence is likely and this may account for the large number of subjects on diapers in our study. In nursing homes of the United States, pads and briefs were being overused and only a

third of patients with incontinence were being managed with behavioural intervention, the treatment of choice⁽²⁶⁾. Hence, we believe that a significant proportion of the 53 subjects on diapers actually suffered from functional urinary incontinence. This is certainly an area that needs to be looked into if better nursing home care is to be provided.

Another area that demands attention is the high prevalence of cognitive impairment. As many as 51 (65% of those tested) subjects have probable cognitive impairment based on ECAQ testing. However, a review of the case records found only 21 subjects to have clinically documented dementia. There are a few reasons to account for this discrepancy. First, cognitive impairment on testing does not equate a diagnosis of dementia. Second, none of these subjects had routine cognitive testing as awareness and recognition of dementia was limited to only a few medical specialities in the past. Third, only those with behavioural problems were referred for evaluation of possible dementia. Finally, does placement in the nursing home contribute to cognitive decline, advancing years in age notwithstanding? By the same token, are depression and functional decline associated with nursing home stay?

Our study reveals that the number of subjects with documented depression had increased from 15, prior to admission, to 22 at the time of study. As regards functional decline, if the need for help with bathing is used as an indicator of increasing dependency, the number of subjects who were dependent on staff for bathing had increased from 24 (23%) on admission to 58 (55%). The other aspects of basic ADL reveal a similar trend towards functional decline. Only 25% of the subjects could be considered independent in basic ADL as measured by Barthel ADL index at the time of study. These findings suggest that nursing home stay may be related to deterioration in functional status. A more in-depth analysis into this observation is certainly useful. Further studies to address the concern of functional decline in nursing home residents are most pertinent.

The cause for cognitive and functional deterioration in the nursing home is multifactorial and would require well-designed studies to objectively evaluate the possibilities. Lack of environmental stimulation is a purported cause while the quality of care rendered has also been a concern. There are several intervention studies which have yielded encouraging results pertaining to improving quality of life with physical and mental rehabilitation of nursing home residents. More than one study has suggested that exercise and physical rehabilitation even for very

frail nursing home residents can result in modest benefits^(27,28). Another study showed that group therapy for the depressed and cognitively impaired can improve cognitive scores⁽²⁹⁾. Indeed, much can be done to improve the quality of life for residents of nursing homes.

We have limited this paper to a descriptive overview of nursing home residents. The study has unveiled several areas that merit further analysis. As mentioned above, separate papers addressing the findings pertaining to functional decline and falls would be pertinent. The following are possible deficiencies of the study that may impact on the results. First, assessment of nutritional status was based on general inspection and not on any objective measure. Second, while the ECAQ was used to screen for cognitive dysfunction, no depression scale was used to determine the prevalence of depression. The prevalence of depression was based on the diagnosis of depression as documented in the case-notes and may hence be an underestimate of the true prevalence. Third, there was much missing data with regard to the functional status of the subjects on admission and this was largely due to the absence of proper documentation on the subjects' functional status on admission. Furthermore, the case-notes did not document any objective scale used in the functional assessment of the subjects at admission. To reliably determine change in functional status, a prospective cohort study using a standard measure of functional status eg. Barthel index would have been the study design of choice.

CONCLUSION

Nursing homes are an important component of health services for the elderly population. Admittedly, nursing home care has been much neglected while medical care in other areas has seen considerable progress. With a significant proportion of the population requiring such care in the future, the time has come for a closer review of the situation so that the deficiencies can be identified and the necessary reforms implemented. This study has identified malnutrition, urinary incontinence, falls, functional decline and impaired vision/hearing as some of the issues that deserve greater attention and, where necessary, intervention in nursing home residents. Whether implementing recognised effective interventions will truly benefit our local population would warrant further research. It is therefore hoped that this paper will provide the platform on which more local studies in the field of nursing home care can burgeon.

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