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AND ELDER ABUSE (Edited By) Lynn McDonald and K.L.Sharma, Rawat Publications, Satyam Apartments, Sector 3, Jawahar Nagar, Jaipur-302004, India, also available at Delhi, Bangalore, Hyderabad and Guwahati. The Book contains total 26 research papers (10 on Ageism and 16 on Elder abuse) by Indian and foreign scholars. Price Rs. 895

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Recognition and Cued Recall of Famous Names in Dementia of the Alzheimer's type

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ABSTRACT

This study tested remote memory in fifteen mildly demented (aged 62-72, Mean = 68.4yrs), ten moderately demented (aged 65-80, Mean = 69.5 yrs) and fifteen matched control subject (aged 60-72, Mean=64yrs) using Name Recognition and Cued Recall Test in a 3x2 mixed factorial experiment. 10 famous and 10 non-famous names were used in this study. Hits, false alarm, correct cued recall and cued recall intrusion were used as response measures. Moderately, demented patients were least efficient in detecting the target words while mildly demented patients were found marginally better on all response measures. The results convincingly exhibited that relative to the degree of dementia of Alzheimer's type failure in recognition or cued recall of famous names was obtained. Theoretical issues have also been discussed.

Keywords : Alzheimer's type dementia (DAT), Remote memory, Recognition, Cued recall, Famous name.

Dementia of the Alzheimer's type (DAT) patients display multiple cognitive impairments that develop gradually and steadily, predominant among which are the impairments of memory, orientation, judgment and reasoning. Memory impairment is almost always the first noticeable cognitive deficit in DAT and it is present to a marked degree in the vast majority of patients from early in the course of the disease. One of the most studied types of memory impairment is related to what appears to be due to defective encoding and storage of new information, increased sensitivity to proactive interferences and accelerated rates of forgetting

(Granholm & Butters, 1988; Heindel *et al.*, 1993; Kopelman, 1991). Remote memory, by contrast, has been investigated much less extensively (Hodges, 1995).

Wilson *et al.* (1981) used a famous face recognition test and found no temporal gradient. However Beatty *et al.* (1988) using a similar task, reported better performance on items from more distant decades. Sagar *et al.* (1988) used a pictorial scenes test and found impairment on recall and recognition of famous events, but only recall showed a temporal gradient. These studies clearly suggest that recall and recognition based findings of a temporal gradient is likely to depend upon the method of testing.

More recently, Starkstein *et al.* (2005) assessed long term changes in autobiographical and public remote memory in 21 DAT patients and 10 age matched controls. DAT group showed a significantly greater decline on both types of remote memory tests than did the comparison group. DAT patients performed significantly better on recognition than on recall, suggesting more severe retrieval than encoding/storage deficits. The decline in anterograde memory correlated significantly with the decline in autobiographical memory, suggesting a common pathway for both deficits.

Most of studies have relied on the information processing model of face identification proposed by Bruce and Young (1986) according to which face recognition, identification and naming involve a sequence of discrete cognitive processes. Hodges and McCarthy (1993) analysed recognition of famous faces from amongst non-famous faces, identification and naming with and without semantic and phonological cues. Their DAT subjects though impaired on all components, showed relative preservation of recognition and naming with first name cues. They argued that the impairment was due primarily to loss of person specific semantic knowledge and that pre and post semantic processes remained relatively spared in DAT.

Burton and Bruce (1992, 1993) extended Bruce and Young model to encompass the processing of famous names and postulated that name recognition requires the activating of name recognition unit, which is similar to, but separate from, the corresponding face recognition unit. Green and Hodges (1996a) have reported that DAT patients were

impaired on all components of remote memory test i.e., famous face recognition, identification and naming and famous name recognition and identification. In a subsequent study, Green and Hodges (1996b) examined remote memory both autobiographical and public, longitudinally over a I-year period in 14 DAT patients and 30 matched controls. Although both public and autobiographical memory were impaired in DAT, public memory deteriorated longitudinally, while autobiographical memory did not. These data show that remote memory may be fractionated and that one important dichotomy is autobiographical memory versus famous person knowledge.

Snowden *et al.* (2004) investigated the famous face recognition and name knowledge in patients with semantic dementia. The semantic dementia patients were profoundly impaired on both face and name identification and familiarity judgment tasks compared with amnesia patients, Alzheimer's disease and healthy controls. However, whereas the two reference groups performed better for names than faces, the semantic group showed the opposite pattern.

The mechanism of famous name identification and recognition is still a controversial issue inasmuch as all the famous names belong to remote memory, study of recognition and cued recall of those names can provide important information about the impairment in semantic memory. Earlier studies have not attempted to analyse impairment in semantic memory of famous persons generated by normal matched controls. One of the innovations of the present study is the use of 10 famous names generated by age matched controls. It was expected that by using such names a degradation in remote memory would be possible to study. It was hypothesized that : (1)The moderately demented patients would show more impairment in the hit rates for famous name recognition tests than that of the mildly demented and matched control groups and (2) contrast to the matched controls, the cueing would not facilitate the correct recall of famous names by the DAT patients group.

Method

Subjects – In the first phase 200 elderly persons aged 60 yrs and above were individually tested on the Hindi version of Folstein, Folstein and McHugh's Mini Mental Status Examination (HMMSE), Mattis Dementia Scale (HMDS) and Wechsler Memory Scale (HWMS). 15

mildly demented (aged 62 - 72 yrs, M = 68.40yrs, SD =3.68 yrs) and 10 moderately demented patients (aged 65-80 yrs., M = 69.50 yrs, S.D. = 4.28 yrs), screened on the basis of HMMS, HMDS, HWMS and on the NINCDS – ADRDA criteria (Mckhann et al., 1984) and 15 Matched control subjects (age 60-72 yrs, M = 64 yrs, SD = 3.11 yrs) performed famous name recognition and cued recall tests.

Material

10 famous and 10 non famous names were generated by 20 age-matched controls for this study. For ascertaining the famousness of these names, a list containing 50 names was presented to 50 age matched persons. They were asked to name all known famous persons belonging to different walks of life. The names collected from these subjects were compiled and 10 famous persons named by majority of age matched controls were finally selected. The ratings for the famousness of the listed persons on the basis of their contributions were obtained on a 5-point scale ranging from the least famous (1) to most famous (5) The more famous and less famous names were identified as famous and nonfamous names, respectively on the basis of their rated scale values. The persons who obtained a mean rating of the 3 and above were considered as famous and those who obtained a mean rating below 2 were considered as non famous. These names were then used as materials for the final experiment.

Procedure

This study followed a 3 x 2 mixed factorial design. Each item was presented on a card written in bold letters in the center of the card along with its associated small letter cue word. In Indian settings, the first name of a person is more important in comparison to his/her surname. Therefore, the first name was used as the target item and surname was used as the cue item. The first name appeared in bold letters in the centre of the card along with its small letter surname presented offset to the right of it.

After all the cards had been displayed the subjects were tested for recognition in which displayed names along with other distracters were presented in a list and the subjects were asked to select the name presented earlier. After a gap of 10 minutes, the cued recall test was taken. The subjects were told that "the titles of the names of famous

persons shown a little while ago are presented in a list. Along with it is also given a short description of those persons. Try to remember the names of those persons by using the description. I want you to write the first names of those persons by making use of the titles as well as the description. You will get 5 minutes time for this task." The cued recall was taken verbatim and no comments about its accuracy were made.

Results

Four response measures, hits, false alarms, correct cued recall and recall intrusion were used. Table 1 presents the mean and SDs for measures for mildly and moderately demented patients as well as matched controls.

Table 1 : Mean and SDs for hits, false alarm, correct cued recall and cued recall intrusion.

Level	Normal			Mild			Moderate		
	M	SD	Range	M	SD	Range	M	SD	Range
Hits	7.40	1.45	5-10	4.60	1.50	2-7	3.90	1.66	2-7
False alarm	1.80	1.08	0-4	2.33	1.35	0-5	2.60	1.26	1-5
Correct cued recall	8.60	1.06	7-10	4.67	1.35	3-7	4.00	1.56	2-7
Cued recall intrusion	1.33	1.18	0-4	2.20	1.42	0-5	2.00	0.82	1-3

Mean recognition hits for famous names of moderately demented patients were poorer than mildly demented patients and matched control. Consistently more recognition scores were amassed by matched control subjects (Mean =7.40, SD = 1.45) than that of the mildly (Mean = 4.60, SD = 1.50) and moderately (Mean = 3.90, SD = 1.66) demented patients. Results revealed that moderately demented patients were least efficient in detecting the target words in the list and mildly demented patients were found marginally more efficient to moderately demented patients. Relatively less recognition hit scores of moderately demented patients opposites the fact that dementia was highly responsible for failure in recognition of famous names. Hit rates main effect was significant (F=19.74, df = 2, 37, p < .001). Tukey's

HSD values for the mild and moderate groups were significant (2.80, 3.50, p < .01). Mean false alarm scores for famous names of moderately demented patients were higher (Mean =2.60, SD = 1.26) than mildly demented (mean = 2.33, SD = 1.35) and matched (Mean = 1.80, SD = 1.08) control subject.

The mean cued recall scores of matched control subject showed a higher index for famous names from the list (Mean = 8.60, SD = 1.06) followed by mildly (Mean = 4.67, SD = 1.35) and moderately demented patients (mean =4.00, SD = 1.56). Cued recall main effect was also significant (F=49.39, df = 2, 37, p < .001). Tukeys HSD values for the mild and moderate groups were significant (3.93, 4.60, p < .01). It was interesting to note that even providing the cue could not facilitate the moderately demented patients to correctly recall the target items. The mildly demented patients were only slightly better in their cued recall performance. 3 (group) x 2 (level) mixed factorial ANOVA with repeated measures on the last factor revealed significant group (F=38.55, df = 2.37, p < 0.001) and level (F= 5.46, df = 1,2, p < 0.05) main effects as well as significant level x group interaction (F=4.01, 2.37, p < 0.05).

Table 2. Pair wise mean differences for hits, false alarm, correct cue recall and cue recall intrusion following tukey's HSD test

Level	Group	Mild	Moderate
Hits	Normal	2.80*	3.50*
	Mild	-	0.70
False Alarm	Normal	0.53	0.80
	Mild	-	0.27
Correct cue recall	Normal	3.93*	4.60*
	Mild	-	0.67
Cue recall intrusion	Normal	0.87	0.67
	Mild	-	0.20

P<0.01 0.01

These results attest both hypotheses of the present study and extend the theory that with the severity of dementia there is a poorer performance of recognition and cued recall. These results also show

that semantic memory is impaired very early in the course of dementia of the Alzheimer's type. The lowest correct performance by moderately demented patients supports the theoretical perspectives on semantic memory according to which the moderately demented subjects become unable to store names of the list and therefore they were unable to recall the names with cue or without cues. These results also highlight the fact that cues can facilitate the recall only in case of proper storage of the item which was conspicuously most absent in the moderately demented patients and relatively less efficient in mildly demented patients.

Pair wise comparison by Tukey's HSD tests revealed that mildly and moderately demented patients emitted less recognition and correct cued recall scores than matched controls. The differences were more for the comparison between normal and moderately demented patient which supports the notion that dementia is a progressive degeneration and the cognitive capacity deteriorates at a faster rate after the onset of dementia in a patient. However none of the measures showed a significant differences between mildly and moderately demented patients thereby highlighting the nature of the decline in the cognitive domain in the patients of Alzheimer's dementia.

These values suggested that the network associations which built the semantic memory becomes severely disrupted in demented patients. Drastically impaired cued recall performance by the demented patients supports most of the theories of progressive decline in cognitive function of demented patients.

Discussion

The results of the present study highlight the impairment in recall and recognition of famous names by the demented patients. The results have shown that moderately demented patients were least efficient in detecting the target words in the list in comparison to mildly demented and normal controls. The recognition of famous names is a semantic phenomenon, and it suggests the differentiation according to conceptual characteristics. These results suggest that the cognitive deterioration varies as a function of severity of dementia. Lesser recognition scores by moderately demented patients shows a storage deficit in DAT patients.

It has been postulated in most of the models of person recognition (e.g. Bruce & Young 1986, Burton & Bruce 1992, 1993 and Velentine *et al.,* 1991) that name recognition requires the activation of name recognition units. Identification proceeds by activation of person-specific semantic knowledge, the latter stage being common to face and name processing. Presentation of face or a name is assumed to activate a store of face recognition units or a set of name recognition units, respectively, which then arouses the store of semantic information about that person. This occurs via a set of multimodal nodes called person identity nodes. It is thought that familiarity judgements (recognizing where a name or face is familiar) takes place at a level of the person identity nodes.

The present results support the findings of Hodges and Grahm (1998) and suggest that the greater exposure to the name of a current famous person helps in boosting the person identity nodes corresponding to that famous person, making it somewhat more resistant to decline due to the progression of disease.

Present study has shown that cues could not facilitate the correct recall particularly in the mildly and moderately demented patients. Demented subjects were unable to recall famous names even with the help of a cue whereas it facilitated the recall in age matched controls. These findings extend the theory that semantic memory impairment in demented patients is a function of storage deficit. In the semantic cueing task, mildly and moderately demented patients showed no facilitation effect. They demonstrated an inability to activate close semantic associations and a failure to make active use of the information contained in the cue to anticipate the target words was evident in them. In normal control subjects cues provided more time to anticipate the targets, hence they could recall more famous names. Another possibility is that the demented patients were incapable of developing expectations about the target names. This outcome could be expected since these subjects had faced difficulty in keeping previous names in active memory long enough to comprehend the structure of famous name task. In other words, if subjects were unable to sufficiently monitor the task to establish that the target pairs were frequently related in famousness, interference would occur.

Contrary to the initial prediction, the present results provide clear evidence that in spite of poor cognitive capacity demented patients cannot spontaneously encode and make use of semantic information. These results suggested that subjects were not utilizing a semantic strategy which would have helped them more accurately to reject the unrelated distraction (non famous name) than the distracters belonging to the same semantic categories.

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Socio-Demographic and Health Status of Nepalese Elderly

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ABSTRACT

The main objective of this paper was to provide some information about the socio-demographic and health status of Nepalese elderly. The data for this study were collected from a cross-section survey in Kathmandu in 2005. Total 509 people 60 years and older living in one ward of Kathmandu Metropolitan City were interviewed using the structured questionnaire. Descriptive technique is used to analyze the data. The result of this study shows mean age of the study population was 69.6 years. Nearly 70 percemt elderly were widow. Fifty-one percent elderly were illiterate. This study found 85 percemt elderly were living with their children, 6 percemt living with spouse only and only 3 percemt elderly were living alone. Major chronic health problem of elderly were Blood pressure (23.4%), Diabetese (13.2), respiratory disease (12.8), arthritis (9.4), back pain (8.4 %) and heart disease (4.9). Further this study found functional difficulties with at least one ADLs was 8.1 percemt and at least one IADLs was 32.8 in the population 60 years and older. If elderly 65 plus is considered functional limitation was 12.8 per cent and 38.2 per cent in ADLs and IADLs. This is quite high when compared with the elderly of other developed country. Finally, an appropriate policy for the elderly should be formulated and implemented through in depth study of elderly so that longevity can be accompanied by improved quality of life.

Keyword : Aging, elderly, Health, ADLs, IADLs, Self Reported Health, Nepal

Population ageing is not only an issue of developed countries now but it is a serious issue of developing countries too. Aging is about changes in life. Population aging in a nation is about many lives coming to face a set of challenging changes. Understanding how these changes occur, how they intertwine with traditional and cultural forces, and how various societal systems respond to the situation is crucial for a nation that intends to become an aging-friendly society.

Ageing is a universal phenomenon yet a single definition of old age cannot be found. It varies across and within cultures as well as across the time and space. Too many people, ageing means chronological process of growing physically older. However, there is also social dimension in which chronology is less important than meaning attached to the process. The personal experience of ageing has socially structured variations. Different cultural values and social expectations apply according to gender and age group. Similarly, condition of aged people depends on their physical health, employment and socio-economic situation, family care and national policies. Ageing issues therefore is concerned not only with the state of the old aged people but also the social context, which produces such conditions.

Following the definition of United Nations Nepal government has defined individuals 60 years and older as an elderly population (Chalise, 2006). The average life expectancy of Nepalese which was nearly 28 years in 1950s has reached to nearly 65 years in 2011. In the past men used to live longer than women (Chalise, 2006, Chalise & Brightman, 2006) but now the situation has reversed and Nepal also came into the track of feminization of ageing.

The main objective of this paper is to examine the demographic, socio-economic and health status of Nepalese elderly.

Method

Sample

Data for this study were taken from a cross-sectional survey of Nepalese elderly in July/August 2005. The study site was Kathmandu Metropolitan City, the capital and largest city of Nepal with a population of 671,846 (CBS, 2003). For this survey an administratively and geographically well-defined, convenient ward was selected. This ward

had a total population of 34,488 with total household 7,848 (CBS, 2003). For the purpose of this study, data of 509 elderly was analyzed statistically.

Results

1. *Socio-demographic Situation*

Mean age of the study population was 69.6 years with the age range from 60 years to 97 years. In the same way average family size was 6.2 ranging minimum one to maximum nineteen. Majority of the population was female (50.9%). Nearly 52 per cent elderly were married in terms of marital status and 48 per centwere widow/widower. The percentage of widow (69.5%) was quite higher than widower (19.6%) which is not shown here. It may be due to cultural tendency of getting married with younger girls by boys. Majority (62.3%) of the elderly has enjoyed the household head status in their family. The literacy rate among the elderly is quite low. This study found 51 per cent elderly were illiterate.

Table 1. Socio-demographic Situation of Elderly Population of Kathmandu, 2005

Variables	Number	Percentage	Mean	Range
Age			69.66	60 - 97
Sex				
• Male	250	49.1		
• Female	259	50.8		
Marital Stauts				
• Married	270	53.0		
• Widow/Widower	232	45.6		
• Seperated/Divorce	7	1.4		
Household Status				
• Household head	317	62.3		
• General member	192	37.7		
• Household head	317	62.3		
Literacy Status				
• Literate	251	49.3		
• Illiterate	258	50.7		
Family Size			6.16	1 - 19

2. *Living Arrangement of Elderly*

It has been the long tradition in the Nepalese and Asian culture that the elderly people are well cared by their family members and relatives, particularly by their sons, daughters and daughters- in law. This is the reason why the older persons transfer their property to their children who assume the responsibility for household task and care for their relatives.

Table 2 shows the living arrangement of elderly in the study area of Kathmandu. This study has classified the living arrangement as living alone, only with spouse, living in the two generation family and three generation family and others. This study found 85 per cent elderly were living with their children among them 72.5 per cent were living in the three generation family while 15 per cent were living in the two generation family. Further, 6 per cent elderly were living with their spouse only 3% living alone and 3.7 per cent living with others.

Table 2. Living arrangement of Elderly, Kathmandu, 2005

Living arrangement	Number	Percentage
Children (three generation)	369	72.5
Children (two generation)	75	14.7
Only with spouse	31	6.1
Alone	15	2.9
Others	19	3.7

3. *Health Status of Elderly*

With increasing age, objectively measured health and functional status decline, physical and cognitive capacities decrease, and the number of chronic diseases and the extent of disability in performing daily activities increases. Maintaining good functional capacity is a crucial component of successful ageing.

Table 3 summarizes the health status of elderly in Kathmandu. Nearly 60 per cent elderly were found suffering from at least one chronic disease. Further 17 per cent elderly were suffering from multiple chronic diseases. Among the elderly suffering from chronic diseases the prevalence of major chronic diseases were high blood pressure (39.7%), Diabetese (22.3%), Respiratory disease (21.7%), Arthritis

(16.0%), Back pain (14.3%) were the major chronic disease. On the other hand when the whole study population was considered major chronic health problem of elderly were Blood pressure (23.4%), Diabetese (13.2), respiratory disease (12.8), arthritis (9.4), back pain (8.4%), heart disease (4.9) liver and gull bladder (2.8%), bone fracture (2.8%) and stroke (2.6%) on the descending order.

Whatever may be the objectively measured health status of elderly, the self reported health status is considered one of the valid indicators of health (Chalise *et al.,* 2007). The self reported health of the respondents shows that 22.0 per cent reported their health either good or very good, 47 per cent consider their health fair and only 31 per cent elderly perceive their health status poor and very bad.

Table 3. Health Status of Elderly, Kathmandu, 2005

Self reported chronic health problem	N	%, N=509	
No	209	41.1	
Yes	300	58.9	
One	213	41.8	
Two	66	13.0	
Three & more	21	04.1	
Major Chronic health problem	(N=300)	(N= 509)	
High Blood Pressure	119	39.7	23.4
Diabetes	67	22.3	13.2
Respiratory diseases	65	21.7	12.8
Arthritis	48	16.0	9.4
Back pain	43	14.3	8.4
Hearth diseases	25	8.3	4.9
Liver and gull bladder disease	14	4.7	2.8
Bone fracture	14	4.7	2.8
Stroke	13	4.3	2.6
Cancer	2	0.7	0.4
Self Reported Health			
Good	112	22.0	
Fair	241	47.3	
Bad	156	30.6	

4. *Functional Limitations*

Functional disability is often assessed in older adults by their difficulty in performing basic activities of daily living (ADLs), such as those measured on Katz Index (eating, bathing, dressing, transferring, toileting and continence) (Katz *et al.,* 1963). Research shows the prevalence of ADL disability not only increases with aging, but also shows associations with gender chronic diseases, visual impairment, and the use of more medications. In addition, assessment of functional status, using instrumental activities of daily living (IDALs), suggest that IDAL deficits usually precede ADL deficits.

Table 4. Functional Limitations in Elderly, Kathmandu, 2005

Variables	Total		Male		Female	
	N	%	N	%	N	%
ADLs	41	8.1	19	7.6	22	8.5
•Eating	12	2.4	5	2.0	7	2.7
•Bathing	28	5.5	11	4.4	17	6.6
•Dress and Undress	26	5.1	7	2.8	19	7.3
•Using toilet	21	4.1	5	2.0	16	6.2
•Transfering from/to bed mat	15	2.9	2	0.8	13	5.0
Control Urine continence	42	8.3	15	6.0	27	10.4
IADLs	167	32.8	60	24	107	41.3
•Travel/Using transportation	117	23.6	34	13.6	83	32.0
•Shopping grocery	79	15.5	26	10.4	53	20.5
•Meal preparation	100	19.6	42	16.8	58	22.4
•Light house work	79	15.5	33	13.2	46	17.8
•Taking medicine	97	19.1	31	12.4	66	25.5

ADLs which included bathing, dress and undress, transfering to/ from bed mat, eating, and using toilet shows that the most difficult ADLs task was bathing. This study showed the percentage of elderly who can not perform the ADLs or need some support to the ADLs activities was bathing (5.5%) followed by dress and undress (5.1%), using toilet (4.1%), transfering (2.9%) and eating (2.4%). It also found 8.3 per cent elderly had problem with urine continence. This is also a serious problem.

IADLs which included travelling, shopping, meal preparation, light house work and taking medicine showed the most difficult IADL item

was travelling followed by meal preparation, taking medicine with correct dose, shopping and light housework.In this study population the percentage of elderly that need some support or fully dependent to others were 23.6 per cent in travelling using public transportation, 19.6 per cent meal preparation, 19.1 per cent taking medicine, and 15.5 per cent for both shopping and light housework.

Gender wise difference on the functional limitation shows that in the every item of ADLs and IADLs the limitations was quite higher for female. This show with the feminization of ageing the problem of elderly will be more severe in the coming days in Nepal.

Discussion and Conclusion

In recognition of increasing worldwide concern regarding issues of elderly with the aging population, this paper is trying to show the socio-demographic and health status of Nepalese elderly. This study found that more than 85 percent are living with their children and 6 percentages living with their spouse. The percentage living alone is 3 % and 3% were living with others. One previous study in Kathmandu highlights negative influence of social aspects like decreasing trend of joint families, lack of family support, feeling of loneliness, economic dependence, lack of cultural values etc on health related conditions of elderly (Chalise & Shrestha, 2005).

This study shows Nearly 60 per cent elderly were found suffering from at least one chronic disease. This condition is quite higher in women compared to men. The government has not any policy how to address the health problem of elderly. There is no any geriatric manpower (Physician, nurses etc) and geriatric ward for the treatment and care of elderly.

Further physical function is recognized as an important indicator of health in older people. The present study among Nepalese elderly aged 60 years and older found, functional disability on at least one five item ADLs was 8.1 per cent. This does not include the urinary incontinence. When the subjects 65 years and older were considered the functional disability was 12.8 per cent on ADL items which is higher when compared with other population (Chen *et al.,* 1995; Winer *et al.,* 1990; Ng *et al.,* 2005). This study found Bathing had the highest prevalence of functional disability on ADL among Nepalese elderly.

This study shows the functional disability on at least one IADLs was 32.8 per cent among Nepalese elderly 60 years and above. When the subjects 65 years and older were considered the IADLs functional disability rate was 38.2 per cent. This is quite high but this result is quite difficult to compare with the other studies due to different in population samples and conceptual measurement difference in the number of IADL items, items content, and scoring methods used in the surveys.

A study by Ofstedal *et al.* (2007) shows Prevalence of ADL and IADL limitations varies across Asian countries and trend was increasing. ADL disability is 3.9 per cent in Singapore, 4.7 per cent in Beijing, 6.5 per cent in Indonesia, 9.2 per cent in Taiwan and 14.7 per cent in Philippines. IADL limitations were 17.2% in Singapore (1999), 17.7% in Beijing, 25.1 per cent in Taiwan and 27.7 per cent in Philippines. Result of this study cannot be directly compared with these results but we can generalize functional disability is high among Nepalese elderly.

This study found gender difference in ADL and IADL functional disability, with elderly women reported to have higher functional disability. The commonest problem that impacts upon health and quality of life of older people with resultant dependency and institutionalization is functional disability [12], which disproportionally affects health care needs (Mor *et al.,* 1994). Studies of the prevalence, causes, and effects of functional disability in aged populations are therefore crucial for proper public health policy and planning. While many population studies on functional disability in older adults have been conducted in Western countries, very few such studies have been reported in Asian countries (Ofstedal, *et al.,* 2005, Chalise *et al.,* 2008).

At last, an in depth national study of elderly is required to identify the socio-economic and health status of elderly which will help in the policy and program formulation for the government so that longevity can be accompanied by improved quality of life.

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Inequality to Elderly in Social Support at Familial Level : A Socio-economic Perspective

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ABSTRACT

Population ageing implies the ageing of some members of family and nature of kinship networks. Because the absolute number of the frail elderly is set to increase, notwithstanding the increase in life expectancy in good health, a top-heavy intergenerational chain is likely both to put stress on the middle generation, and result in the older and younger generations competing for their support where Pondicherry is not an exception. Thus, issues of the redistribution of financial and time resources become relevant in the middle and younger generations when frailty emerges in the older generation. The present paper adopts a bi-generational perspective in order to examine not only whether social inequality affects resources available to the dependent elderly, but also whether and how a frail elderly person's demands impact differently on children's resources and life chances across gender and social classes, as well as what the impact of specific patterns of public care provision (other than healthcare) is on these inequalities.

Key Words : Elderly, Inequality, Family and social support

The sharp decline in mortality since 1950 and a steady recent decline in fertility has contributed to the process of population ageing in India. India currently ranks fourth among the countries of the world with a large elderly population; by the year 2000, it is likely to be second only to China. There is no United Nations standard numerical criterion, but the UN agreed cutoff is 60+ years when referring to the elderly population. In India, the elderly account for 7 per cent of the total population, of which two-thirds live in villages and nearly half of them in poor conditions. Urbanization, nuclearisation of family, migration, and dual career families are making care of the elderly more and more of a

personal and social problem in India. With the decline in fertility and mortality rates accompanied by an improvement in child survival and increased life expectancy, a significant feature of demographic change is the progressive increase in the number of elderly persons. Increasing life span and poor health care add to the degree of disability among the elderly and compound the problems of care giving. In India, the life expectancy has steadily gone up from 32 years at the time of independence to over 63 in 2001. The elderly experience changes in different aspects of their lives. The physiological decline in ageing refers to the physical changes an individual experiences because of the decline in the normal functioning of the body resulting in poor mobility, vision, hearing, inability to eat and digest food properly, a decline in memory, the inability to control certain physiological functions, and various chronic conditions. Change in socio-economic status adversely affects the individual's way of life after retirement. The economic loss is due to a change from salary to pension or unemployment leading to economic dependency on children or relatives. A feeling of low self-worth may be felt due to the loss of earning power and social recognition. This state of mind is harmful. With the prospect of this situation worsening in the coming decades, ways and means of managing the stress effectively needs to be examined.

Old age in Puducherry is not an exception where many of the aged suffer from social and health problems such as diabetes, hypertension, high cholesterol, osteoporosis and arthritis as well as lack of social support, neglect, ill-treatment from their younger generation. Their sadness at being abandoned has aggravated their illnesses. According to an estimate nearly 40 per cent of senior citizens living with their families are reportedly facing abuse of one kind or another, but only 1 in 6 cases actually comes to light. It was found that men and women react differently when they are abused by their children. The women take abuse silently, they always look at their children with love and never complain to outsider about their ill-treatment. It is the men who call help line and ask for assistance. The younger generation does not have even time to talk to their parents. The elders feel neglected and suffer from loneliness that leads them to depression followed by deterioration of health. According to recent Help Age India survey across 8 cities Delhi, Mumbai, Ahmadabad, Kolkata, Bhopal, Chennai, Patna

and Hyderabad - 36 percent of elders reported abuse of various kinds, interestingly there is a change in attitude among the children when the parents died. They feel an enormous sense of guilt. Sometimes to compensate for their guilty they will donate money in the name of their parents.

Some earlier studies conducted shows that for India, most research on the impact of modernization on ageing is based on a general idea that modernization processes such as urbanization, industrialization, women's participation in extra-familial work etc. will erode the traditional familial supports for older persons and leave them vulnerable and isolated (Sharma & Dak, 1987). However, some studies indicate that familial support is still the mainstay of most seniors in Asia (Knodel, 199). Sun (2002) reviews two alternative models of old age support based on familial relations: the power and bargaining model vs. the corporate group / mutual aid model. The former model suggests that familial exchange of support is determined by the capacity of different members to extract resources from others; while the latter highlights the notion that members' needs (such as age or ill health) determine receipt of support. Vijayshree (1988) investigated life satisfaction, depression, loneliness and death anxiety among family based and non-family based elderly subjects. The results showed that the family based aged have proved to be the most satisfied psychologically and socially as their life satisfaction scores stood significantly higher than those of others. Blazer and Kaplan (1983) conducted a study to assess social support in elderly community population. The following parameters of social support were described for the elderly results indicate that roles and attachments, frequency of interactions and perception of social network each predicted a change in self-care capacity i.e. activities of daily living.

Scope and objectives of the study

This present paper focuses on to understand the living condition of the elderly, to find out the level of family care given to elder with regard to physical, emotional and psychological and to examine inequality treatment of elder in families. The study focuses on urban area where the people are not traditional bound to provide proper care and time to elderly and lead an individualistic life resulting in ailing of elderly people who are found to be devoid of their love and support. The bi-generational

approach shows that the younger generation are not providing the elderly with proper care and support which takes into account two indicators of inequality that gender and resources of time and familial relationship. A bi-generational aspect is shown in the paper to depict how the frail elderly of older generation are being abused by the younger generation in terms of familial relationship and the paper also tells about the difference in treatment of gender that the elderly face in matter of support in family. With a descriptive and explanatory design the present paper aims to describe the various issues faced by elders at their familial level. Taking a purposive sampling method, 300 respondents have been taken for this study. The present paper describes the problems of social inequality faced by elderly people in family.

The objectives are

- To show a gender difference in approach of treatment to elderly in Puducherry.
- To analyze a bi-generational approach to the elderly where older generation have expectation of social support and younger generation failure to provide the same.
- To examine the practice and pattern of familial relationship of elderly household and abuse.

The results of the study

The socioeconomic profile of the respondents taken for the study shows that one third of the respondents (66.7 percent) are Hindus and more than three fifth of the respondents (76.7 percent) are from the Most backward caste. More than eight out of ten respondents (85 percent) have reported some health problems. Health problems are common for all especially in elderly people and the frequent problems are failing eyesight.

The elderly status in the family can be seen by certain behaviuor like to what extent the elderly can use household things freely, their role in solving family disputes, their participation in family ceremonies, the extent of younger generation providing cordial relationship to them, abusing behavior of family members, availability of finance etc. From the present study it has been seen that substantially higher proportions

of male elderly (72.3 percent) were having freedom to use Sofa/ Furniture compared to female elderly (61.9 percent). Freedom to share bathroom/Toilet was not much gender difference in the freedom to use bath room/toilet at home.

In the matter of cordial relationship it is seen that it is observed that most of the respondents were having cordial relationship with family members. Substantially higher proportion (91.2 percent) of elderly were having cordial relationship with spouse, 69.3 percent were having cordial relationship with their son, 65.4 percent having cordial relationship with their daughters, 60.5 percent were having cordial relationship with daughter-in-law, 63.1 percent were having cordial relationship with their son-in-law and 85 percent were having cordial relationship with other family members. There was not much gender difference in the proportion of elderly having cordial relationship with all family members except for daughter-in-law and son-in-law where the proportion of elderly having cordial relationship was comparatively lower among female than male. The percent distribution of elderly having cordial relationship with family members by sex is presented in Table 1.

Table 1 : Percent Distribution of Elderly having Cordial Relationship with Family Members by Sex

Family Members	Male (N = 126)	Female (N = 174)	Total (N = 300)
Spouse	92.3	88.1	91.2
Son	73.0	66.4	69.3
Daughter	74.4	66.5	65.4
Daughter-in-law	64.7	57.3	60.5
Son-in-law	67.5	59.7	63.1
Other family members	85.6	84.5	85.0

In the matter of elderly participation in family matters in the family show that only 38.2 percent of male and 26.3 percent of female elderly had been participating in all family ceremonies. It is seen that the proportion elderly participating in all family ceremonies was substantially higher among male than female. When the present study tried to find the reasons of some elderly not participating in family ceremonies, it is

seen that the major reasons reported by male elderly were 'not permitted' and 'no respect' (44.8 percent each). Among the female, the major reasons were 'not permitted' (43.6 percent) and 'no respect' (41.7 percent). 'Physical condition not good' was reported by 5.8 percent of male and 9.1 percent of female elderly. The reasons reported for non-participation in family ceremonies did not vary much between the male and female elderly.

The real respect of elderly in any family is known by the fact that how much they are consulted by their younger generation of any family decision on important matters and from the present study it is seen that only 35.4 percent of male and 18.6 percent of female elderly were consulted by family members on important family matters. The results showed that higher proportions of male were consulted on important family matters than female. The reasons for not consulting them in important family matters shows that majority of the elderly were 'not permitted' (60.4 percent of male and 65.9 percent of female), 'no respect / no money' (26.2 percent of male and 21.9 percent of female), and 'no interest' (9.8 percent of male and 9.2 percent of female). The reasons reported for not consulting them on important family matters did not vary much between the male and female elderly.

The elder's decision in any sort of dispute in the family was considered very essential in traditional period but with the modern world of today their role seems to be very negligible to run the family smoothly. The present study also shows that only 35.4 percent of male and 20.4 percent of female elderly had involved in solving family disputes. This reported by three fourth of elderly (73.1 percent) were not involved is solving family disputes. The results showed that the proportion of elderly who had role in solving family dispute was more among male than female. Dependence makes the elderly to lose their respect in their younger generation, similar findings show from the study that only 34.3 percent of male and 28.3 percent of female elderly were having adequate finance of their own to meet their personal needs. Majority of elderly (65.7 percent of male and 71.7 percent of female) were not having adequate finance of their own. The results showed that higher proportions

of male elderly were having adequate finance of their own to meet their personal needs than female. More important is again the source of finance. The main sources of money for the elderly were son (45.5 percent of male and 41.7 percent of female), daughter (13 percent of male and 21.4 percent of female) and grandchildren (20.2 percent of male and 17.5 percent of female). The reported sources of money to meet their personal needs did not vary much between the male and female elderly.

Abuse Behaviour of Family Members which is most important indicator to show the status and social support of elderly has been given importance in the present study. The present distribution of elderly who had experienced abusive behavior from their family members by sex is presented in Table 2. It is observed that only 79.9 percent of male and 84.1 percent of female elderly had experienced abusive behavior form family members. The results indicated that the proportion of elderly who had experienced abusive behavior from family members was higher among male than female.

Table 2 : Percent Distribution of Elderly who had Experienced Abusive Behaviour from Elderly Family Members by Sex

Experience of Abusive r Behaviour	Male (N=116)	Female (N=166)	Total (N=282*)
Yes	79.9	84.1	82.9
No	20.1	15.9	17.1

*18 respondents did not have child

The percent distribution of elderly by sex and type of abusive behavior of family members is presented in Table 3. The main type of abuse reported by the elderly was 'lack of care / neglect' (43.2 per cent of male and 34.5 per cent of female) followed by 'verbal abuse' (18.9 per cent of male and 20.5 per cent of female) and 'both beating and verbal abuse' (17.6 per cent of male and 16.6 per cent of female).

Table 3 : Percent Distribution of Elderly by Sex and Type of Abusive Behaviour of Family Members

Type of Abuse	Male (N=95)	Female (N=139)	Total (N=234)
Verbal abuse	18.9	20.5	19.7
Beating and verbal abuse	17.6	16.6	17.2
Lack of care/Neglect	43.2	34.5	38.8
Not given food	12.2	11.8	11.8
Verbal abuse and not given food	8.1	16.6	12.5

From the above table it is seen that although they get lot of abuse but it is seen that the highest number of elderly people facing lack of care and neglect form their own familial relations followed by with beating and verbal abuse, even the elderly are seen to be abused by not giving proper food to eat also.

From the study also it is seen that as per the elderly treatment of abuse that they face in their daily activities it has been found from the study like eating, dressing, cooking and bathing where it is seen that majority of the respondents (68.3 percent) are unable to cook and majority (48.3 percent) respondents are opinion that during the time of illness the elders depend on others as their unable to take bath on their own. Majority of respondents (51.7 percent) are unable to eat during the time of illness and depend on others. More than half of the respondents (51.7 percent) are found to unable to dress themselves independently during the time of illness. The respondents opinion regarding the involvement of kin's in assisting the elderly for daily activities has been found that highest number of the respondents (30 percent) depend on their spouse help where as 23.3 percent depend on daughter-in-law. Son and daughter seem to provide assistance where 21 percent on daughter and 8.3 percent depend on son.

Conclusion

The present study has been conducted to show the inequality in elderly in terms of social support where the study tries to find out the differential treatment of gender in familial treatment. The study focuses

on urban area where the people are not traditional bound to provide proper care and time to elderly and lead an individualistic life resulting in ailing of elderly people who are found to be devoid of their love and support. The bi-generational approach shows that the younger generation are not providing the elderly with proper care and support which takes into account two indicators of inequality that gender and resources of time and familial relationship.

The result broadly depicts that in almost all the respondents provided less support to women elderly and more form of abuse to female elderly. Male elderly comparatively enjoy a better status from female but nevertheless they also face suffering being not provided with support. The younger generation does not take proper care of elderly in urban places of Puducherry. Mostly elderly in urban Puducherry can easily afford old age homes and other governmental support but they being traditional bound mind setup, they do not avail for this option rather they depend on their younger generation to take care of them, where the elderly come out with failure in result not provided with proper social support at familial level.

The elderly women face more familial abuse as compared to elderly male. Mostly such kind of attitude comes because of women being more depended on their younger generation as compared to male elderly. Women elderly are more emotional in nature and they do not turn to governmental institutions for their support in old age, they want stay with their younger generation. As like male elderly in most cases women are not getting pension so they depend fully for financial help from their younger generation. Moreover from health perspective it is seen that women face more health problems in older age than male which makes them to get more ailment of frail body and depend fully on younger generation for social support. So it is seen that the elderly in Puducherry are not provided with proper respect and support, rather provided with abusive negligence as mentioned in the above tables. From the study it is clear that there is a gender difference in treatment of elderly in Puducherry where females are more venerable and males are provided with minimum support.

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Population Ageing and Feminization in Assam

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ABSTRACT

The demographic process of population ageing has been gaining momentum over time and it threatens to engulf all the nations around the world to extraordinary economic, social, and political challenges.The Indian population is ageing in line with the world population and the population of the less developed regions. The pace of population ageing is different in different regions and countries. The UN International Plan for Action on Ageing (United Nations, 2002b), therefore, recommends that countries identify their particular path to ageing, analyze its implications, and elaborate the appropriate responses in terms of programmes and policies. Two important features of population ageing are feminization and urbanization of population ageing. The present paper is a small effort to identify the path of ageing, its feminization and urbanization process in Assam, the state which was one of the fastest growing regions of the subcontinent in terms of population growth in the 20th century. The results of the study reveal that the ageing process among the males and females in both rural and urban areas of the state is accelerated from 1981 and it appears to be faster among the females in the rural areas of the state. As expected, the rate of growth of male and female population, in all age groups, is found to be much higher in urban areas than that in the rural areas of the state. The results further indicate that the state has not yet entered into the stage of feminization of ageing process. However, there is a clear indication of the beginning of feminization era of population ageing in the state in the recent past.

Key Words : Path of Ageing, Feminization of Ageing, Urbanization of Ageing.

The present day world stands on the threshold of a demographic revolution having very few parallels in humanity's past. It's called population ageing. In the coming decades, this demographic process will engulf all the nations around the world to extraordinary economic, social, and political challenges. For most of human history, until about a century ago, the elderly (people aged 60 and over) never amounted to more than 2 or 3 percent of the population. Today, in the more developed world, they amount to 19 percent in 2000. By the year 2050, they will be around 39 percent. In the less Developed regions, the corresponding percentages will be 8 and 19 percent respectively. The least developed regions of the world will also not lag much behind with 5 percent and 10 percent of its population aged 60 and above in 2000 and 2050 respectively(United Nations,2001). As recently as in 1980, the median age of the society on earth (Sweden) was 36. By the year 2030, the median age of the entire developed world is projected to be 45. In Japan and much of southern and eastern Europe, it will be over 50. As a whole, the developing world will remain much younger for the foreseeable future. Yet it too is ageing—several major countries in East Asia and Latin America, including China, South Korea, and Mexico are projected to reach the developed-world levels of old-age dependency by the middle of the century(CSIS, 2009).

Global ageing is the result of two sweeping forces: falling fertility (fewer births per woman) and rising longevity (longer lives). The first decreases the relative number of young in the population, while the second increases the relative number of old. Meanwhile, since World War II, global life expectancy has risen from around age 45 to around age 65. In the developed countries, life expectancy has risen from the mid-to-high 60s to the mid-to-high 70s, and in a few countries, including Italy and Japan, it has passed age 80 (CSIS, 2009). Apart from fertility and mortality, the other factor that has considerable impact on the rate of population ageing, is migration. Immigration usually slows down population ageing, because immigrants tend to be younger and have more children. The cases of Canada, America and Europe are examples of such phenomena (Frank *et al.,* 1999,Guillemette *et al.,* 1996; Kahn, 1994).

Two of the notable features of population ageing are feminization and urbanization of population ageing. The process of ageing is mainly rapid among women because of lower mortality rates of them, resulting in 'feminization' of population ageing. The existing literature suggests that among the elderly, females will continue to outnumber males, in both developed and developing countries (Gavrilov et al, 2003; Gulati,1993). Population ageing is also faster in urban areas. Based on the latest information, approximately half of the world's older populations live in urban areas. Thirty years ago, the proportion living in urban areas was about 40 percent. Large differences exist between more and less developed countries. On an average, about 70 percent of older persons in more developed countries, and only 38 percent in the least developed countries are urban dwellers (United Nations, 2000).

As per 2001 Population Census, the elderly in India totals to nearly 77 million, comprising over seven per cent of the total population of the country. The number of older people has increased from 43 million (6.5 percent of the total population) to 77 million (7.5 percent of the total population) during the period 1981-2001 (GOI, 2005; Census of India, 1981, 1991, 2001). In 2050, the elderly will constitute 20.14 percent of the total population of India and only 18.60 percent will be in the age group of 0-14 years, as per projections made by United Nations (United Nations, 2002a, 2001). The Indian population is ageing in line with the world population and the population of the less developed regions. The age distribution structure of the Indian population is slowly moving from a pyramid-shaped structure to a hexagonal one, while the same is gradually transforming to an inverted pyramid or trapezoidal shape in more developed countries (Bhattacharya, 2005).

The current level and pace of population aging vary widely by geographic region, and usually within regions as well, but virtually all nations are now experiencing growth in their numbers of elderly residents. As the pace of population ageing is different in different regions and countries, the UN International Plan for Action on Ageing (United Nations, 2002b) recommends that countries identify their particular path to ageing, analyze its implications, and elaborate the appropriate responses in terms of programme and policies.

The history of demographic transition of Assam offers a challenging proposition for assessing the population ageing process in the state. Throughout the 20th century, the state of Assam had been one of the fastest growing areas of the entire subcontinent of India in terms of its population size. Several waves of immigration lashed the state and emigration of people from the state had remained quite negligible in relative terms. As a result, there was phenomenal rise in the size of the population of the state, particularly during the periods of 1901-1951, 1951-1961, and 1961-1971. While the size of India's population increased by only 51 percent during the period from 1901 to 1951, the growth rate of the population of Assam over the same period was 144 percent. In 1951-1961 and 1961-1971, the population of Assam grew at the rate of 34.98 and 34.95 percent respectively; the corresponding growth rates of India's population were 21.51 and 24 percent respectively. As several millions of immigrants came and settled down in Assam, the process of ageing is expected to be slow. The humanitarian aspects of the problem of ageing in a demographically unstable state like Assam have already assumed a challenging proportion. As per report prepared by Help Age India on the basis of a survey conducted in Assam, an increasing number of aged citizens are being subjected to abuse in some form or other with 33.7 per cent of them reportedly being subject to neglect by their own family. The NGO found that of the aged facing abuse, 53.6 percent suffered mental torture at the hands of their sons and 43.3 percent were abused by their daughter-in-law. The survey also revealed that 50 percent of the elders in the state live with their sons and 57 percent are financially dependent on their children. Under such circumstances, these individuals have no option but to keep silence about their discomfort (The Times of India, Wednesday, June 16, 2010, pp: 2).

The present paper is a small effort to identify the path of ageing and feminization process in Assam. The study assumes importance in view of the fact that ageing pattern is different in different regions and the state Assam is demographically still an unstable one with past history of witnessing explosive growth rate of population, immigration, gender disparity and its apparent unpreparedness to extend extensive old care facilities. The Section II of the paper is on the methodology adopted for the study. In section III, a brief discussion is made on the growth rate of population of different age groups of the state, gender and residence-wise. In section IV, the process of population ageing over the last few

decades in Assam is measured by applying different measures of population ageing, separately for males and females in rural and urban regions of the state. Section V deals with the feminization process and finally section VI draws the conclusions.

II. Methodology

The study is based on secondary data set. Age group wise decadal population data of India for the period from 1961 to 2001 is collected from the Census Reports of India, 1961-2001. The size of population in each of the specified age group from 1961 to 2001 is taken into consideration for estimating the trend line of the age-group-wise population growth. As there was no census in Assam in 1981, the population size of the different age groups for 1981 was estimated by applying Symbolic Relations and Separation of Symbols method of Interpolation (Shastry, 2005). The exponential function Ae^{rt} is considered to find out the growth rate of population. Given the function $V= Ae^{rt}$, where V denotes the size of population; the rate of growth of V is simply equal to 'r'. This rate of growth of V is estimated for each age group population over the period 1961-2001 by fitting trend line, separately for males and females of rural, urban and combined areas. Different methods of measuring ageing process - Ageing Index, Rate of Demographic Ageing, Number of the Oldest-Olds, Growth Rate of the Oldest-Olds, Median Age, are used to capture the pattern of population ageing in Assam. Lastly, simple techniques are applied and Feminization Index is estimated to examine the feminization process of population ageing in Assam. The main objective of the paper is to identify the path of ageing and feminization process in Assam, a state which is, as of now, completely unprepared to meet the challenges of population ageing in terms of provisions for old age security and care.

III. Growth Rate of Age-Group Population

Table-1 reports the trend of population ageing in Assam. The value of 'r' gives a clear picture of the overall rate of change of the size of population of respective age groups over the period from 1961-2001 and therefore, it facilitates inter- age group comparison by smothering out erratic fluctuations in size of population over time. Further, comparison between the rates of growth of male and female population

Table-1 : Age-Group wise Growth Rate of Population Trend line (1961-2001)

Age Group	Growth Rate of Population (value of r in $V= Ae^{rt}$)					
	Assam		Rural Assam		Urban Assam	
	Male	Female	Male	Female	Male	Female
0-4	0.0106	0.0102	0.0098	0.0082	0.0206	0.0102
5-9	0.0155	0.016	0.0149	0.014	0.0222	0.0227
10-14	0.0201	0.0224	0.0192	0.0214	0.0292	0.0317
15-19	0.0254	0.0244	0.0248	0.023	0.0299	0.0372
20-24	0.0227	0.023	0.022	0.0212	0.0266	0.0387
25-29	0.0196	0.0247	0.0183	0.0226	0.0279	0.0435
30-34	0.0207	0.0254	0.0191	0.0232	0.0311	0.0439
35-39	0.0234	0.029	0.0216	0.0265	0.0362	0.0522
40-44	0.0216	0.0245	0.0195	0.0223	0.0359	0.0446
45-49	0.0224	0.029	0.02	0.0266	0.0396	0.0503
50-54	0.0174	0.0227	0.0156	0.0207	0.0352	0.0418
55-59	0.0212	0.0297	0.0185	0.0276	0.0418	0.051
60-64	0.0198	0.0263	0.018	0.0248	0.0377	0.0419
65-69	0.031	0.039	0.0287	0.0372	0.0522	0.0555
70-74	0.0274	0.0304	0.0258	0.0289	0.0453	0.0452
75-79	0.0324	0.0347	0.0305	0.0327	0.0506	0.0522
80+	0.0259	0.0282	0.0242	0.0249	0.0372	0.0452

size, age group wise, in terms of residence, is also possible. Table-1 reveals that rural and urban combined, the rate of growth of female population is higher than the male population in almost all age groups above 25-29. Evidently, female population in almost all age groups (particularly in higher age groups), has been increasing more than proportionately than the male age group population. Consequently, the sex ratio in the state has been increasing albeit slowly since 1961 (Table-8). Further decomposition of rates of growth of population, age group and place of residence wise, reveals that the rate of growth of male and female population in all age groups, from 0-4 to 80+, is much higher in urban areas than that in rural areas. This trend is quite expected since the process of urbanization, although slow in Assam, is supposed to have an overbearing impact on the rural, urban composition of

population. Other important contributing factors include, high rural mortality rates as reflected in the values of Crude Death Rates (CDRs) which were 13, 10.5 and 9.9 per thousand in rural areas and 8, 6.7 and 6.6 in urban areas in 1981, 1991, and 2001 respectively (GOI,2001); Infant Mortality Rates (IMRs) in rural areas which is more than double than that in urban areas (IMR was 34 per thousand in urban areas in 2001 whereas it was as high as 77 in the rural areas of the state, GOA, 2007). The immigration pattern also lent to net addition of people to urban population. While the so called largest influx that took place after 1900 was confined to the rural areas along the banks of the river Brahmaputra, the later influxes (of traders, merchants, bankers, moneylenders, and small industrialists from other parts of India and refugees from the then East Pakistan immediately before and after independence) were largely urban centric. 'The towns of Assam had become centers of alien life and culture' (for details, please see Weiner, M; 1986). For all these reasons, the rate of growth of urban population is found to be much higher than the rate of growth of rural population of Assam in all age groups. Interestingly, the rate of growth of female population is found to be higher than the male population in urban areas in all but 0-4 age group. According to report prepared by Registrar General of India (1999), the expectation of life at birth for the females in the urban areas of Assam was higher than males' in the period 1991-1995. It was 65 years for the females and 64 years for the males. The difference was much higher in 1976-1980, 64.6 years for the females and 59.3 years for the males. Through out the period from 1970 to 1995, the females in the urban areas of Assam enjoyed higher life expectancy than their counter parts, the males. This fact is quite significant in explaining the higher rate of growth of females in the urban areas of Assam. In addition to that, the sex selective migration of women in the post independence period has contributed to this phenomenon.

The discussion on the rate of population ageing and the feminization process in the rural, urban areas of the state will throw more light on the gender differences in the demographic transition of Assam.

IV. Population Ageing- Area and Gender-wise

Population Ageing basically depends on fertility, mortality and longevity. The process of ageing of population is generally measured by

applying different methods. In the present framework of study, the methods applied speak about the pace of ageing process among the males and females of the state. The 'Ageing Index' is a strong indicator of ageing process and is defined as the number of people aged 60 and over per 100 youths under age 15. In 2000, only a few countries viz. Germany, Greece, Italy, Bulgaria, Japan, had ageing index above 100. However, the ageing index is projected to exceed 100 in all developed countries by 2030. As per report published by United Nations (2002), the ageing index of the population of the world and India was 33.4 and 22.7 respectively in 2000. The 'Rate of Demographic Ageing' is another indicator of population ageing. It is the ratio of population aged 60 or over and aged 80 or over to the total population. The indicator expressed as percentage obviously represents the share of olds and the oldest-olds in the population. The second class of indicators of population ageing is the group of statistical measures of location- Median, Mean and Modal class of population. Out of these, the most popular measure is 'Median'- the value of which shows the age at which exactly half of the population is older and another half is younger. In 2000, the Median age in the United States was 36 years, a typical age for most developed countries and it is twice the median age for Africa (United Nations, 2001). It was 23.7 for India and 26.5 for the world in 2000 (United Nations, 2002).

Table-2 shows the estimated values of the selected measures of population ageing for the total male population of Assam. The ageing index for male population in Assam is found to be increasing gradually over decades, from 8.83 in 1961 to 15.59 in 2001. In the age group of 60+, the ageing index for India has increased from 13.7 in 1961 to a projected figure of 21.1 in 2001 (Irudaya Rajan, 1999).The gradual increase in the value of ageing index for male population of Assam confirms that the ageing phenomenon among the males in Assam would be more serious in future. The rate of demographic ageing for 60+ elderly males has been increasing steadily over decades in Assam indicating more than proportionate growth rate of elderly male population out of the total male population of the state. However, for people aged 80+, the rate of demographic ageing has dropped in 2001. This indicates that comparatively larger number of oldest of the olds (80+) have died

Table 2 : Measures of Ageing of Total Male population of Assam

Measures	1961	1971	1981	1991	2001
Ageing Index	10.68	11.41	13.06	14.4	15.72
Rate of Demographic	4.57a	5.12a	5.51a	5.68a	5.82a
Ageing	0.53b	0.56b	0.67b	0.73b	0.64b
No of Oldest-Olds (80+)	33388	44011	65273	84290	88180
Growth Rate of Oldest-Olds (%)	31.82	48.31	29.13	4.62	0.64b
Median Age	19.54	18.05	18.9	20.44	20.84

a - % of population 60+ to total population, b - % of population 80+ to total population

in the decade 1991-2001. In less developed regions of the world (including China), the rate of demographic ageing for 60+ population and 80+ population was 7.7 and 0.7 respectively in 2000 (United Nations, 2001.). The Table-2 shows further that the absolute number of the Oldest-Olds among the males has been increasing in the state. However, their growth rates have declined drastically in the last two decades. This further corroborates the fact that large number of Oldest-Olds among the males have died in the state in the last two decades. The median age of the male population of Assam was 19.54 in the year 1961, but it declined to 18.05 in 1971; thereafter it has been increasing and reached the figure 20.84 in 2001. The drop in the value of Median in 1971 probably has relation to immigration of younger people in the state at that time. The very low elderly sex ratio (Table-10) in the state of that time also points towards that possibility. Table-2 shows that the male society of Assam is much younger as half of male population is below age 20.84 years only.

In Table-3, the values of the selected measures of population ageing for the total female population of the state are shown. The ageing index for females was less than the males in all the decades under consideration. In 1961 it was only 8.83; the corresponding male ageing index was 10.68. The female ageing index further declined to 8.7 in 1971. This indicates that the number of female olds was growing less than proportionately than the number of female youths in the state at that time which points towards the presence of larger number of female children in the population of the state at that point of time. However,

Table 3 : Measures of Ageing of Total Female population of Assam

Measures	1961	1971	1981	1991	2001
Ageing Index	8.83	8.7	9.77	12.07	15.59
Rate of Demographic	4.07a	4.27a	4.48a	4.99a	5.91a
Ageing	0.48b	0.52b	0.55b	0.59b	0.63b
No of Oldest-Old (80+)	26113	36721	48786	63351	81459
Growth Rate of Oldest-Old (%)	-	40.62	32.86	29.85	28.58
Median Age	17.17	15.53	17.16	19.25	21.37

a - % of population 60+ to total population, b - % of population 80+ to total population

the female ageing index started improving thereafter and almost became at per with male ageing index in 2001.The increase in the value of female ageing index in the state from 1981 onwards is quite remarkable. This is probably because of, apart from other reasons, fewer female births in the earlier decade of 1971-1981 and improvement in the survival advantages for females in the state. The rates of demographic ageing show that both the proportion of population in the age group 60+ and 80+ has been increasing in the state since 1961. The growth of 80+ population is obviously a welcome improvement in the longevity of people in the state. The jump in the value of the rate of demographic ageing for 60+ female population from 4.99 in 1991 to 5.91 in 2001 is a clear indication of faster process of female population ageing in the state from the last decade. It is higher than the male rate of demographic ageing in 2001. In absolute terms, the male oldest –olds clearly outnumbered the female oldest-olds in the state in each decade since 1961.However, the growth rate of female oldest-olds , although declined marginally from 29.85 per cent in 1991 to 28.58 per cent in 2001, was much higher than the growth rate of male oldest-olds in 1991-2001 decade. According to the value of median, the male population remained older than the female population all through the period from 1961 - 1991. But in 2001, it turned out to be slightly younger than the female population of the state.

Table 4 : Measures of Ageing of Total Rural Male population of Assam

Measures	1961	1971	1981	1991	2001
Ageing Index	10.77	11.54	12.71	14.17	15.16
Rate of Demographic	4.7a	5.28a	5.57a	5.76a	5.84a
Ageing	0.55b	0.58b	0.69b	0.75b	0.66b
No of Oldest-Old (80+)	31767	41277	60269	76630	78248
Growth Rate of Oldest-Old (%)	-	29.94	46.01	27.15	21.11
Median Age	19.09	17.56	18.40	19.79	20.91

a - % of population 60+ to total population,
b - % of population 80+ to total population

Table 5 : Measures of Ageing of Total Rural Female population of Assam

Measures	1961	1971	1981	1991	2001
Ageing Index	8.43	8.65	9.57	11.65	15.12
Rate of Demographic	3.99a	4.27a	4.43a	4.92a	5.9a
Ageing	0.47b	0.52b	0.49b	0.5b	0.63b
No of Oldest-Old (80+)	24384	34019	38783	48060	71235
Growth Rate of Oldest-Old (%)	-	39.51	14.00	23.92	48.22
Median Age	15.28	15.34	16.95	18.85	20.79

a - % of population 60+ to total population,
b - % of population 80+ to total population

Table-4 and Table-5 show the extent of ageing phenomenon separately for rural male and rural female population of the state. The ageing index values reflect that the shift in the age group structure of rural male population towards older age groups commenced earlier than that in the rural female population. In 1961, the ageing index value for rural male population was higher (10.77) than that for the rural female population (8.43). From 1961 to 1981, the ageing index value for rural female population increased slowly implying more or less equal growth of rural female elderly and rural female children. However, from 1981 onwards, the process of the ageing of the rural female population

accelerated as is evident from higher values of ageing index, 11.65 in 1991 and 15.12 in 2001. The elder-child ratio (ageing index) is almost same for rural male and rural female population in 2001. The rates of demographic ageing also reveal similar picture. So far as ageing process is concerned, the decade 1991-2001 appears to be the turning point of rural female ageing process. In 2001, for the first time in last five decades, the percentage of older people (60+) among rural female population is found to be higher than percentage olds (60+) among rural male population. Not only that, the oldest- old females among rural female population have also grown significantly in the decade 1991-2001, from 0.5 percent in 1991 to 0.63 percent in 2001.In this area, the rate for males has declined from 0.75 percent in 1991 to 0.66 percent in 2001. If this trend continues, there will be more female oldest-olds in the state than the male oldest-olds in near future. The growth rates of the rural male and female oldest-olds also speak the same thing. However, as in 2001, the rural male and female societies are equally young with median values 20.91 and 20.79 for males and females respectively. The values of the measures of population ageing for urban male and urban female population are given in Table-6 and Table-7 respectively.

Table 6 : Measures of Ageing of Total Urban Male population of Assam

Measures	1961	1971	1981	1991	2001
Ageing Index	9.44	10.96	12.33	15.54	20.79
Rate of Demographic	3.17a	3.96a	4.17a	4.7a	5.69a
Ageing	0.3b	0.36b	0.19b	0.22b	0.54b
No of Oldest-Old (80+)	1621	2734	1897	2999	9932
Growth Rate of Oldest-Old (%)	-	68.66	-30.61	58.09	231.18
Median Age	22.79	21.83	22.82	24.41	26.63

a - % of population 60+ to total population, b - % of population 80+ to total population

Table 7 : Measures of Ageing of Total Urban Female Population of Assam

Measures	1961	1971	1981	1991	2001
Ageing Index	8.17	9.35	10.87	14.32	19.88
Rate of Demographic	3.8a	4.23a	4.38a	4.95a	5.92a
Ageing	0.47b	0.48b	0.56b	0.63b	0.64b
No of Oldest-Old (80+)	1728	2702	4537	7091	10224
Growth Rate of Oldest-Old (%)	-	56.37	67.91	56.29	44.18
Median Age	16.78	17.31	19.47	21.60	24.90

a - % of population 60+ to total population, b - % of population 80+ to total population

The urban male population is found to be ageing quite fast. The ageing index has increased from 9.44 in 1961 to 20.79 in 2001. When total urban male population is considered, the percentage elderly is found to be growing a little bit faster in the later decades. However, the percentage share of the urban male oldest-olds (rate of demographic ageing) in the total urban male population has increased remarkably from only 0.22 in 1991 to 0.54 in 2001. The growth rate of urban male oldest-olds over a decade in 2001 is a hopping 231.18 percent. Whether this is because of the crowding phenomenon of medical facilities of urban centers by the ill older people of rural areas, is difficult to ascertain at this stage without further proving.

Like the case of urban male population, the ageing process is equally fast among urban females. The ageing index value for urban females has increased steadily from 8.17 in 1961 to 19.88 in 2001.Similar as in urban male population; the process of ageing has become faster among urban females in the later decades of 1981, 1991 and 2001. The rate of demographic ageing for urban females also corroborates the same phenomenon. However, in case of urban female oldest-olds, there is no visible jump in their number during the last five decades. The urban male society is a bit older than the urban female society with median values 26.63 for urban males and 24.90 for urban females in 2001.

IV. Feminization- Population and Population Ageing

The sex-ratio in the state improved from a low at 869 in 1961 to 935 in 2001. However, it is still less than that of India and remained so

for all decades since 1961 (Table-8). The state's female shares to India's female population have not changed much over time indicating that although sex ratio has gradually been increasing in the state, the net gain in terms of the number of females living in the state is negligible vis-a vis , the female population of the country. The female share to total population of Assam (Table-9) has increased from 46 percent to 48 percent over a period of four decades from 1961 to 2001. However; it increased by leaps and bounds from a meager 40 percent in 1961 to 47 percent in 2001, in the urban areas of the state. This relative gain in the strength of female population in the urban areas undoubtedly can be attributed to increased health care- including pre-natal and post natal- for women, increased awareness among people about gender relations leading to an increase in female survival advantage. Comparatively, the gain achieved in that direction in the rural areas, is small, from 47 percent in 1961 to 49 percent in 2001.The low female share to total population in the urban areas of the state in the early decades of sixty to eighty may also be attributed to factors such as prevalence of joint families in

Table 8 : Sex Ratio (female per 1000 Male)

Year	Assam	India	State's Female Share to India's Female population
1961	869	946	0.0255
1971	896	941	0.0268
1981	901	930	0.0268
1991	923	927	0.0264
2001	935	933	0.0259

Source: Census Reports of India, 1961-2001; figures in col.4 are calculated from Census data.

Table 9 : Female Share to Total Population of Assam

Year	Share in Areas		
	Rural	Urban	Combined
1961	0.4723	0.4037	0.4614
1971	0.4770	0.4286	0.4728
1981	0.4802	0.4435	0.4749
1991	0.4823	0.4558	0.4800
2001	0.4857	0.4658	0.4831

Source: Figures are calculated from relevant Census data, Census of India.

rural areas and selective out migration of males from there to the urban areas in connection with jobs and other economic activities.

The issue of female-male ratio deserves special attention for several reasons. "Even though males outnumber females at birth (and even more at conception), women tend to outnumber men substantially in Europe and North America, with an average ratio of around 1.05

In contrast, many parts of the third world have female-male ratios substantially below unity, for example , 0.96 in North Africa, 0.94 in China, Bangladesh and, West Asia. The average female-male ratio in India is around 0.93- one of the lowest in the world" (Dreze, J and Amarty Sen, 1995). Because of this phenomenon, female-male ratio is considered as a strong indicator of social and economic development, higher female-male ratio implying higher social and economic development. Region specific studies on female-male ratio are necessary as there are large variations in the female-male ratio among different states and countries. For example, sex ratio is only 821 in Delhi, whereas it is as high as 1058 in Kerala in 2001 (GOA, 2007); the inter-country variation is already indicated above. Table-10 is, therefore, constructed to have a deeper look into the female-male ratio in Assam.

Table 10 : Female-Male Ratio in Assam

Year	Female-Male Ratio								
	Rural			Urban			Combined		
	Child (0-4)	Child (5-14)	Old (60+)	Child (0-4)	Child (5-14)	Old (60+)	Child (0-4)	Child (5-14)	Old (60+)
1961	1037	933	761	1019	899	811	975	894	763
1971	1013	968	738	965	924	799	1009	965	748
1981	994	958	731	961	950	841	998	975	735
1991	980	964	797	962	961	886	978	964	812
2001	973	951	955	949	949	908	971	950	949

Source: Estimated from Age Group wise Distribution of Population of Assam, Census of India.

Table-10 reveals that in the year 1961, the proportion of females was as high as 1037 in the category of children of 0-4 age group in the rural areas of the state. In fact, it is the highest female-male ratio among all categories considered here during 1961-2001. The point to note here

is that in the same census year of 1961, the female-male ratio was almost equally high at 1019 in the same age group of 0-4 in the urban areas of the state, the second highest female-male ratio in the table. The period under reference is significant. It is a period when almost the entire subcontinent of India was rocked and millions of people were uprooted in the aftermath of partition of the nation in 1947. Apart from other factors, it appears that the high female-male ratio in the age-group of 0-4 in both rural and urban areas of the state is a result of sex-selective immigration of first female minors in 1961, 1971 and then both males and females from erstwhile East Pakistan to Assam in the following decades. However, further investigation is required to pin point the reason(s) for explaining the observed phenomenon of excessive high female ratio in the age group of 0-4 in 1961 and 1971 in both rural and urban areas of the state. The fact remains that the ratio of females to males among the children of 0-4 age group population started declining steadily from its largest figure of 1037 in 1961, in the following decades; and reached the lowest figure of 973 in 2001. The observed variations in the female-male ratio in the 5-14 age group population (children) in both rural and urban areas of the state do not follow any definite pattern. However, in case of the older people (60+), the ratio first declined from a very low figure of 761 in 1961 to further low at 738 in 1971, and then further dipped down to only 731 in 1981 in rural areas. The ratio improved to 797 in 1991 and then jumped to 955 in 2001. In urban areas, the female-male ratio among the olds (60+) first declined from 811 in 1961 to 799 in 1971, and there after it started rising steadily from 1981 and reached a modest figure of 908 in 2001. Many factors may have contributed to these phenomenal variations in the female-male ratio among the population of older people. First, the selective migration from erstwhile East Pakistan, the female olds and the oldest-olds were left behind or they preferred to stay put. Secondly, the high mortality rates among older females because of well documented neglect of females, weak infrastructure of health care facilities in the early decades. Lastly, with the advancement of medical science, improved health care facilities and, social development, the survival advantages of older females have improved in the last two/three decades in the state. As a result, the female-male ratio among the olds has started improving from 1981 in

urban areas (having comparatively better medical facilities) and, from 1991 in the rural areas of the state as well. The female-male ratio in the population of older people is consistently higher in urban areas than rural till 1991.This is expected since existing literature suggests that mortality rate among women is higher than men in rural areas of India in general (Dandekar, 1996). Surprisingly, the urban female- male ratio among elderly (908) is found lower than rural female-male ratio (955) in 2001. This indicates a sudden spur in the process of feminization of ageing in the rural areas of the state.

Feminization of ageing is a process of number of female aged growing faster than the male aged. The female aged are growing much faster than male aged in most of the developed countries of the world. Because of the better survival chances of older women relative to men, the sex ratio changes with age in favour of the former. The UK 2001 census shows that while the ratio of women to men in their late 60' is 1.07, the figure rises to 1.29 in their 70's, and further to 1.91 for people in their 80's and 3.46 for those in their 90's. As women's budget group has noted, ageing in the UK, and also elsewhere, is a progressively gendered experience (House of Lords session, 2002-03).

India in numerical strength is visibly a male dominated country. Till date, the sex ratio is unfavorable to females in India. The state of Assam, being a part of India, is no exception to that. The following table-11 shows the feminization index for Assam as a whole and by residence. Feminization Index is estimated separately for total population of the state as a whole and for total rural and urban population of the state (Table-11). This index shows the female share in older population. The older population refers to, as usual, population belonging to age group 60+. The index, estimated for the decadal years from 1961 onwards for Assam, captures the process of feminization of ageing in the state. For total population of the state, the feminization index was 42.745 in the year 1961. In a decade, from 1961 to 1971, the feminization index increased marginally to 42.786 in 1971. From 1981-1991, the index value is found to be increasing steadily over time. The index value reached 48.688 in the year 2001. The index for rural and urban population shows that the percentage of elderly females among the

elderly population varied only marginally over the period from 1961 to 1981.However, the index improved its value significantly in the period 1981-1991 in rural areas and in 1991-2001 in the urban areas of the state. The result shows that the process of feminization of ageing is quite fast in the total population of Assam in the post 1981 period and there is acceleration of the same in rural, urban areas of the state as well, rural areas witnessing the phenomenon earlier than the urban areas.

Table 11 : Feminization Index

Year	Total	Rural	Urban
1961	42.745	43.202	44.625
1971	42.786	42.325	45.100
1981	42.829	41.903	44.203
1991	44.810	44.00	45.20
2001	48.688	48.856	47.578

The correlation between the process of feminization of ageing and the process of demographic ageing (with 60+ population) is checked by finding out the correlation coefficient of the two variables mainly feminization index and rate of demographic ageing. In case of the total population of Assam, the correlation coefficient is found to be quite high (0.84) implying that as the rate of demographic ageing increases the process of feminization of ageing also increases. Same is the picture in rural Assam (r =0.76). The urban Assam also presents a similar picture where r=0.71. The values of correlation coefficient indicate that there is very high level of correlation between the process of feminization of ageing and the process of demographic ageing in the rural, urban areas and, in case of Assam as a whole as well.

VI. Conclusion

The results of the present study reveal very important sides of the trend in the rate of population ageing, female-male ratios and feminization of the entire process of population dynamics of the state. The values of the indicators of ageing process show that the male society of Assam, as a whole, is still much younger than the male society of India and within the state, it is even younger than the female society. However,

further decomposition of data residence-wise, presents a different picture- while the male society is slightly older than the female's in the rural areas; it is near about 2 years older than the female society in the urban areas of the state. The ageing process among the males and females in both rural and urban areas is accelerated in the state from 1981 and it appears to be faster among the females in the rural areas of the state. The growth rates of female oldest-olds are also found higher than males' in the rural areas and also in areas rural-urban combined. If the trend continues, there will be more female oldest-olds in the state than the male oldest-olds in future.

While the unexpected high female-male ratio among children of 0-4 age group in both rural and urban areas in the immediate post independence period, is intriguing; its monotonic decline in the following decades raise question about the survival advantage of female babies and also of female children of 5-14 age group in the state. The picture is not a better one even in the urban areas of the state. The female-male ratio is comparatively better among older population as the number of females have been increasing significantly in last two decades from very low levels in the early decades since 1961. The over all female share to total population has improved over time and it is likely to improve further in coming years as the rate of growth of female population in almost all age groups are found to be higher than the males. As expected, the rate of growth of male and female population, in all age groups, is much higher in urban areas than that in the rural areas of the state. Interestingly, the rate of growth of female population is found higher than the male's in the urban areas in all but 0-4 age group.

The results further indicate that the state has not yet entered into the stage of feminization of ageing process. However, the rise in the values of feminization index from 1981 onwards in the state as a whole and from 1981 in rural Assam, from 1991 in urban Assam in particular, is a clear indication of the beginning of feminization era of population ageing in the state. This is further evident from the fact that the demographic ageing of 60+ populations is found to be highly correlated with feminization index in the case of rural, urban and rural-urban combined areas of the state.

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Instrumental Activities of Daily Living and Subjective Wellbeing in Elderly Persons Living in Community

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ABSTRACT

Decline of functional ability with age leads to stress, isolation, and other harmful effects. Activities of daily living represent basic responsibilities and duties that comprise the individual's daily functioning, such as bathing, dressing, eating, toileting, and transferring. Impairment in activities of daily living is illustrative of a stressful life situation and, in turn, affects the elderly individual's experience of well-being. There are limited psychological data on the quality of life and activities of daily living among community dweller elderly in India. This study explored and compared various factors associated with Instrumental Activities of Daily Living and Well-being in elderly persons living in community. A sample of 100 elderly persons was drawn from Agra and adjoining villages. GHQ-12 was used to screen out participants. Instrumental Activities of Daily Living Scale (IADL) (Lawton & Brody 1969) and Personal Wellbeing Index (PWI) (International Wellbeing Group, 2006) were administered on each participant. The results revealed significant group differences in IADL across domicile, current working status, age groups; and significant differences in wellbeing across age groups. Regression analysis revealed that IADL significantly predicted wellbeing in older age group.

Key Words: Activities of Daily Living, Elderly in Community, Well-being in Elderly, Personal Wellbeing Index, GHQ-12.

The size of elderly population is increasing all over the world including India. In 1991, the population of 60 years and above was 6.8 per cent which had increased to 7.5 per cent in 2001 census. The data

on 2011 census is awaited which is likely to show further increment in the proportion of the elderly persons. According to an estimate, the elderly population in India is expected to reach 177 million by 2025; one out of seven elderly in the world is an Indian.

The ageing is associated with increased vulnerability of medical and psychiatric problems. Joshi *et al.* (2003) reported that in a sample of 200 elderly persons of 60+ years; 88.9 per cent persons perceived themselves as ill; and 43.5 per cent were under active treatment. 42.5 per cent persons were diagnosed as having multiple diseases to the tune of 4-6 morbidities per person. The elderly with higher morbidity were found to have greater distress and disabilities.

Many countries are starting to face crisis because there are not enough resources to support either medical or social services that this population needs. The health care services and social security measures are not being expanded in proportion to the increasing size of the elderly population; thereby enhancing the risk for compromised quality of life; health problems and reduced functioning. This is further complicated by disintegrated joint family structure and increasing demand and utilization of geriatric homes. About 30 per cent elderly live separately and bear loneliness, dependency, poverty, lack of protection for their lives and property.

The big challenge of disability tend to increase with increasing morbidity and vulnerability in advanced age to the extent that a portion of the elderly fails to undertake even basic and/or instrumental activities of daily living. Basic activities of daily living (ADL) consists of tasks that are essential for self-care for example, elimination, ambulation, feeding, grooming etc. (McDowell and Newell, 1996). The Instrumental Activities of Daily Living (IADL) are not essential for fundamental functioning, but they allow an individual to live independently in the community; for example, cooking food, shopping, communication over telephone, using technology and so on (Bookman *et al.,* 2007). Because of an inability to execute these ADL, an elderly is required to depend upon other human beings or mechanical devices for these basic functions. Within the elderly population, ADL prevalence rates rise steeply with advancing age and are especially high for persons aged 85 and over (Rivlin *etal,* 1988; Altmets, 2008).

Functional abilities and ADL decline with age (Haug & Folmer, 1986). The number of elderly persons who require assistance in ADL doubles with each successive decade up to age 84 years and triples between 85—94 years (Almy, 1988). Nandakumar (1998) observed that 9% elderly persons had difficulties in performing one or more ADL.

A decline in functional capacity of the elderly persons is associated with reduction in subjective well-being (Liberasleso, 2002). Impairment in ADL affects the elderly individuals' experience of wellbeing (Revicki & Mitchell, 1990). Deng *et al.* (2010) reported that social support from family members and cognitive function were key factors associated with quality of life among the very old in China. Hisnanick (1994) reported that prior existence of ADL limitations is hypothesized as proportionately associated with a transition to a lower state of wellbeing. This study was designed to explore and compare various factors associated with Instrumental Activities of Daily Living and Well-being in elderly persons living in community.

Objectives

1. To estimate group differences in Instrumental Activities of Daily Living across various groups of elderly persons
2. To estimate group differences in Well-being across various groups of elderly persons
3. To estimated the association between Instrumental Activities of Daily Living and Well-being in elderly persons.

Method

Design: Cross-sectional study having between group and correlational design

Sample: A sample of 100 elderly persons of 65+ age was recruited from Agra and nearby villages through purposive sampling. The elderly persons who were willing to co-operate and give informed consent were included

Tools: Following tools were individually administered on the participants.

1. *Personal Data Sheet* was used for recording socio-demographic information of the participants.

2. *General Health Questionnaire (GHQ-12)* is used for detecting non-specific psychological morbidity. The 12-item GHQ is the shortest versions of General Health Questionnaires and widely used in research studies (e.g. Goldberg and Williams, 1988; Pan and Goldberg, 1990; Quek *et al.,* 2001; Tait *et al.,* 2003; Hahn *et al.,* 2006; Hankins, 2008). A higher score on the questionnaire indicates a possible psychiatric morbidity.
3. *Instrumental Activities of Daily Living Scale (*Lawton & Brody 1969*)* was developed to assess the complex ADLs for older adults living in the community. It assesses a person's ability to perform tasks such as using a telephone, doing laundry, and handling finances. Each item relies on either cognitive or physical function, though all require some degree of both. There are 31 items of varying complexity level in the scale grouped into eight domains arranged in increasing complexity which were rated on a continuum of 0-4. The higher scores reflect better functioning. This tool is widely used both in research and in clinical practice on elderly population in community or hospital settings (e.g. Cromwell *et al.,* 2003; Ng *et al.,* 2006; Vittengl *et al.,* 2006; Niti *et al.,* 2007).
4. *Personal Wellbeing Index (PWI) (*International Wellbeing Group*, 2006)* is used to assess subjective wellbeing of the participants. The scale has two Parts. Part-I consists of an optional single item and Part-II consist of eight items to be rated on a 11 point scale. The items assesse a subject's satisfaction in following areas: life as a whole, standard of living, health, achievements, personal life, feelings of safety, feelings parts of the community, future security, and spirituality/religion. It is one of the most widely used scale for assessment of well-being in a variety of population (e.g. Wills-Herrera *et al.,* 2009; Webb, 2008; Tiliouine, 2009; Tiliouine.and Belgoumidi, 2009). A higher score means greater well-being. The sum total of nine items are processed in the analysis of this study.

Procedure

The data was collected in Agra city and nearby villages. The village heads were contacted for enlisting the names of elderly people above 65+ living in their community. The prospective participants were then contacted one by one; briefed about the nature of the study and informed consent was sought. The above tools no. 1-4 were individually administered on elderly persons who gave his/her consent to be part of

the study. The entire data was collected from Agra city and five neighboring villages.

Results

The participants were screened through GHQ-12 for eliminating probable cases. A binary response system (0,1) was used for scoring. There is a variation in selection of a cut off score for GHQ-12 across studies. It ranges from a cut off score of two, three to even four. The mean GHQ-12 score in the present data was 1.44 with an SD of 1.75. A cut off score of mean plus one S.D (3.17 rounded to 3.00) was chosen for screening out the participants. 29 participants scored Three or more on GHQ-12; they were excluded from the main analysis. The characteristics of this excluded sample was as follows: 41.4 per cent males, 58.6 per cent females and 24.1 per cent rural, 75.9 per cent urban. The details of the main study sample (n=71) are summarized in following table-1:

Table 1: Sample characteristics

Variables	Groups	N	%	Chi-Square
Gender	Male	38	53.5	.35
	Female	33	46.5	
Age	65-80 years	40	56.3	1.41
	Above 80 years	31	43.7	
Education	Illiterate	25	35.2	
	Up to 9th Std.	11	15.5	12.28*
	H.Sc and above	35	49.3	
Domicile	Rural	30	42.3	1.70
	Urban	41	57.7	
Current working status	Not working	41	57.7	1.70
	Working	30	42.3	

* Significant at .01 level

Table-1 shows that there were no differenced in following variables across sub-groups: gender, age, domicile, and current

working status. Significant differences emerged in educational status; hence this variable was not included in further analysis.

Comparisons of IADL Scores Across Groups:

The mean IADL score for the entire screened in sample was 16.29 with an S.D. of 7.57. The maximum possible score on the scale is 23.

Table-2: Mean, S.D. and t-value of IADL Scores

Variables		N	Mean	Std. Deviation	t-values	Significance level
Gender	Male	38	16.68	7.48	.46	ns
	Female	33	15.84	7.77		
Age	65-80 years	40	20.42	3.55	6.62	.001
	Above 80 years	31	10.96	8.09		
Domicile	Rural	30	14.20	8.61	2.04	.05
	Urban	41	17.82	6.40		
Current working status	Not Working	41	14.48	8.42	2.43	.01
	Working	30	18.76	5.45		

The results of t-test (Table-2) revealed significant group differences in Instrumental Activities of Daily Living across age domicile and Current Working Status. The working status for male participants was engagement in any gainful occupation and for females it included both gainful occupation and/or domestic responsibilities. The age group above 80 years had significantly lower IADL. In Domicile, the urban group has higher mean IADL scores indicating significantly better functioning of this group compared to the Rural group. In Current Working Status; the Working group has higher Mean IADL scores reflecting statistically superior performance of this group in comparison to Not working group. No significant group differences emerged on mean IADL across Gender.

Comparisons of PWI Scores across Groups

The mean PWI score of the entire screened in sample was 60.71 with an S.D. of 15.81. The maximum possible score on PWI is 90.

Table-3: Mean, S.D. and t-value of PWI Scores

Variables		N	Mean	Std. Deviation	t-values	Significance level
Gender	Male	38	58.92	16.11	1.03	ns
	Female	33	62.78	15.43		
Age	65-80 years	40	66.37	12.64	3.72	.001
	Above 80 years	31	53.41	16.66		
Domicile	Rural	30	56.60	15.91	1.90	ns
	Urban	41	63.73	15.22		
Current Working Status	Not Working	41	58.58	17.16	1.38	ns
	Working	30	63.63	13.48		

Only age emerged as the significant variable in wellbeing. The older group had significantly lower wellbeing. None of the other variables e.g. gender, domicile and current working status were found significant (Table-3). To estimate the variance accounted for by age in SWB; simple regression analysis was conducted by entering age as the predictor variable which yielded an R^2 of .168 $p<.001$.

Association of IADL and Well-being

Bivariate Pearson's Product Moment Correlation was computed between IADL scores and PWI scores of 71 screened in participants. A correlation co-efficient of .641 was obtained which is significant at .001 level. To estimate the variance accounted for by IADL in well-being scores; simple linear regression was estimated in which IADL scores were processed as predictor variable and PWI scores were entered as dependent variable. The analysis resulted in an R Square of .41 which is significant on .001 level; indicating that IADL significantly contribute to the well-being in elderly persons. In view of the significant age difference in IADL and wellbeing; simple regression analysis was performed in these two age groups separately (65-80 years, Above 80 years) by entering IADL scores as the predictor variable and PWI scores as dependent variable. Interesting results were obtained. The IADL significantly predicted wellbeing only in the older age group (above 80 years) having an R^2 of .540 $p<.001$. The R^2 in other age group 65-80 years was .022 only.

IADL and Wellbeing in 80+ years Age Group

Since 80+ years age was found to be significantly associated with IADL and wellbeing; a detailed analysis of the factors associated in this age group was conducted. The computation of t-test for group differences across gender, domicile and current working status did not reveal any significant differences.

Discussion

Instrumental Activities of Daily Living (IADL): IADL are complex activities of daily living which require a minimum amount of intact physical capacity and cognitive efforts on the part of an individual. The physical competence and cognitive demands increase with the complexity of activities like shopping, handling finances, use of transportation. The advancing age in general results in compromise of both physical strength and cognitive competence hence a more or less decline in the capacity to perform Instrumental Activities of Daily Living can reasonably be expected in older persons. The data of two age groups in this study indicated a significant decline in the capacity to perform instrumental activities of daily living in 80+ years age group. In a three year follow up study, Fujiwara *et al.* (2008) also observed that advanced age was a significant predictor of decline in IADL. Inzitari *et al.* (2009) observed that in older adults who seek medical attention for non-disabling complaints, severe age related changes in white matter independently and strongly predict rapid global functional decline. Pohjasvaara *et al.* (2007) examined the role and extent of White Matter Lesions (WML) involved in activities of daily living, instrumental activities of daily living and cognitive functions in a sample of 395 elderly people of 55-85 years age. Their results indicated that the oldest group had greater WML and had higher deficits in instrumental activities of daily living and cognitive functions.

The analysis across other variables like Gender, working status and domicile revealed that the working elderly persons and the elderly from urban domicile were found to have performed better on IADL. Ishizaki *et al.* (2000) in a longitudinal study of elderly persons of 70 years or older also observed that being engaged in work was strongly associated with remaining independent in instrumental activities of daily living. No significant group differences emerged in IADL across gender.

Ishizaki (2004) also reported that gender was not significantly associated with functional decline in elderly persons.

Subjective Well-being (SWB) in Elderly Persons

SWB refers to an individual's evaluation of satisfaction in various domains of life. A person may be said to have high SWB if she or he experiences life satisfaction and frequent joy and only infrequently experiences unpleasant emotions such as anger and sadness. A person is said to have low SWB if he or she is dissatisfied with life, experiences little joy and affections and frequently feels negative emotions such as anxiety (Sharma & Sidhu, 2009). Personal Wellbeing Index (PWI) assesses a subject's satisfaction in following domains of life e.g. Standard of Living, Personal Health, Achieving in Life, Personal Relationships, Personal Safety, Community-Connectedness, Future Security, Spirituality – Religion. In this study, group differences in subjective wellbeing in elderly persons were explored for following variables: gender, domicile, current working status and age. No significant differences were observed for gender, domicile and current working status. However, age was found to be associated with subjective wellbeing. The older group (above 80 years) had significantly reduced wellbeing in comparison to other group of lower age. The age accounted for 16.8 per cent variance in wellbeing. Momtaz *et al.* (2009) did not get any significant association of age with wellbeing; but they were expecting it to be significant. The subjective sense of wellbeing may get affected negatively in elderly persons in advanced age due to many factors like physical illness, cognitive decline, socio-economic status, home environment, support from family members, spouse conditions, living alone and so on.

Instrumental Activities of Daily Living and Wellbeing

The results of the study revealed a highly significant association of IADL and wellbeing in elderly persons (R^2=.41); however, a deeper level of examination of this association revealed that IADL and wellbeing were significantly associated in older age group (80+ years) only. This result appears to be in expected direction because this older group was found to have significant IADL deficits (Table-2). A deficit in performing IADL makes a person dependent on others; and this get accentuated with the magnitude of deficits. In the changed socio-cultural context of

nuclear family composition, a support in executing these tasks may be present in part. The dependence on others, recognition of one's own deficits and lack of effective support may be some of the reasons for negative affective reactions and reduction in wellbeing in elderly persons. Apart from IADL deficits, other factors may also contribute to the decreased wellbeing in elderly persons. The list of factors may be quite exhaustive but following factors can reasonably be expected to have their bearing on wellbeing in elderly persons – physical illness, financial difficulties, living alone, spousal illness, cognitive impairment, interpersonal rejection.

The reduced wellbeing and IADL limitations can be an expected sequale of advanced age much because of atrophy and disintegration of neural system and psychosocial factors. There have been attempts to improve the status of wellbeing in elderly persons but the results were not encouraging as indicated by a meta-analysis of Okun *et al.* (1990) who reported that the attempts to improve wellbeing in elderly may be successful but the gains do not last over one month period. Because of this observation; we may be required to develop more innovative modules of psychosocial integration, rehabilitation, support for mitigating the deficits and enhancing wellbeing status of the elderly population to the maximum possible extent.

Conclusion

The results of this study are based on a relatively small sample but reveal some important findings which would need be replicated through larger and more methodologically sophisticated work up. The significant IADL deficits were found in oldest age group, rural living and non-working status of elderly persons. The older age group had lower subjective wellbeing. The IADL deficits significantly predicted wellbeing in elderly persons. A comprehensive approach incorporating biopsychosocial support would be required to achieve tangible success in enhancing wellbeing, managing impacts of IADL deficits in the elderly persons living in community.

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Alcohol Dependence and its Physical Complications in the Elderly : A Clinical Review

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ABSTRACT

Alcohol dependence is a very serious health issue all over the world. In fact there has been a rise in the number of elderly resorting to substance abuse and alcoholism in the last decade. The use of alcohol in the elderly is not only plagued with psychological problems but also leads to a large number of physical complications. The present review looks at the alcohol dependence in the elderly for the family physician and geriatric medicine practitioner. It highlights the extent and scope of the problem, focusing on the various physical complications that ensue with alcohol intake. Key medical symptoms that may complicate alcohol dependence in the elderly are explained. The assessment and management of the problems encountered at a primary care level are discussed.

Key words: AlcoholDependnce, Elderly, Physical complications, Psychological problems, Management

As our population continues to age, we face a growing number of persons seeking physical and psychological benefits from alcohol abuse. To some this is a way to counteract the void created by a series of losses. To others it is a way to escape from chronic unrelenting pain and suffering. To still others, it is the result of failure of medical professionals to properly evaluate and treat many problems of old age (Mallia, 2010). Aging is associated with decrease in physiological reserves and losses associated with psychological wellbeing. An increasing number of elderly are outliving their spouses, friends and even children. Loss of friends and family is further affected by loss of

job, economic instability and failing health. Elderly men who have recently lost their spouses have highest incidence of 'new alcoholism' (Kalpatapu *et al*., 2010). Drinking guidelines highlight an important distinction between problem or at-risk drinking and alcohol dependence.

Alcohol dependence refers to a medical illness characterized by loss of control, preoccupation with alcohol, continued alcohol use despite adverse consequences, and physiological symptoms such as withdrawal and tolerance (American Psychiatric Association, 1994). There appear to be two types of elderly alcohol abusers, those who have a life-long pattern of drinking, individuals who were probably alcoholic all their lives and are now elderly and those who become alcoholics in their drinking patterns for the first time late in their life. While either group may drink openly, it is more common for drinking to occur in secrecy. In the early onset alcoholics, there is a strong family history (80 % cases as against 40 % in late onset alcoholics). Besides, there is a greater prevalence of personality disorders in the early onset group (Turner, 2009). Depression, loneliness and lack of social support are most commonly cited antecedents for drinking in both groups (Kenna, 2010).

Table 1. Certain physical effects seen both with age and alcohol dependence

System of the Body	*Effects*
Central Nervous system	Neuronal death
	Short term memory
	Slow reaction time
Cardiovascular system	Reduced cardiac output
	Valvular sclerosis
	Decreased stamina
Respiratory system	Infections
	Decreased vital capacity
	Reduced ciliary action
Kidneys	Nephron loss
	Reduced GFR
	Change in renal threshold
Musculoskeletal	Osteoarthritis
	Loss of bone density
Endocrine system	Impaired glucose tolerance

	Reduced BMR and Obesity
Reproductive	Delayed erection
	Orgasmic difficulties
Gastrointestinal tract	Reduced taste sensation
	Acidity
	Constipation
	Nutritional deficiencies

As with alcoholics of any age, there is a strong tendency for geriatric alcoholics to try and hide their illness. Most elderly alcoholics drink alone while at home which may further contribute to the precipitating factors of loneliness and lack of social support and create an unavoidable downward spiral (Hawkley and Cacioppo, 2010). The present article reviews various aspects of alcohol dependence in the elderly with special emphasis on physical complications in this population.

Epidemiology

The prevalence of alcohol dependence is between 3-15 per cent in community dwelling elders and between 18-20 per cent in elderly general medical patients while the number rises to 44 per cent in psychiatric inpatients (Schonfeld and Dupree, 1991). Estimates from community based epidemiologic studies suggest that 1 year prevalence rate for alcohol abuse and dependence is 2.75 per cent for elderly men and 0.51 per cent for elderly women (Schonfeld and Dupree, 1995). Differences between ethnic groups are not clear, although in some ethnic minorities such as elderly Asian populations, drinking is very uncommon (Hensing and Spak, 2009). There is great difficulty in diagnosing alcohol abuse in elderly (Saitz, 2010). In a study of 263 elderly persons with a history of substance abuse only 33 of 99 problem drinkers were correctly identified by medical staff (Grant *et al*., 2004). Another study demonstrated that gerontologists were significantly less likely to screen for alcoholism in routine clinical practice than family practitioners (Archangelo, 1993).

Physiological aspects of geriatric alcohol dependence

Alcohol is distributed in the fluid compartment of the human body. With aging there is a decrease in intracellular and extracellular fluid and

increase in proportion of total body fat. Although there appears to be no age related change in hepatic detoxification of alcohol, there is decrease in volume of distribution of alcohol with age, resulting in a greater load reaching the central nervous system. There is age related decrease in gastric alcohol dehydrogenase which increases the amount of alcohol entering the blood stream (Lieber, 2005). Making things worse is the age related decrease in number of brain cells. This causes a higher alcohol to brain cell ratio in older people despite small amount of alcohol consumed. Elderly people are hence particularly vulnerable to side effects of alcohol including altered cognition, behavior and tendency of repeated falls under alcohol intoxication (Lieber, 1998).

Table 2. Early onset vs late onset alcoholism.

Early onset Alcoholism	***Late onset Alcoholism***
Family history (80%)	Less common (30%)
Personality disorders	Stable early life
Early antecedents	Rarely antisocial
Poor social status	Likely to live with family
Malnutrition common	Positive work history
Multiple injuries	Drinks alone
Poor occupation	No other substances
Abusive nature	Physical complications
Poly-substance	Loneliness
UsePsychotic disorders	Depression

Table 3. Effects of Acute alcohol intoxication

Physiological effects	***Potential consequences***
Increased heart rate	Congestive cardiac failure
Increased cardiac output	
Increased stomach acid	Gastritis
	Bleeding peptic ulcer
Increased pancreatic secretions	Pancreatitis
Alcoholic ketoacidosis	Neurotoxicity and Coma
Hypoglycemia	Coma and confusion

Table 4. Effects of Chronic alcohol dependence

Physiological effects	*Potential consequences*
Decreased Vitamin D	Osteomalacia
Increased estrogen ratio	Fractures
	Palmar erythema
	Spider angiomata
	Gynecomastia
Decreased testosterone	Impotence
Thiamine deficiency	Wernicke Korsakoff syndrome
B12 deficiency	Megaloblastic anemia
Gastritis	Peptic ulcer
Liver	Cirrhosis & Hepatitis

Physical complications of acutre alcohol intoxication

Elderly persons are particularly prone to problems from acute alcohol intoxication. Clinically, the same amount of alcohol consumed in earlier years with impunity may now cause clinical symptoms such as slurred speech, instability, falls and confusion. The elderly alcoholic may be mistakenly diagnosed with dementia or tumour rather than a subdural hematoma which he might have suffered during a fall after a bout of drinking. Some regions of brain are more vulnerable to ethanol than others. The neocortex, basal ganglia, hippocampus and reticular activating system undergo neuronal aging at a faster rate than do other regions of the brain.These changes result in impaired cognition and motor skills (Harper and Matsumuto, 2005). Alcohol also has an acute effect on cardiac muscle, leading to increased cardiac rate and output. Systolic blood pressure may be increased and blood shunted from splanchnic circulation to periphery. The latter phenomena cause cutaneous vasodilatation and loss of body heat. When coupled with elderly problem of maintaining thermo-neutrality, the elderly person is at a greater risk of developing hypothermia (Silveri and Spear, 2000).

Alcohol increases acid production by the gastric parietal cells. Because ageing results in reduction in gastric parietal call mass, a significant problem may not result unless an abnormal mucosal lining co exists .As the amount of alcohol consumed increases, there is a greater

risk hyperemia, increased mucus production and decreased acid secretion leading to acute gastritis. Resulting nausea and vomiting may lead to electrolyte and fluid imbalance earlier in elderly as a consequence of decreased physiological reserve (Bujanda, 2000). Although less common, alcohol may stimulate stimulate secretin production by pancreas, resulting in increased pancreatic enzyme output. These proteolytic enzymes may lead to auto-digestion of pancreatic tissue with potential for producing acute pancreatitis (Yadav *et al.,* 2007).

Acute alcohol ingestion may result in alcoholic ketoacidosis. Arterial blood pH is reduced with a high anion gap, test results for serum ketones are weakly positive because of predominant ketone being beta hydroxybutyrate, which is not detected by standard tests for ketones. Supportive care and rarely bicarbonate administration is needed until metabolic balance returns (Kraut and Kurtz, 2008). The elderly are particularly prone to alcohol induced hypoglycemia. Usually preceded by a period of starvation, glycogen stores are further impaired by alcohol's inhibition of hepatic gluconeogenesis (Howard *et al.,* 2004). Hypoglycemia has a greater impact on elderly because they have less efficient counter regulatory mechanisms and fewer brain, cardiac and renal cells. This decreased reserve may result in more significant tissue damage and altered functional status (Malouf and Brust, 1985).

Alcohol inhibits anti diuretic hormone (ADH) which in turn leads to water dieresis and may present as urinary incontinence. Neurologically, alcohol depresses the central nervous system .Tendon reflexes may be hyperactive as a result of reduced inhibitory spinal motor neuron activity (Neiman, 1998).

Physical complications of chronic alcohol intoxication

Alcohol affects almost every cell, organ, and tissue in the body. Changes in vitamin D metabolism may result from inability of the cirrhotic liver to hydroxylate vitamin D3 at the 25 position to its more active form. This condition may be worsened by dietary deficiency in vitamin D, fat malabsorption and / or concomitant use of either phenytoin or phenobarbitone. The end result may be osteomalacia resulting in bone pain or fractures (Bikle and Genant, 1985).

Because the liver is the main site of "binding globulin" production and catabolism of testosterone and conjugation of its metabolites with

sulfuric or glucoronic acid, alcoholic changes may result in an increase in the ratio of physiologically free oestrogen to free androgen. This may result in clinical manifestations including testicular atrophy, spider angiomata, palmar erythema and gynaecomastia (Yip and Burt, 2006).

An increased rate of conversion of adrenocortical steroid precursors to estrogen has also been reported (O'Shea *et al.,* 2010). This is thought to result from decreased uptake of androstenedione by the diseased liver with a resultant increase in estrone production. Decrease concentration of plasma testosterone, decreased testosterone production , increased testosterone clearance and altered hypothalamic-pituitary axis have all been noted following alcohol ingestion, even in absence of liver disease. This may result in impotence, often wrongly dismissed as a function of increasing age (Farhner, 1987).

Chronic alcohol consumption has both a direct and indirect effect on cardiovascular system. It is associated with cardiomegaly (Rimm, 2000), cardiac fibrosis (Kannel, 1998), microvascular infarcts and altered myocardial subcellular components (Corrao *et al.,* 2000). Clinically, chronic alcoholism is associated with tachycardia, reduced myocardial contractibility and output (Cowie, 1997).

Elderly persons who are chronic users of alcohol have higher rates of glossitis, stomatitis and parotid gland enlargement (Burns and Flower, 1988). In addition, there is an increased risk of squamous cell carcinoma of oropharynx. Chronic gastritis may lead to iron deficiency anemia. Anemia may also result from a deficiency in folate or vitamin B12 (Guralnik *et al.,* 2005). Sideroblastic and hemolytic anemias are also more common. Thrombocytopenia and macrocytosis, with or without granulocytopaenia may also be noted as a result of bone marrow toxicity (Michot and Gut, 1987). Failure of these parameters to return to normal within 1 week of abstinence usually indicates some other etiology.

The most common complication is liver toxicity. A spectrum of illness has been described, ranging from fatty metamorphosis to cirrhosis. Consequences may include systemic complaints of fatigue, anorexia and weight loss. Until jaundice is noticed these vague complaints may not be ascribed to alcoholic liver disease in elderly persons with other age-prevalent disorders. On examination, while patients may show typical clinical signs, including icterus, spider angiomata, ecchymoses,

gynaecomastia, testicular atrophy, muscle wasting, palmar erythema and Dupuytrens contracture (Lieber, 2001). These findings may be wrongly blamed on other disorders. Even laboratory testing may be misleading as normal liver function tests may be noted as the liver fails and production of hepatic enzymes is diminished.

Nutritional deficiencies are common in elderly alcoholics and may include protein energy malnutrition, select vitamin deficiencies, hypomagnesemia, hypophosphatemia and hypocalcemia (Epstein, 1997). Active forms of vitamin D may be diminished in alcoholic liver disease. Wernicke and Korsakoff syndromes are associated abnormalities that result from thiamine deficiency (Kopelman *et al.,* 2009). Chronic alcohol ingestion also causes proximal muscle wasting, which may negatively affect balance and lead to falls (Sullivan and Pfefferbaum, 2009).

Alcohol and sleep in the elderly

Alcohol also is often used to help with sleeping problems,a common complain among elderly people. With normal ageing, total sleep time decreases to an average of 6 hours per night. The proportion of rapid eye movement sleep (REM) sleep decreases by nearly 25 pr cent and phase IV or deep sleep is significantly decreased in advanced age (Roehrs and Roth, 2001). Compared to younger adults, elderly individuals have increased sleep latency and more frequent awakenings. Regardless of the length of total time asleep, the sleep is less effective and non restorative. Alcohol decreases sleep latency. This effect of alcohol may be subjectively perceived as a benefit. The other side of the coin, however is that a significant alcohol induced decrease in REM and delta sleep in the elderly alcoholic may result in practically no deep sleep at all, causing undesirable clinical consequences during waking hours. Lack of deep sleep manifests as lethargy whereas REM sleep deprivation leads to increased irritability (Park and Yu, 2006).

Assessment of the elderly alcohol dependent subject

As with alcoholics of any age, there is a strong tendency for geriatric alcoholics to hide their illness. A useful sign that can be picked up during routine history includes daily use of alcohol. Although daily use may be denied, repeated efforts may elicit history. The elderly may very well experience amnestic periods while drinking hence history must

be obtained from family or acquaintances (Menninger, 2002). The alcoholic is often unaware of memory lapses or adamantly denies them. In presence of any of the following signs , there should be a high index of suspicion of serious alcohol abuse –

1. Daily drinking pattern.
2. Amnestic periods while drinking.
3. Continuation even after warning to stop.
4. Physical stigmata of chronic alcohol abuse.
5. Altered cognitive abilities.
6. Deranged liver function tests.
7. Anemia.
8. Frequent falls and fractures.
9. New seizure activity.

In addition to history and clinical diagnostic signs, currently accepted screening tests include both CAGE and MAST-G (Michigan Abuse Screening Test). A study of 1885 patients showed that fewer than half patients studied screened positive for both MAST-G and CAGE questionnaires, leading the authors to conclude that each capture different aspects of unsafe drinking (Rigler, 2000).

Management of geriatric alcohol dependence

Over the last two decades, there have been multiple controlled clinical trials to evaluate the effectiveness of early identification and secondary prevention using Brief Alcohol Counseling to address alcohol misuse (McDuff and Bueger, 1997). Strategies have ranged from relatively unstructured counseling and feedback to more formal structured therapy (Washton, 1996) and have relied heavily on concepts and techniques from the behavioural self control literature (Marlatt, 2005). The interventions generally include an expression of concern, feedback to the patients linking their health and drinking and explicit advice to cut down. The US Preventive Services Task force recommends the five A's approach (ask, assess, advise, agree, assist).

The goal of any treatment modality must include total and complete abstinence for the elderly individual. Researchers have reported that older adults are more compliant with addiction treatment than younger adults are, as measured by treatment attendance. Patients usually require hospitalization for management of withdrawal and in the acute stage of detoxification. Medical treatment available for alcoholics includes

Disulfiram. However it is seldom used in older patients because of concerns related to adverse effects though studies have proven it effective (Kranzler, 2000; DeSousa and Jagtap, 2009). In 1995, the opioid antagonist naltrexone was approved by the US FDA for treatment of alcohol dependence. The use of naltrexone is based on endogenous endorphin activity and alcohol intake and reward (Volpicelli *et al.,* 1992). Acamprosate has also been approved and is believed to reduce the glutamate release and thus affect the reward circuit (Mason, 2005).

For those patients in whom alcohol has resulted in dietary and vitamin deficiencies, replacement of vitamins and an adequate diet is essential. Medical support is of paramount importance in those with alcohol related medical illness (Schuckit, 1997). It is reasonable to offer pneumococcal vaccination to elderly abusers because they are more prone to respiratory infections (Stone, 2000). Self help groups like alcoholic anonymous and psychoeducational intervention for the relatives have their own advantage (Kurtz, 1997).

Summary

The goal of as high a quality of life as possible must be maintained throughout life. In case of alcohol abuse, the goal is to stop the problem. Before treatment can start, the problem must be recognized. Even before that, those at potential risk must be identified and counseled and predisposing factors eliminated.

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Functional Impairments in Elderly

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ABSTRACT

A cross-sectional study was conducted in the Out-Patient Departments (OPDs) of Medicine Speciality at the Kasturba Hospital, Manipal and Central Referral Hospital (CRH), Sikkim to determine the various functional impairments among 492 individuals in the age group of 65 years and above, visiting the hospital during the study period. It was found that 36.2 per cent of the study individuals had at least one or more functional impairments. The common ones were visual (46.7%), difficulty in moving one or both lower limbs (42.3%) and difficulty in adjusting with the physical home environment (32.9%). Multiple Logistic Regression analysis revealed that age group of 75 years and above, history of death in the family within last twelve months and above, a history of accident during last 5 years and presence of three or more chronic illnesses were independently associated with functional impairments in elderly individuals.

Key Words : Functional, Impairment, Socio-Demographic, Correlates, Elderly.

The geriatric population in developing countries like India are vulnerable to greater socio-economic and health marginalization mainly due to inadequate provision of services and economic deprivation (Lachs *et al.,* 1990). At present, India stands second to China in its elderly population with 7 per cent of Indian population belonging to the age group of 65 years and above and it is expected to rise to 10 per cent by 2030 (Ibid.). Functional ability refers only to that part of functional capacity which is related to essential activities of daily life. Functional ability

impairment means a decreased ability to meet one's own daily needs. Though functional impairments are common in elderly due to various physical & psychosocial factors, clinicians often fail to assess the functional impairments of individuals visiting the Out Patient Departments (OPD) due to their busy schedule or lack of initiative or inadequate clinical skills (Manandhar, 1995).

There are various people in the country in different households, belonging to different cultures and castes, surrounded by different people some of whom are economically stable while others are not, some do suffer from certain illness while others are free of such problems. Each of these factors does have an influence on the lives of every individual in the geriatric age group. But every impairment or dysfunction does not necessarily have to have a bearing on another. Individuals in the age group of 65 years and above, with visual impairment, would eventually undergo some form of depression, be it mild, moderate or sever depending on the impairment as he or she would love to see their family, children, grandchildren and loved ones and would love to take part with them in their day to day enjoyment. The approach relies on checking a limited number of targets that are commonly dysfunctional but often unappreciated when conventional histories and physical examinations are done for the elderly (Branch and Meyers, 1987; Dey, 1999a; Barua *et al.,* 2007a).

With this background, a Cross-sectional study was conducted during March - October 2004 (eight months) in the Out-Patient Departments (OPDs) of Medicine Speciality at the Kasturba Hospital, Manipal and Central Referral Hospital (CRH), Sikkim to determine the various functional impairments among 492 individuals in the age group of 65 years and above, visiting the hospital during that time.

All the inpatients of the two selected hospitals, individuals who refused to give the informed verbal consent to participate in this study and the terminally ill patients were excluded from this study. Simple Random Sampling, using the lottery method, was applied to identify the study individuals. After informed verbal consent was obtained, a pre-designed & pre-tested questionnaire was used to collect the socio-

demographic profile of the individuals visiting the OPD of Medicine speciality. The functional impairments were assessed by administering the clinical guidelines from the instrument entitled, "Clinical Assessment of an Older Patient" developed by the World Health Organization (Dey, 1999).

Data were tabulated and analyzed by using statistical software package of SPSS 7.5 version. Results were calculated in terms of proportions. Chi--square test was applied to study the relationship between different variables and functional impairments. To determine the independent effect of various factors on functional impairments, Multiple Logistic Regression was performed and their significance was estimated in terms of adjusted OR and its 95 per cent confidence interval. *P* value less than 0.05 was considered as significant.

In this study, the mean age of the study individuals was determined to be 71.4 (±4.8) years. Their age groups ranged between 65 and 88 years. The findings revealed that majority (62.1%) of individuals belonged to the age group of (65-69) years. 60.6 per cent were married, 76.8 per cent were Hindus, 63 per cent were illiterates, 58.9 per cent were unemployed, 84.7 per cent were living with children or relatives and only 9 per cent were financially independent.

It was found that 178(36.2%) respondents had at least one or more functional impairments. Among those who had functional impairments, the most common ones were visual (46.7%), difficulty in moving one or both lower limbs (42.3%) & difficulty in adjusting with the physical home environment (32.9%). Descriptions of mobility performance tests in elderly people can be found in the reports of Tinetti *et al.* (1994). Lower body dysfunction will affect mobility, and have an impact on other factors such as anxiety, fear of falls and balance (Ibid.). Majority of males (38.6%) had functional impairments. Prevalence of functional impairments was found to be significantly increasing with age [x^2 for linear trend=10.9 and p=0.002*]. Individuals belonging to the age group of 75 years & above had significantly higher proportion of functional impairments (82.6%) than other elderly age groups. In a hospital-based study, similar findings were also reported by Barua A. *et al.* (2007).

In this study, the singles were almost equally affected with functional impairments as married individuals. Literates (43.6%) and unemployed individuals (39.6%) were more affected with functional impairments, but the differences were not found to be statistically significant. Functional impairments were significantly higher among those who had a history of death in the family within last 12 months (79%) and those who were staying alone (54.2%). There is evidence that in many developing countries, especially in the growing urban areas, the extended family and traditional coping systems for older people are beginning to show signs of strain (Hashimoto *et al.,*1992). Thus, understanding the mechanisms behind the maintenance of functional ability, and devising strategies to preserve it for as long as possible, will have a beneficial impact on millions of elderly people and their families in a number of physical, economic, social and emotional ways.

It was revealed that 418 (85.0%) respondents had encountered accidents in the past 5 years and 41.1 per cent of them were functionally impaired. This was also found to be statistically significant [x^2=4.6 (Yates corrected), p= 0.029*]. The accidents encountered were road traffic accidents, domestic and occupational in nature. Domestic accidents (84%) were the most common form of accidents encountered as compared to others. Here, 387 (78.7%) people presented with either one or more than one chronic illnesses. Among those suffering from any chronic illness, 43.8 per cent had at least a functional impairment. The common chronic illnesses associated with functional impairments were Diabetes Mellitus (63%), Hypertension (30%), COPD (20.9%), Pulmonary Tuberculosis (15%) and Bronchial Asthma (12.9%). These findings are consistent with the observations from the study conducted by Penninx Brenda W.J.H *et al*. (Penninx *et al*., 1999) [Iowa, East Boston, New Haven (1982-88)]. Similar observations were also reported from a study conducted by Kennedy Gary J. *et al.* (1989) in which the prevalence of depression and functional impairments were highest among those with four or more co-morbid chronic conditions (30.2%) and the difference as compared with other groups was found to be statistically significant.

Multiple Logistic Regression analysis revealed that age group of 75 years and above, history of death in the family within last twelve months, a history of accidents during last 5 years and presence of three

or more chronic illnesses were independently associated with functional impairments in elderly individuals. Similar findings were reported from community based studies by Kennedy Gary J. *et al.* (1989) and Barua, A. *et al.* (2007b). This study emphasized the need for successful implementation of routine assessment of functional impairments in medical OPD set up where the patients often come with other health problems.

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Impact of Housing Environment and Neighbourhood Safety Towards Perceived Quality of Life Among Older Persons

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ABSTRACT

Since elderly people prefer to stay in their homes as they age, so it is imperative to enhance the housing environment and neighborhood safety for better quality of life among older persons. This study aimed to examine the impact of housing environment and neighborhood safety towards quality of life among older persons in Malaysia. Data were derived from the "Mental Health and Quality of Life of Older Malaysians, 2005" (N=2,980). A 4-item and 5-item at four point Likert Scale were used to measure the perception of housing environment (Alpha=0.53) and neighborhood safety . Perceived quality of life was measured using a one-item statement on a 5 – point Likert Scale. Result of regression analysis showed self-rated health (â=0.25), income category (â=0.14), neighborhood safety (â=0.11) and level of education (â=0.08) are significant predictors for perceived quality of life. In conclusion, safety issues influence the perception of quality of life among older Malaysians, after controlling for health, income and level of education.

Malaysian population is enduring an ageing process. It records 7 per cent of older persons aged 60 years and over in the year 2005. This figure will double to 14 per cent in 2028. The full impact of an ageing population will hit Malaysia in 2035, where 17 per cent of the total population is projected as senior citizens. Currently, there are approximately 1.4 million older persons in the country (Department of

Statistic, 2001). As the number is expected to increase, it is crucial to enhance the housing environment and neighborhood safety for better quality of life in older age. Living arrangement is an important component of overall quality of life of older persons, as they experience life changes such as retirement, death of spouse and decline in health. This is mainly due to the fact that older persons prefer to "age in place" and spend most of their time inside their dwelling units in later life.

As people getting older, the close environment - the home and the immediate outdoor environment become more important. A time-budget study in Germany revealed that the older persons stay at home for more than 80% of the day that is 20 hours (Kuster, 1998). Existing objective environment indicators that are critical for maintaining good life such as housing quality and subjective evaluation such as housing satisfaction and feeling of place attachment play a substantial role as predictors of quality of life among older persons. Headey (1999) mentioned that older persons are more satisfied with their housing condition. This is because they have more than likely paid off their mortgage, have more room now that the children have grown and left the home, and have established close relationships within the neighborhoods that they have lived in for so long. Kozma (1991) found that improved housing conditions did increase the well-being of the older person, while possibly eliminating the number of daily hassles associated with dilapidated housing.

Quality of Life

Lawton (1991) states "Quality of life is the multi-dimensional evaluation, by both intrapersonal and social-normative criteria, of the person-environment system of an individual in time past, current and anticipated".

The fundamental premise of Lawton's (1991) conceptualization of "quality of life" is recognition of the breadth and depth of older adults" lives and the inherent meanings. This conceptual model appreciates the complexity of the concept and provides a systemic approach in understanding the person, as well as emphasizes the importance of socio-psychological aspects in life beyond the traditional approaches that look at decrements from a baseline. Lawton's (1991) quality of life conceptualization proposes four evaluative sector of "good life":

psychological well-being, perceived quality of life, behavioural competence and objective environment. At the core of these four section as "self" as the integrating reality of individuals. On the other hand, other studies illuminated the understanding of the quality of life. Quality of life is concerned with personal characteristics, life satisfaction and the process of ageing relative to the socioeconomic and cultural conditions in which ageing takes place (Lee, 2005). Quality of life of older people can be assessed either subjectively or objectively (Lassey & Lassey, 2001; Schmitt & Juchtern, 2001). George and Bearon (1980) describe quality of life in older person as composed of four central dimensions. Firstly, subjective evaluations which include life satisfaction and self-esteem. Secondly; objective conditions that include general health and functional status and socioeconomic status. They maintain that life satisfaction has been traditionally used as an indicator of quality of life. Self esteem can be described as general sense of self-worth. Functional status is the most important aspect of physical well-being which includes mobility and ability to carry out self maintenance and preferred activities. Previous studies also showed that quality of life is. Xavier, Ferraz and Marc (2003) found that for the elderly subjects a negative quality of life is equivalent to loss of health and a positive life quality is equivalent to a greater range of categories such as activity, income, social life and relationships with the family.

Physical Environments

The physical environments refer to both the level of exposure to environment pollutants and toxins as well as characteristics of the built environment, including housing , neighborhood, transportation and land use. Although less attention has focused on the elderly, this is changing for a number of reasons. First, as noted previously, there is growing recognition that current health status, for example, in the elderly, is due to events and exposures occurring over the life course. Because the elderly by definition have live a long time, there is a greater likelihood of elevated risk associated with accumulated exposures and environmental insults. Second, as with children, the elderly are physiologically vulnerable. This vulnerability is due to past and current health conditions as well as reductions in immunologic capacity associated with ageing. There is also growing interest in characteristics of the built environment such as physical environment. Physical environments that are friendly are of

particular importance for those growing older. Older people who live in unsafe environment are more prone to isolation, dissatisfied and increased mobility problems (World Health Organization, 2002). One of the important aspects of physical environments is neighborhood environment. The neighborhood environment may be the source of esthetic enjoyment, physical security, sensory variety, basic resources, help in emergencies, social interaction, interesting things to do, the feeling of territorial pride and many other satisfiers of human needs. The essential interaction of person and environment is ever-present; the local environment cannot be reduced to the individual and the macrosocial structure alone. Neighborhood safety is also one of the important issues for them that include security, crime rate and drug problem in their residential area. When programmes address the physical security needs of people as they age, older people are ensured of protection, dignity and care in the event that they are no longer able to support and protect themselves. Families and communities play an important to care and support their older members.

Health Status

Health related variables such as perceived health is among major predictor of quality among older persons (Brief, Butcher, George, & Link, 1993; Smith, Fleeson, Geiselmann, Settersten Jr, & Kunzmann, 2001). Adequate health and functional ability are necessary for maintaining independence in later life because these characteristics relate to capacity to meet the needs of daily living. Poor health and restrictions in the activities of daily living are associated with a greater likelihood of co-residence with non-nuclear kin. Older persons who experience poor health may choose to live with others to obtained needed assistance when appropriate co-residences are available and willing to help. Declining health is usually associated with less active life, loneliness and increased reliance on others (Sainsbury, 1976). Figure 1 shows the ecological model by United State Department of Health and Human Services. An ecological model is based on the assumption that patterns of health and well-being are affected by a dynamic interplay among biologic, behavioral and environment factors, an interplay that unfolds throughout the life course of individuals, families and communities (Smedley & Syme, 2000). This model also assumes that age, gender, race, ethnicity and socioeconomic differences shape the context in which

individuals function and therefore directly and indirectly influence health risks and resources. In addition, the ecological model serves to identify multiple points of possible intervention in public health, from the microbiologic to the environmental levels, to postpone the risks of disease, disability, and death; and enhance the chances for health, mobility and longevity. An ecological model explained as a comprehensive framework to summarize the diversity of the study and to provide a sense of the "big picture". Aging represents a complex blending of physiological, behavioral, social and environmental changes that occur at both level of the individual and at the level of the wider community.

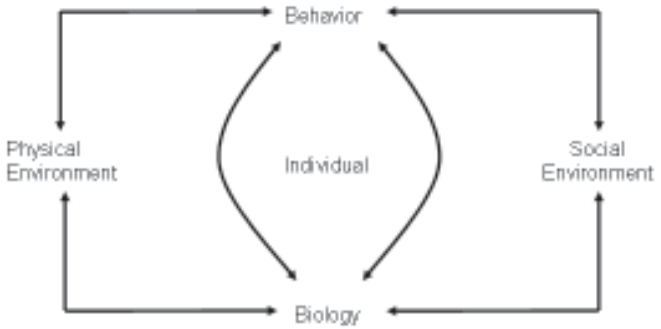

Figure 1: Ecological Model. Determinants of Health (1991)

Objective

Based on the literature reviews discussed above, the objective of this paper was to examine the impact of housing environment and neighborhood safety towards quality of life among older persons living in the community.

Methodology

Data from the cross-sectional survey on "IRPA: Mental Health and Quality of Life of Older Malaysian, 2005" funded by Ministry of Science, Technology and Innovation (MOSTI) were used for the analysis. A multistage sampling was used to achieve an appropriate nationwide representation of the older population. Sample was proportionately distributed across the state in Malaysia. A total of 2,980 older persons were successfully interviewed at their home by trained

enumerators based on structured questionnaire. A 4-item and 5-item at four-point Likert Scale were used to measure the perception of housing environment (Alpha = 0.53) and neighborhood safety (Alpha = 0.67). Perceived quality of life was measured using a one-item statement on a 5-point Likert Scale.

Results and Discussion

Socio-demographics Characteristics

A total of 2980 older persons were interviewed for this study. Table 1 shows the profile of the respondents. The respondents consisted of 50.4% females and 49.6% males with more than half (56.4%) living in urban areas while 43.6% staying in rural area. In terms of ethnicity, the Malays represented the majority of 58.3%, followed by the Chinese (24.8%). The rest of the respondents (4.8% and 12.2%) were represented by the Indians and other races. The ethnic composition does not reflect the population composition of Malaysia partly because of the rural nature of the sample may have resulted in a higher percentage of Malays. Almost two third (72.6%) of the respondents were young-old (60 to 74 years), 22.6% were old-old (75 to 84 years), followed by 75 to 80 years (22.6%) and 4.9% were oldest-old (more than 80 years).

The socioeconomics variables used in this study were education level and income. In terms of educational attainment, almost half (45.2%) stated that they had never received any formal education and 44.6 per cent attended primary school. Only 10.2 per cent of the respondents had tertiary educational level. Monthly income is calculated based on summation of respondents and spouse's wages and side incomes, rents, remittance from children and relatives, pension and welfare aids. Range of monthly income is between RM0 to RM20,000 and their mean monthly income was RM551 which represented low income households. More than half of surveyed population received less than RM 510 which represent the poor income group by comparing their income with Malaysian Poverty Line Income 1999 (Eight Malaysia Plan, 2000). About 27.89 per cent received income in the range of RM 511–RM 1499 which indicate that they fall in group of low income.

Table 1 : Profile of the Respondents by Socio-demographic Characteristics

Variables (N=2980)	n	%	Mean	SD
Gender				
Female	1503	50.4		
Male	1477	49.6		
Ethnicity				
Malay	1737	58.3		
Chinese	738	24.8		
Indian	142	4.8		
Others	363	12.2		
Age (years)				
Young –old (60 – 74)	2163	72.6	66.89	3.92
Old – old (75 – 84)	672	22.6	78.18	2.70
Oldest – old (>85)	145	4.9	88.88	4.29
Marital status				
Single	50	1.7		
Widowed	1220	41.0		
Divorced	22	0.7		
Separated	19	0.6		
Married	1664	55.9		
Number of Children			6.03	3.58
Household size			4.26	2.77
Level of Education	1325			
No schooling	1309			
Primary	258			
Secondary	42			
University				
Employment status	739	28.1		
Working	1889	71.9		
Not working			551.07	863.40
Monthly Income (RM)				
Median				
Stratum				
Rural	1298	43.6		
Urban	1682	56.4		

In terms of marital status, more than half were married (55.9%), 41% widowed and others were singles/divorced/separated (7%). The household size was 4.6 persons. More than one-fourth of the respondents were still working (28.1%).

Perception towards Housing Satisfaction

Perception towards housing environment and neighborhood safety were measured based on five and four items using Likert scale respectively. Figure 2 shows respondent's perception towards housing environment. Majority of respondents agreed with those statements given. Item 4 "Your residential area is contaminated by air pollution" received the highest agreement (82.6%) followed with item 1 "You feel comfortable with the environment within your residential area" (81.5%). Responses towards those statements indicate that most respondents agreed with statement given which indicated they were comfortable with the environment within their residential area.

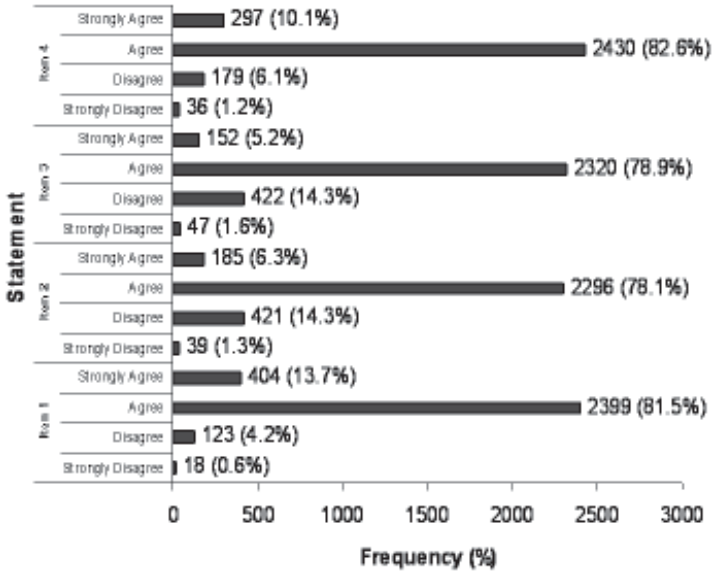

Figure 2 : Respondents" Perception towards Housing Environment

Figure 3 shows respondents' perception towards neighbourhood safety. Most of them agreed with those statements given except for statement 2 "Your place is free from drug threat" where 66.5 per cent

agreed and 24 per cent disagreed with the statement. It indicates almost a quarter of them where concerned about drug problems in their residential areas. In terms of agreement, the highest score goes to item 4 "You feel safe staying in you residential area" (81.5%) followed by item 1 "You feel safe when you are at home" (81.3%). It indicates that more than four-fifth of them felt safe staying at home in those residential areas.

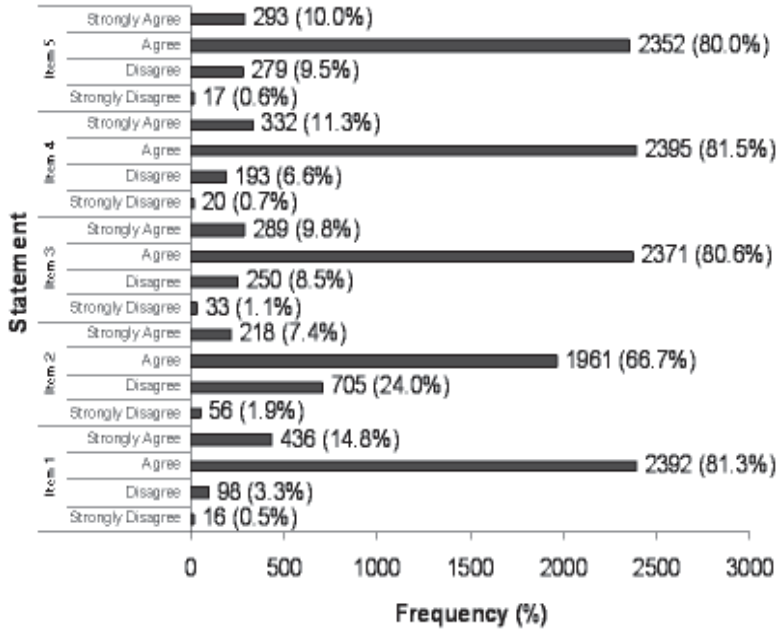

Figure 3 : Respondents" Perception towards Neighborhood Safety

Mean for each item was then calculated (Table 2). In terms of housing environment, item "You feel comfortable with the environment within your residential area" received the highest score (3.08) whereas item "You are always disturbed by noises" received the lowest score (2.88). It indicates that they were comfortable with their living environment which is supported with low noise level in the surrounding areas. Mean total score for housing satisfaction was 2.98 which indicate that they were moderately satisfied with their housing environment.

For neighbourhood safety, item "You always feel safe when you are at home" received the highest satisfaction score (3.10) whereas item "Your place is free from drug threat" gets the lowest score (2.80)

(Table 2). It indicates that those respondents feel safe when they are at home. However, they were least satisfied with drug problems in their neighborhood. Mean total score for neighbourhood satisfaction was 2.96 which are quite similar to those of housing satisfaction score. It indicates that these older persons were moderately satisfied with their neighbourhood safety.

Table 2 : Mean Values and Standard Deviation of Respondents Perception towards Housing Environment and Neighborhood Safety

Item	Variables	Mean	SD
Housing Environment			
1.	You feel comfortable with the environment within your residential area.	3.08	0.443
2.	Your place is free from pollution.	2.89	0.498
3.	You are always disturbed by noises.	2.88	0.494
4.	Your residential area is contaminated by air pollution.	3.02	0.459
Neighborhood Safety			
1.	You always feel safe when you are at home.	3.10	0.439
2.	Your place is free from drug threat.	2.80	0.591
3.	At your place often occur quarrels or uproars.	2.99	0.477
4.	You feel safe staying in your residential area	3.03	0.452
5.	You are always feel calm	2.99	0.467

The correlation between "perceived quality of life", "housing environment" and "neighbourhood safety" are positive indicating that as an increase in X variables is followed bv an increase in variable (Figure 4)

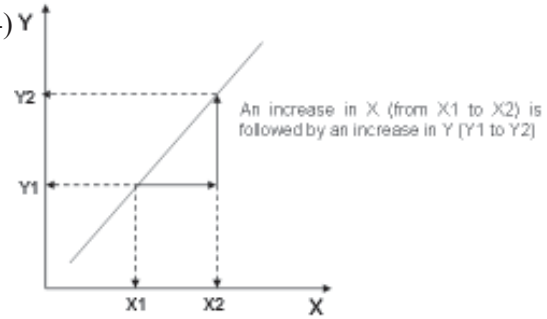

Figure 4 : Positive Correlation

Table 3 shows the findings of descriptive and correlations of selected predictor variables and perceived quality of life (QOL). From this study, the majority of the respondents were at average age of 70s, the group of young – old elderly. The mean score for perceived quality of life and self-rated health were 2.32 and 1.67 respectively which can be regarded as low. Findings showed that neighbourhood safety was rated as the most satisfied aspect in life with a mean score of 9.91 and followed by housing environment (mean score of 7.87).

The correlation coefficient (r) results showed that eight variables (stratum, sex, level of education, marital status, income category, self rated health, neighborhood safety and housing environment) were positively related and significant at level of 0.01 (Table 4). This indicates that those with higher score of housing satisfaction and health status tend to have positive perception of quality of life. However, this study found that the relationship between "perceived quality of life" and "age" to be negative (Figure 5) and significant (pd"0.01) suggesting that those who are young-old are likely to place higher satisfactory on quality of life.

Table 3 : Descriptive Statistics and Correlation Coefficient of Selected Predictor Variables and Perceived Quality of Life (QOL)

Variables	M	SD	Perceived QOL r
Perceived QOL	2.32	0.666	1.000
Stratum			0.043*
Sex			0.083**
Age	70.46	7.220	-0.120*
Level of Education			0.197**
Marital Status			0.114**
Income Category			0.222**
Self Rated Health	1.67	0.686	0.315**
Neighborhood Safety	9.91	1.599	0.174**
Housing Environment	7.87	1.222	0.098**

* Significant at the 0.05 level (2- tailed)

** Significant at the 0.01 level (2 – tailed)

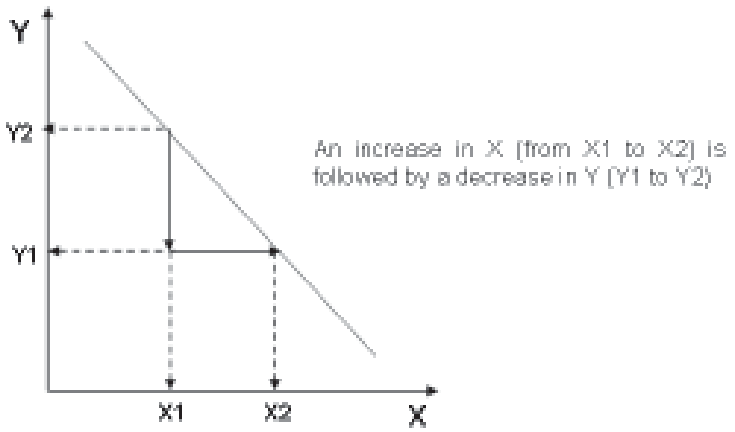

Figure 5 : Negative Correlation

Perceived quality of life was the dependent variable and the predictors or independent variables were stratum, sex, age, level of education, marital status, income category, self-rated health, neighborhood safety and housing environment in the multiple regression analysis. Linear regression were performed and enter method were used. The result has been presented in Table 5. The regression model suggested is shown below :

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e$$

Where:

Y = perceived quality of life
X_1 = stratum
X_2 = sex
X_3 = age
X_4 = level of education
X_5 = marital status
X_6 = income category
X_7 = self-rated health
X_8 = neighborhood safety
X_9 = housing environment
A = constant
$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8, b_9$ = parameter expressing linear relationships (Regression coefficients)

Regression analysis result in Table 5 showed an R2 of 0.14 that revealed the ability of the regression model to explain the variation in the dependent variable-perceived quality of life by 14.1%. The model

was significant at p=0.0001 with F-value of 49.208. From the independent variables entered in the model, only four variables were significant and these were self-rated health, income category, neighborhood safety and level of education. The importance of the predictor variables was assessed using beta weight. Among the four predictors, self-rated health (â=0.25) was the most important in influencing the variation in the perceived quality of life as compared to income category (â=0.14), neighborhood safety (â=0.106) and level of education (â=0.081). Stratum, sex, age, marital status and housing environment were not significant in explaining the variance in perceived quality of life. The regression model for the enter method was as below:

Y (Perceived quality of life) = 1.370 +0.244 (self-rated health) +0.081 (income category) +0.048 (neighborhood safety) +0.076 (level of education)

With adjusted R2 =0.1411 and F-value = 49.208

All predictors were positively related to perceived quality of life where the higher their self-rated health, income category, neighbousrhood safety and level of education, the more satisfied they were.

Table 5 : Summary of Regression Analysis for Variables Predicting Perceived Quality of Life (QOL)

Variables	Perceived QOL		
	B	SE	â
(Constant)	1.370	0.163	
Stratum	-0.006	0.025	-0.005
Sex (Male=1 , Female=0)	-0.001	0.027	-0.001
Age	-0.001	0.002	-0.008
Level of Education	0.076	0.020	0.081**
Marital Status (Married=1, Unmarried=0)	0.027	0.028	0.020
Income Category	0.081	0.012	0.137**
Self Rated Health	0.244	0.018	0.251**
Neighbourhood Safety	0.048	0.010	0.106**
Housing Environment	-0.006	0.012	-0.011

F = 49.208, p = 0.000 , R^2 = 0.14** P<.001

Conclusion

The results of the study showed that more than 90 per cent of older persons fall under poor and low income groups. Issues on neighborhood safety influence the perception of quality of life among older Malaysians after controlling for health, income and level of education. Their sense of neighborhood safety and feelings they can cope with their environment which plays an important role in maintaining their quality of life. However, housing environment has no impact on perceived quality of life. This is due to issues on pollution as an emerging issue in Malaysia especially in rural areas. In the later stage of life, their perspectives and needs are likely to be different from the rest of the population.

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Unmet Service Needs of Ethnic Elders with Dementia in United Kingdom

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ABSTRACT

Along with the increase in overall population of older adults, dementia prevalence is increasing in minority ethnic elders in UK. There is scant information regarding the issues surrounding their use of services for dementia. This review analyzes the magnitude of problem, current service provision, utilization of services by the Black and Minority ethnic (BME) communities and suggests methods to improve services to these sections of the elderly. The information was collected from relevant publications available through electronic searches of databases and from cross references. It is apparent that fewer than expected elders with dementias from BME communities are presenting to services for diagnosis and support. Rather than just barriers to accessing services, there are various other factors which hinder effective service provision. These factors include stigma, lack of understanding of mental illness amongst ethnic elders, design of services, language issues, and generational differences in ethnic families. The needs of BME elders for dementia care remain largely unmet in UK. The review identified factors contributing to the disengagement of ethnic elders from services. Developing culturally appropriate services may improve their service utilisation and social inclusion. This is an area which needs urgent attention since the population at risk is projected to increase.

Key words: Dementia, UK, Black and Ethnic Minority, services, care

Introduction

The proportion of Black and Minority ethnic (BME) elders over the age 65 years in England and Wales has progressively increased from 1 per cent in the 1981 population census [Office of Population Census and Survey (OPCS), 1983] to 3 per cent in the 1991 (OPCS, 1993) and 8.2 per cent in the 2001 (Shah *et al.,* 2005; Shah, 2007). Along with longevity, the most important risk factor for developing Alzheimer's disease, prevalence of dementia is increasing in all ethnic groups. As numbers of elderly people in the ethnic communities in UK increase, more people from these communities may be expected to present with dementias and to need access to appropriate services.

Dementia statistics

Shah (2008) used two methods to estimate of the minimum number of cases of dementia amongst BME elders and obtained numbers of 7270 and 10786; the corresponding figures for depression are 33,559 and 52,980. His figures are likely to err on the side of underestimating the numbers affected by these two mental conditions. However the above also demonstrates that there is a significant amount of psychiatric morbidity among older adults from BME groups.

The '*Dementia UK'* report (Knapp and Prince*,* 2007) provides an evaluation of the numbers of people with dementia in the UK, projections of numbers of people in the future and the prevalence of dementia. The report estimates that there are about 11,000 people from BME groups with dementia. There are no accurate projections available for the future size of the BME population in the UK, by age and gender (Ibid) thus making it difficult to calculate projected increases in the numbers of people with dementia within these groups. However, Dementia UK (Ibid) also predicts with confidence that the increases will be much larger in relative terms than for the UK population as a whole. The number of older people and the number of people with dementia will rise especially quickly in several minority ethnic groups as first generation migrants from the 1950s to the 1970s enter into the age groups most at risk for dementia.

Method

In the above context it was intended to review the clinical and service related issues related to BME elders with dementia in UK. Specifically, the objective was to analyze the magnitude of problem, evidence relating to current service provision and utilization of services by the BME communities, and to suggest methods to improve services to these sections of the elderly. The information was collected from relevant publications available through electronic searches of databases and through cross references.

Results

Recognition of unmet needs

There is evidence from various sources that mental health remains one of most prevalent of unmet needs for older people in the UK (Department of Health, 2001; Girling *et al.,* 1995; Holmes *et al.,* 1995; Challis *et al.,* 1997; MRC CFAS, 1998). Specific attention was paid to mental health services for older people and their carers by the Audit Commission 'Forget-me-Not' reviews (Audit Commission, 2000; 2002). These highlighted considerable variation in range and types of services and a lack of coherence in dementia care; they also identified a dearth of specialist services for ethnic minorities. In 2007, the Policy Research Institute on Ageing and Ethnicity (PRIAE) carried out an appraisal of more than 20 UK mental health policy and research documents as part of their project Managing Better Mental Health for BME Elders (PRIAE, 2007). This exercise highlighted the key service gaps and concerns for BME elders accessing mental health services. It has also been observed that many services for people with dementia from these communities remain inappropriate and inaccessible (Alzheimer's Society, 2010).

Several government documents including the Forget-me-Not publications (Audit Commission, 2000, 2002) the National Service Framework for Older People (Department of Health, 2001) and the National Dementia Strategy (Department of Health, 2009; CSIP, 2005). stress the need for early diagnosis of dementia, as it 'gives access to treatment, allows planning for future care, and helps individuals and families come to terms with the prognosis'. The National Dementia

Strategy (Department of Health, 2009) suggests that some groups of people with dementias might need specifically tailored approaches. We would argue that this applies to BME elders.

Recognition of the mental health needs of older people from BME groups may be lower than in the white population (Lloyd, 1993; Abas 1996; Odutoye and Shah, 1999; Livingstone *et al.,* 2002). Odutoye and Shah (1999) looked at the characteristics of elders with origin in Indian subcontinent, referred to an Old Age Psychiatry services and compared them with indigenous elders in the UK. They found no differences and concluded that their findings did not support the view that ethnic elders find it difficult to access services. Adamson (2001) found limited knowledge of dementia among families of South Asian and African/ Caribbean descent, which could cause problems in access, diagnosis and using.. Gaining a better understanding of the mental health needs of BME communities has been stated as a policy aim in both Wales and England (Welsh Assembly Government, 2003; Social Services Inspectorate, 2003).

Dementia risks in the ethnic elders

Several themes of concern regarding risks are highlighted in the ethnic population in UK. As in other popultaion subgroups, dementia among ethnic elders has been shown to be associated with increasing age, lower levels of education, poor fluency in English and being in a residential or a nursing home (McCrakken *et al.,* 1997; Livingston *et al.,* 2001). The *Dementia UK* report suggests that 6.1 per cent of all people with dementia among BME groups have a younger age of onset, compared with only 2.2 per cent for the UK population as a whole (Knapp *et al.,* 2007). This reflects the younger age profile of BME elders with dementias.

In addition, elders from Asian origin are also at enhanced risk of developing vascular dementia due to the increased incidence of diabetes and hypertension (Seabrooke & Milne, 2004). Improved detection and effective treament of these risk factors for dementia including hypertension, diabetes and cardiovascular disease, would help in prevention of vascular dementia (Shah *et al.,* 2007).

Research evidence shows that depression, a risk factor for dementia (Ritchie *et al.,* 2010; Kar, 2010), among BME elders is

associated with chronic health problems, stroke, subjective ill health, functional disability, increasing age, poor housing, low family support, reported need for community services, poor socio-economic status, female gender and poor fluency in English (Silveira & Ebrahim, 1995; McCrakken *et al.*, 1997; Livingston *et al.,* 2001; Stewart *et al*., 2001). Many of these factors might not only increase the risk of dementia but also affect the utilisation of services for the condition.

Discussion

Under-representation of ethnic elders in dementia services: probable reasons

Shah *et al.* (2007) suggest that, although BME elders have high rates of general practice registration and consultation, their rates of contact with dementia services are low due to several factors which include communication difficulties, taboo and stigma attached to mental illness, bias and prejudice of clinicians, institutional racism, unfamiliarity of symptoms of dementia to patients and relatives, and paucity of diagnostic and screening instruments.

Two-thirds of all people with dementia live in their own homes in the community. Some are in the early stages, and others near the end of their lives (Lloyd 1993). The numbers of BME elders with dementia living at home, supported by family could be greater due to traditional values and attached stigma therefore placing excessive demands on their carers. Hence many people may not present to services till they have advanced illness. Family carers may continue to care for them with no help, and caregiver stress is a major concern. CNEOPSA (Care Needs of Ethnic Older People Suffering from Alzheimer's) (PRIAE, 2004) identified inadequate funding for day centres and voluntary organisations which could provide culturally sensitive services for BME dementia-sufferers; and the project identified the need for training, training materials, policy development and further research. A detailed study is needed to explore these factors.

Awareness of dementia

Awareness of dementia as an illness in the BME population is poor (Kaur *et al.,* 2010). This is mainly due to communication difficulties resulting from language barriers and fear of stigma attached to mental

illness. A study in Manchester showed that, although both Indian and Caucasian elders had poor knowledge of dementia, knowledge was worse among Indian elders (Purandare *et al.,* 2007). South Asians in Scotland with dementia had negative experience of dementia, poor quality of life, desperate need for support, little knowledge of dementia, and isolation from the community and family life (Bowes & Wilkinson, 2003). A study of south Asian and African Caribbean carers of dementia-sufferers observed that awareness of dementia and the understanding of the causes of dementia was poor (Adamson, 2001).

Seabrooke and Milne (2004) in their study of the Asian community in north west Kent reported that one of the most striking findings was the lack of knowledge and understanding of dementia in the Asian community. They reported that this community did not conceptualise the illness as an organic disease or treatable illness and in fact, Asian languages do not have a word for dementia. There is an almost universally negative perception of dementia and in its early stages, it is often regarded as a 'normal' part of ageing. The authors go on to suggest that this perception, coupled with the lack of knowledge about treatment and services, acts as a powerful barrier to both users and carers seeking support. They conclude that cultural beliefs also play a role and Asians place great emphasis on the importance of being self-sufficient, portraying an image of well-being, and hiding mental health problems. Hesitancy in accepting diagnosis is also an issue, as considerable stigma is associated with acknowledging dementia.

Cognitive disorders being taken as age related

Cognitive impairment may be taken to be a natural and inevitable consequence of ageing in some communities (Jolley et al, 2009), and different cultures may have different thresholds for this diagnosis, depending upon the social roles and cognitive demands that are placed upon elderly people (Pollitt, 1996). Within an ethnic minority community the position of an elderly individual may in fact be more advantageous than that of his or her indigenous counterpart (Lindesay, 1998). However, in Asian families this status depends to some extent on the provision they have made for their families earlier in life (Ibid). Unfortunately elderly individuals who fail to gain this status are at risk of neglect and lack of care, which might predispose them to mental health problems in later life or to delayed diagnosis of a dementia. This group tends to be predominently women.

Language difficulties

Language and communication difficulties remain a major area of concern. The Policy Research Institute on Ageing and Ethnicity (PRIAE) conducted a large cross-national study involving several European countries on the care needs of ethnic elders with Alzheimer's (CNEOPSA) and found that dementia-sufferers and their carers who do not speak English face problems at every stage when trying to get care (PRIAE, 2004). It suggests that BME families have difficulty in communicating with professionals and acquiring information about available services. BME individuals also faced huge difficulties in accessing services because of a complex system involving several agencies. Moreover the study observes that many cultural groups failed to recognise dementia as an illness and attributed dementia to growing old; consequently carers looked after the dementia-sufferer without seeking help. There was inadequate funding for day centres and voluntary organisations who could provide culturally sensitive services for BME dementia-sufferers; and the project identified the need for training, training materials, policy development and further research. Other work from PRIAE has further demonstrated the importance of stigma and that all the above issues lead to late presentation and late diagnosis of dementia in these communities (Patel et al., 1998).

Paucity of instruments for evaluation of cognitive deficits in ethnic elders

There is a paucity of specific instruments for evaluation of cognitive deficits in this ethnically diverse group in UK. The mini-mental state examination (MMSE) which measures severity of cognitive impairment and is widely used in screening for dementias has been developed in Hindi, Punjabi, Urdu, Bengali and Gujarati (Lindesay *et al*., 1997; Rait *et al.,* 2000) and in English for use in the African Caribbean group (Ibid). The abbreviated Mental Test Score (Quereshi & Hodkinson, 1974) has been developed in several Asian languages and in English for use among the African Caribbean population in the UK (Rait *et al*., 1996; Rait *et al.*, 2000). The difficulty with all the screening instruments for dementia is that they can only be used by bilingual clinicians because

the questions are in the individual's language (Royal College of Psychiatrists, 2009). There are no instruments that can be administered by English-speaking clinicians in English, with an interpreter translating the question to the patient and the answer to the clinician, and with the clinician scoring. Moreover some of the questions which might be culturally relevant to indigenous elders might not be appropriate to Asian elders and thus, as Parker & Philp (2004) argue, formal testing is often culturally unsuitable and tends to underestimate the abilities of elders from BME communities.

Stigma

It is well known that stigma attached to mental illness deters individuals or their families from seeking help (Barker, 1984) and especially for dementia in BME population (La Fontaine *et al.,* 2007;). Fear, shame and stigma are associated with mental illness in many cultures that may result in problems being hidden (Jolley *et al.,* 2009). This may be a significant factor in some groups, but its importance should not be over-emphasised (Manthorpe & Hettiaratchy, 1993).

Caregivers' perspective in changing scenarios

The change in the structure of families in Asian communities is also relevant. Elders are always respected and cared for in traditional Asian families. Caregiving among Asian groups for dementia has been shown to be determined by gender stereotypes and filial responsibility (Townsend & Godfrey, 2001). Although BME carers tend to care unaided and in isolation (Seabrooke & Milne, 2004), their experiences have been shown to be similar to white British carers (Adamson, 1999).

However the changing population in Asian communities with more of the second generation carers being born and brought up in the UK might impact on the beliefs and expectations about caring for elders. On one hand it might make the younger generation more aware of the elders' needs thereby improving awareness and detection, on the other hand, however, with the loss of the traditional family structure, the elderly Asian population might be more compromised and neglected and hence at a higher risk of mental illness and lack of support.

Personal and societal expectations are changing and the next generation of ethnic communities who are born and brought up in this country might not share the same values and ethics as their elders,

despite being traditionally expected to care for the family elders: hence they might be torn between filial piety (i.e. their duties with regard to caring for a mentally ill or severely cognitively impaired family member) and their different life expectations.

Caregivers' stress remain a major concern in the BME population, like the indegenous communities. It is compounded for individuals with learning disasbility who later develop dementia. Research evidence suggests that there are significant differences in care giving, carer stress and carer burden between main stream and minority ethnic communities in relation to people who have a learning disability and develop a dementia (McGrother *et al.,* 2002; Devapriam *et al.,* 2008; Gangadharan & Bhaumik, 2008). Nevertheless, there is a paucity of studies examining issues relevant to caregivers of BME elders (Milne & Chryssanthopoulou, 2005).

'Triple Whammy'

Rait and colleagues (1996) described the 'triple whammy' of disadvantage and discrimination. BME elders have the disadvantage of being older people, added to the disadvantage of having a mental disorder, and compounded by the greater difficulty that BME groups experience in accessing services.

Current practices

Most of the needs of the ethnic elders with dementia are being addressed through the mainstream services of old age psychiatry in UK. Memory clinics, psychology services, old age home treatment team, old age liaison services are in place in many areas in addition to social services and voluntary organisations.

There are examples of good practices in UK. In three cross-sectional evaluative studies of two old age psychiatry services in West London, elders of Indian subcontinent origin (Redelinghuys & Shah, 1997; Odutoye & Shah, 1999) and Polish elders (Bhatkal and Shah, 2004) received individual components of health and social services at the same frequency as indigenous elders. Another population based study of a mixed group of BME elders in London reported similar findings for the use of primary care, secondary care and social service resources (Livingston *et al.,* 2002).

Several other examples exist of local voluntary organisations such as the Alzheimers Society and Age Concern which are developing support for BME communities (Royal College of Psychiatrists, 2009). Moreover, the Care Services Improvement Partnership's (CSIP) Older People's Mental Health Programme conducted a national project to promote the mental health and well-being of BME elders and to improve their access to mental health services. This includes national mapping of resources and projects for BME elders (CSIP, 2008).

Culturally appropriate services

The need for culturally appropriate services as an overarching theme has been identified (CSIP, 2005; CSCI, 2008). The risks of elders from BME communities becoming socially excluded and finding services hard to access has been highlighted. Amongst others the reasons include issues related to language and communication, unavailability of culturally appropriate evaluation instruments, cultural issues related to the understanding of mental illness, knowledge of services and attitudes of service providers.

All this suggests that more needs to be done in the areas of the needs of ethnic families and their carers. It is essential to be aware of how dementia is differently conceptualized in these communities and the deficits in mainstream and minority ethnic services to meet the needs of ethnic elders with dementia.

The Royal College of Psychiatrists acknowleges that enormous advances are to be achieved in the care of ethnic elders with dementia (Royal College of Psychiatrists, 2009). Some of the recommendations made in their 2001 report (Royal College of Psychiatrists, 2001) remain relevant. For example: acute psychiatric services involving assessment and treatment should remain within mainstream psychiatric services, with ethnic awareness and sensitivity emphasised by training staff in culturally sensitive issues. Services providing continuing care in the community should be developed specifically for the appropriate user group. Efforts should be made to recruit a racial mix of multi-disciplinary staff members reflecting the population served. Increased involvement and commitment is needed on behalf of all interested stake-holders in order to involve general practitioners and other key players in establishing good practice for care of BME elders**.**

Conclusion

This review has identified some of the main clinical and service issues for detection and diagnosis of dementias in ethnic elders in UK. Language and communication barriers, lack of awareness/understanding of the illness and lack of culturally appropriate services deprive BME elders of access to services for diagnosis and treatment at an early stage of illness and contribute to caregiver stress and burden. Moreover, the changing perspectives of younger family members of ethnic communities could influence caregiving and help seeking initiatives.

There is an urgent need for public education campaigns at both local and national levels within all communities in line with the National Dementia Strategy. These should be stressing the importance of early recognition of symtoms of dementia, the importance of seeking help early to improve outcome, the availability of effective treatments, strategies to reduce stigma and improved treament of risk factors for dementia which are relatively more common in ethnic elders including hypertension, diabetes and cardiovascular disease. Multisource efforts from a health and social service perspective, and culturally appropriate services in addition to research are needed to address the issue of dementia care of ethnic elders in UK.

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Grandparents in Need of Social Work Services in Tehran, Iran : A Study of Social Work and Social Development

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ABSTRACT

The purpose of this study is to investigate the quality of life of the ageing grandparents, and their need for social work services within the context of the capital city of Tehran. The portrait of older families or grandparents *would also help younger generations how to plan their health so as to have healthy ageing in future. Similarly, the paper identifies the lifestyle of the ageing* grandparents *in association with their needs and health. The main hypothesis of the survey focuses on: more social work services provide the elderly* grandparents *with improved quality of life. A representation of elderly's health disorders would help in projecting the illness and quality of life of those younger generations moving towards "third age". The paper is addressed to social workers and family sociologists who interact and work with old people. Analysis of data on* grandparents *gives some qualitative and quantitative reflections and dimensions of these increasing people, not only in Tehran, but it works as a powerful screening tool of the entire Iran. The method of research used in this paper is empirical, preceded by theoretical and literature reviews. In that, 452 families with* grandparents *have been referred to.*

Keywords : Longevity. Social Work. Grandparents. Dementia. Quality of Life.

As ageing and longevity are gradually increasing in Iran, the present study aims to find out the health and socio-economic conditions of those people whom we call grandparents in this paper. Though there are very few sources and scientific documents on grandparents in Iran, the author

is trying to create views and literature on the topic by collecting data and using relevant materials through referring to foreign resources. While the concept of "Third Age" was not very popular in the past, it has found its deep meaning during the twentieth century, in which industry and medicine have created miracles — leading to ageing and increase in the number of grandparents.

While in the past grandparents were very influential over the youth, social structure of the family was such that, almost every decision-making of the younger generations was directed by the authority of grandparents (Asefi, 1973), yet, in the course of time, and due to rise in educational status of children and youth, the authority of grandparents over offspring and grandchildren declined. The present work tries to reflect a perspective of grandparents with especial reference to their own lives, i.e. their safety and quality of life.

Table - 1 : Comparative Profile of Number and Proportion of "Potential" Grandparents 65 and over in Iran and Tehran City Between 1956 and 2006

Iran				Tehran			
Year	Population	(Potential) Grandparents	% Total	Year	Population	(Potential) Grandparents	% Total
1956	18954704	758670	4.0	1956	1560434	52013	3.3
1966	25788722	993045	3.8	1966	2719730	81295	3.0
1976	33708744	1186470	3.5	1976	4536264	14829	3.3
1986	49445010	1493382	3.0	1986	6010075	203062	3.4
1996	60055488	2587437	4.3	1966	6758845	320430	4.6
2006	70472846	5130000	7.3	2006	7803883	464638	6.0

Source : Results of the Decennial Population and Housing Censuses of Iran 1956-2006

Increasing life expectancy everywhere including Iran means that couples are likely to remain married for longer time; letting them appear as grandparents. Under such conditions the number of grandparents is ever increasing with especial reference to larger cities wherein more health and medical facilities are available. Years of living together contributes to mutual understanding and companionship to likely increase between old couples, or what is known in this paper as grandparents. By about age fifty, most couples have completed the task of raising children. From this age on, the couples gradually enter the period of

grandparenthood. The remaining years of marriage — "the empty nest" brings a return to living with only one's spouse, and a decline in their socialization[1].

However, more adults in midlife are facing challenges of caring for their ageing parents or grandparents to their own children. Many families find that grandparents living to seventy and beyond require practical, emotional, and financial care that can be more complicated than raising their own children. Those born in 1950s — now in their fifties, will spend as many years looking after their ageing parents, as they did caring for their own offspring (Jarrett,1994).

Retirement also brings a change to family life. If the spouse has been a homemaker, the husband's retirement means that spouses will spend much more time together. Although the husband's presence is often a source of pleasure to both, more in the Western world, it sometimes undermines wives' established routines to the point of intrusion (Kalish, 1982). In case of Iran, wives not much welcome the retirement of husbands due to their ever presence at home, diminishing of family's income, intervention of husbands in daily family routines etc.

The most difficult transition in married life comes with the death of a spouse. Wives typically outlive their husbands because of women's longer life expectancy and because wives are usually younger than husbands to begin with. Wives can therefore expect to spend a significant period of their lives as widows. Loneliness accompanying the death of a spouse is always difficult. This experience may be even harder for grandfathers or widowers, who usually have fewer friends than grandmothers or widows do, and may be unskilled at housework (Berardo, 1970).

In the present research, variables such as age, state of life, state of occupation, income, welfare, insurance, safety, education etc. have been investigated among the grandparents. They will be fully analyzed in a separate section.

Method of Research

A randomly selected sample of 452 elderly (60 years and above) of both the sexes from various parts and neighbourhoods of Tehran city. The selected grandparents were given a questionnair and were

also interviewed in the course of referrals. Eventually, the questionnaires were edited, electronically extracted and tabulated in the form of designed tables.

Findings

In referral to families to find out about different characteristics of grandparents, the researcher could find 272 alive grandfathers againt 402 alive grandmothers, i.e. a sex ratio of 68 males for every 100 females or grandmothers. Within those alive, 75 per cent used to live together, while 25 per cent of those elderly couples used to live with their offspring. In another query, the author came to know that 60 per cent of sample grandfathers lived alone, while 40 per cent used to live with their offspring. In this query, 73 per cent of grandmothers used to live alone, while 27 per cent used to live with their offspring. Similarly, occupational status of grandfathers was as such: 27 per cent were busy in jobs, 41 per cent pensioners, 1 per cent had no pesion at all, 7 per cent were depended on offspring and finally 24 per cent were depended on their own wealth. In this regard, only 2.75 per cent of grandmothers were engaged in jobs, 35.78 per cent were pensioners, 15.6 per cent had no pensions, 18.35 per cent were depended on their offspring and 27.52 per cent were depended on their own wealth.

Income being an important factor in old age, it was found that: 14 per cent of grandfathers asserted to earn about 107 US $ a month, 16.5 per cent declared to have monthly income of about US $ 100 and 160. Those having monthly income of US $ 160 and 180 were 21 per cent, grandfathers with monthly income of US $ 180 and 267 demonstrated 20.5 per cent, and finally 28% declared to have an income above US $ 268 a month. So far as the grandmothers' income status is concerned, they declared their monthly income as such: 35.36 per cent had income of less than US $ 107 per month, 19 per cent of grandmothers had income of between US $ 107 and 160, 15.22 per cent had monthly income of US $ 160 and 180, 14.07 per cent had monthly income of US $ 180 and 267, and finally 16.35 per cent of grandmothers declared to have a monthly income of US $ 268 and above.

While insurance plays a determining role in the safety and security of the ageing grandparents, 82.72 per cent of our sample grandfathers declared to have insurance and the rest of 17.28 per cent declared not

to be under any health insurance coverage. In a query regarding the health insurance of grandmothers, 84 per cent had insurance, and 16 per cent did not have it.

In another table prepared to find out about the health conditions of grandfathers the data collected were as follows: 36.03 per cent were healthy, 11.75 per cent had arthritis, 20.22 per cent had some heart disease, 7 per cent had diabetes, and 25 per cent had other diseases. In case of grandmothers, 26.62 per cent were healthy, 28.61 per cent had arthritis, 12.94 per cent had some heart diseases, 12.19 per cent had diabetes, and 19.65 per cent had other diseases.

Older generations are not quite educated in Iran. Therefore, a perspective of the educational status of grandfathers could be reflected as follows: 26.84 per cent uneducated, 30.88 per cent had only primary education, 12.5 per cent education of below ninth grade, 24.27 per cent had finished secondary school or below, 1.84 per cent had finished a diploma or college degree, 1.84 per cent had a B.A./ B.Sc., and also 18.4 per cent had a master's degree or above. Educational reflections on grandmothers is a bit different from those of grandfathers. Table concerning grandmothers states that 46.02 per cent of them were illiterate, 30.6 per cent had primary education, 6.47 per cent had education of below ninth grade, 13.33 per cent had finished secondary school or below, 2.24 per cent had finished a diploma or a college degree, 1 per cent had a B.A, B.Sc, and only 0.25 per cent of the sample grandmothers had master's or above.

Classification of grandmothers according to their general feelings could be illustrated as such: 19.12 per cent of our sample grandfathers declared to have loneliness feeling, 44.12 per cent had impatience or moodlessness feelings, 7.72 per cent had feelings of non-assistance or helplessness, 12.5 per cent feared death, and finally 16.54 per cent of grandfathers declared no remarks. In case of grandmothers, feeling of loneliness among them was 30.35 per cent, impatience/moodlessness was 30.6 per cent, feeling of non-assistance 14.43 per cent, fear of death was 12.19 per cent, and 12.44 per cent declared no remarks.

Another table indicating grandfathers' status could be reflected as follows: 10.66 per cent were in poverty, 29.41 per cent were in social isolation, 30.15 per cent suffered insecurity, and 29.78 per cent gave no

comments. Similarly, grandmother respondents were found, 9.2 per cent in poverty, 25.87 per cent in isolation, 35.82 per cent in insecurity, and 29.1 per cent with no comments.

In a query regarding the satisfaction of grandfathers, various reflections were found accordingly, i.e. 59.19 per cent were satisfied with their lives, 18.75 per cent were not satisfied with their lives, 8.82 per cent expressed happiness, and finally 13.24 per cent expressed grief. In case of grandmothers, 49.5 per cent were satisfied with life, 16.17 per cent were dissatisfied with their lives, 9.95 per cent were happy, and 24.38 per cent were grieved.

Similarly, attitudes of grandfathers towards different conditions were measured as such: 54.04 per cent were satisfied with their marriage, 6.25 per cent were discontented with their marriage, 5.15 per cent were satisfied with their income, 10.66 per cent were discontented with their income, 11.03 per cent of the grandfathers were satisfied with the atmosphere/ their surroundings, and finally 12.87 per cent of the grandfathers were discontented with their atmosphere around. In terms of grandmothers, the data showed that 35.82 per cent were satisfied with their marriage, 10.7 per cent were discontented with their marriage, 3.48 per cent were satisfied with their income, and 15.17 per cent were discontented with that. Similarly, 15.17 per cent of grandmothers studied were satisfied with the atmosphere around them, and 19.65 per cent were dissatisfied with that.

Other indicators pertaining to the way of life of the grandparents and approaches towards them in the family are reflected in a compact table as follows :

Table 2 : Multi-indicator Perspective of Grandparents in Tehran in 2006

		The way grandparents are approached in the family		
		With justice	With affection	With dicrimination
Grandfathers	100%	34.19%	52.94%	12.87%
Grandmothers	100%	16.42%	68.66%	14.92%

The way the ideas/experiences of grandparents are used in the family

		Use of Ideas	Non-use of ideas
Grandfathers	100%	69.85%	30.15%
Grandmothers	100%	61.69%	38.31%

Safety and psycho-mental dependency of grandparents

	Visiting	Visiting relatives	Visiting friends	None offspring	
Grandfathers	100%	26.47%	10.66%	49.26%	13.6%
Grandmothers	100%	27.61%	6.47%	59.45%	6.47%

Safety dependency of grandparents

		Adequate income	Care by offspring	Care by nurse
Grandfathers	100%	42.65%	55.88%	1.47%
Grandmothers	100%	27.61%	70.15%	2.24%

Priority of grandparents' lives

		Living alone	Living in birth place	Living with spouse	Living with offspring
Grandfathers	100%	6.99%	22.06%	54.04%	16.91%
Grandmothers	100%	10.45%	14.18%	41.29%	34.08%

Grandfather dead and state of life of grandmother

		Living alone	Living with offspring
Grandfathers	100%	72.78%	27.22%
Grandmothers	100%	60%	40%

Discussion

Grandparents can be of great help to their children. They can influence a family's adjustment, and often provide support to the entire family. They often serve many purposes of their grandchildren that their parents cannot fulfill. To be effective supporters, grandparents must first have their own needs and concerns responded and addressed. They have the potentiality of being each other's best resources.

Grandparents not only in Iran, but in any other country could be the primary caregivers for millions of children, especially in modern time that many mothers work outside home. They could be increasingly of great help to the health and welfare of the "third generation". At the time when children are facing unprecedented stresses, and many parents are busy outside home, they could be a good reservoir of knowledge and parenting wisdom. Therefore, these great sources of advice and experience must well be protected.

To focus attention on the phenonmenon, and provide grandparents with the recognition they deserve, the present research has been started. Grandparents bridge between the last generation(s), and the new generation(s). They transfer old culture and values to the younger generation(s) through their caregiving to contribute to their social mobility[2]. While they benefit their grandchildren, they are benefited by them too. Therefore, the youth must learn how to value grandparents in our society. Moreover, it must become a part of our culture, and globalized too. Similarly, grandparents can be updated more through contacts with grandchildren, and that prevents them from social exclusion.[3]

To promote national quality of life, clean safe environment must be created, education and culture must be promoted, economic opportunities should be provided at all levels, and finally the youngest and the oldest (grandparents) must be respected regardless of class, creed and race in a given society. However, environmentalism is a relatively new approach which argues that the physical world is being harmed and this will increasingly impact on our grandparents' welfare. However, sociologists argue how environmental problems are linked to particular cultural values, economic arrangements and welfare of ageing grandparents (Cylke,1993).

Safety of grandparents depends on many factors such as providing social work and health services to them, and also improving their social, physical and mental well-being. Though grandparents are usually of the age of being retired, yet, they may be activated to maintain secondary functions such as giving care to their grandchildren in parent- absent homes, assisting each other (the two spouses), keeping their independence for longer time and so on. However, a century back or

so, about half of children died before the age of twenty, and few could live to forty (Lenski & Lenski, 1995). Under such conditions the chance of having grandparents was very low.

With increase in longevity and life expectancey, the number and proportion of grandparents are increasing more than ever before. Under such conditions, social[4] security in old age is very vital to provide them with. The baby- boomers of mid 20th century are gradually turning to 60-65, and adding to the number of grandparents in Iran. But, just as the physical problems of ageing, intellectual and psychological changes accompany ageing too. In short, we can state: "What goes up must come down" (Baltes and Shaie,1979). What they immediately need now is better income, more social security, and better coverage of health insurance. So, increase in old age means more grandparents. The trend is likely to increase upto 2020 due to high population growth rate of 1960s. However, as the number and proportion of the elderly people increase, the healthcare system will experience an unprecedented influx of grandparents with physical and mental health problems, i.e. various age-related issues will make their care more complex, and necessary.

Not all the elderly grandparents are in a state of safety, some minorities face challenges associated with addiction, mental health problems, Alzheimer's disease, dementia etc. Similarly, prevalence of depression among them is quite on increase in modern time. But, fortunately, as a result of advances in medical sciences, many old grandparents can be treated upon clinicians' diagnosis. That is largely possible in the industrial countries, and less practical in developing societies including Iran.

Recent studies demonstrate that many grandparents afflicted by depression, hypertension, diabetes, heart failure and many other ailments can be prevented, and in some cases treated, if means enough are available. What is more difficult with the elderly is mental disorders which cannot easily be cured. However, despite all the advances taken place at different rates, and in different societies, many physicians are unlikely to recognize and diagnose mental health problems in older adults in the early stages of Alzheimer's disease. Likewise , if and when diagnosed, most elder patients do not receive treatment. In case of physical problems, fractures etc., physicians and clinicians feel more responsible and pay more attention rather than mental problems and

cases. So, in many cases, mental illness and ageing problems which usually happen to grandparents are ignored in contemporary time and in many societies.

Factors such as the age of grandparents, and whether they both are alive — living together; all contribute to the quality of life of grandparents in Iran. Similarly, occupational position of grandparents, their pensions, their "age[5] and work" their, income and as a whole their economic position affect their quality of life, their health conditions etc. In Iran, not all the grandparents hold insurance. Therefore, those who have it, can practically have better and more immune life. Educational status of grandparents also narrows the gap between their grandchildren and them. Education has much played role in increasing life expectancy, or so to say, it has contributed to having more grandparents, and in the future the number and proportion will be much higher (Blundell:2001). But, unfortunately not all the grandparents are educated. While many grandparents are in need of help and emotional supports of their children, or grandchildren, that often does not happen at the current complicated, socio-economic and cultural conditions.

Theoretical Perspectives

According to many economic demographers, an ageing population and increase in the number of grandparents lead to negative consequences in terms of growth of output per capita. A decreasing ratio of the working-age population to the total population contributes to the increases of the ratio of dependents (grandparents) to working people and the active members of families. This phenomenon is increasingly appearing in the contemporary world with special reference to the countries with longer life expectancy.

The theory of optimal life-cycle human capital investment that has been developed by Bon-Porath (1967), Mince (1974) and Becker (1964), argues that rapid technological change in the form of education contributes to be almost exclusively concentrated at younger ages, poses challenges for rapidly ageing population or grandparents. Hence, the relationship between age and human capital investment and consequently productivity growth cannot be seen in isolation from organizational and institutional factors. Under these circumstances the number of the grandparents is ever increasing, But, due to poor planning and

controversial conditions, large number of ageing grandparents are not in healthy and quality conditions in Iran.

No any economic theory provides a clear view as to how ageing affects productivity. Thus, health limitations tend to reduce employment opportunities of ageing grandparents. In response to lower earnings potential, older grandparents with health limitations are likely to reduce hours of work, and retire at earlier ages. Poor health also changes the grandparents' own assessment of the value of themselves. Yet, less is known about the relationship of grandparents' health and retirement in the rapidly ageing countries of Asia including Iran.

Japan provides a good example of grandparents' health, retirement within them and so on. It has the most rapidly ageing population (grandparents) in the world, and currently has the highest proportion of people age 65 and older. In 1980, only 9.1 per cent of the population of that country was aged 65 and older. By 2004, this percentage had increased to 19.5 per cent, and current projections indicate that in 2025, about 31 per cent of the Japanese population will be aged 65 and older. That is, about one-third of population will be grandparents (Ogawa, 2003). Hence, many other countries will have larger number and proportion of grandparents in the years to come.

Another perspective emphasizes the consequences of demographic change for long time economic growth. Anderson (2001), for example, estimates the effect of population ageing, and appearance of larger number of grandparents on average growth rate which is a down-ward trend. Bloom and Williamson (1998) add that the ratio of the non-working-age population (grandparents), to the working age population between 1965 and 1995; suggesting that a baby-boom generation would create a wavelike pattern of real GDP per capita over time. Bloom and Williamson believe that as baby-boomers increase the head count immediately after birth, they reduce per capita income, and the final incidence is on grandparents who are often pensioners.

It is well accepted that the future economic output in most industrialized countries must be achieved by a smaller and older labour force. A key question is how this development might affect labour productivity as measured by output per worker (Blanchet 1992). In the view of many economists, an ageing population or increasing

grandparents has negative consequences for growth in output per capita. Therefore, countries with such population structures must search alternatives to respond to the shortage of their human labour force(15-64). However, though the number of grandparents is increasing, their economic conditions are at risk in countries like Iran. They are at present highly dependent on their offspring, and the scenario will be worse in the years to come.

Until recently grandparenthood has been a neglected area of study. Academic interest has been much more widespread in the USA (Begston and Robertson, 1985). Roles that have been identified are surrogate parent (Victor,1994). One matter of concern has been the lack of legal rights and obligations that parents have in relation to their grandchildren.

Upon the studies done, it was found out that grandmother was the second most frequent source of child care for women in employment (Martin and Roberts, 1984). In that, large number of pre-school children of working mothers use grandmothers to look after these children during the absent-time of mothers. Almost the same amout of help and care are offered to school-aged children by grandmothers. However, this is a sort of exchange, i.e. while the daughter sees her visits as "keeping an eye on mum", mum may see the visits as the daughter turning to her for help and advice (Harris,1969). He stresses that to be on the receiving end in old age amounts to an abrupt reversal of the parental role.

Older people being the whole of a generation survived to a certain age, is the result of demographic changes in the population, i.e. the outcomes of longer life expectancies, lower birth rates, and an older average age of giving birth (Becker, 2004). This scenario eventually leads to the phenomenon of grandparents. It has been recognized that such changes are likely to result is significant increases in elder abuse which includes grandparents too (Voelker, 2002). Sociologically speaking, disproportionate increases in the number of dependent elders (Grandparents) relative to working-age individuals may result in higher stress levels among caregivers and increase abuse opportunities,and thus may act to increase the rates of grandparents abuse.

Findings, and the literature on elder mistreatment, and misbehaviour with the elderly appears to emphasize dependency and stress as two of the most significant factors. For example, a positive relationship between

abuse and stressful workplace environment has been emphasized in Pillemer and Finkelhor (1989) and Pillemer and Moor (1989). In many cases, the elder and grandparents' abuses are hidden, and as a normal and routine movement — depending on societies and cultures, poverty and affluence etc. For example, Harrington *et al.* (2000) found a positive relationship between nurse staffing hours and nursing home deficiencies. The specific mechanisms that lead to increased levels of abuse, neglect, and exploitation, are not clear, what is consistent among the studies is that, a decrease in the qualified workforce is inversely related to abuse.

However, safety and quality of life of grandparents highly depends on health status and personality traits, and ethno-cultural backgrounds of those around such elderly people. Therefore, such people may abuse the elderly, or have good behaviour with them. In the present paper, we are unable to uncover all the dimensions regarding the grandparents' lives because of data limitations.

Conclusion

Figures indicate that the ageing people or so to say, grandparents are increasing in Iran. Personal characteristics of the elderly such as health status, personality traits, personal problems, and socio-economic backgrounds of grandparents are different in this paper. Therefore, grandparents represent different reflections. Similarly, different educational status, income conditions, work and health conditions of these elderly people prior to their retirement have given them different quality of life in their old age as grandparents. Increase of grandparents in Iran to about seven times during fifty years (1956-2006) means that the elderly's needs have increased at higher proportions, and any failures or neglects towards that, will be elder abuse within them. In terms of norms and culture, the older grandparents rely on their children, and in that, grandmothers more rely on their daughters. Similarly, as residing in nursing homes is not much common in Iran, the only alternative left for these people, is to be supported by their offspring and younger family members. In this paper we are unable to measure the quality of life of the elders any further due to resource and data limitations, which should be addressed in future studies.

Moreover, due to current young population structure in Iran, the country will face much higher number and proportion of elderly

grandparents by 2030. As life expectancy is also increasing, we must logically expect more grandparents, especially women. However, issues such as social stigma and low status, employment and compulsory retirement, financial services and insurance, transport and medical treatment are highly problematic for the elder grandparents less in Tehran and more in Iran as a whole.

Notes

1. Socialization : The term socialization means lifelong social experience by which individuals develop their human potential and learn patterns of their culture. This complex lifelong process buids up individual personality. Socialization does not much happen during the old age. It forms an integral part of the quality of life of the individuals belonging to any society. It is really hard to socialize the elders and therefore, that leads to what is known as elder abuse.

2. Social mobility : It means movement up or down the class system. Unlike other systems of stratification, such as caste, class position is not determined for life at birth — people can move up and down. But, age limit can prevent or cut this mobility. During the twentieth century, upward mobility was much more common than downward mobility.

3. Social exclusion : This term is not very easy to define. Social exclusion is about the ways that people, and the elderly are cut off from the mainstream of life in the rest of society. It covers, among other things, poor health, poor housing, poor access to medical treatment etc. Central to the attack on social exclusion is welfare to work, provision of basic needs, pensions to the ageing people or grandparents, providing the people with work and income to be independent to support themselves.

4. Security in old age : In the past, one reason people had children was to make sure there was someone to look after them when they got old. In the West, this has become less important because more people have pensions and money saved or invested for retirement. Many older people still rely on their children, and especially on daughters. This affects women more than men, because women are less likely to have occupational pensions. In Iran, grandparents more rely on their sons for material supports.

5. Age and work : Older people can face ageism; that is, they can be discriminated against because of their age. For those looking for new jobs in their 40s or 50s, age can count against them. Skills learned as a young adult may become out of date. Ageism is based on negative stereotypes of older people and grandparents. Many cultures value the experience and wisdom of older people who are looked up to as "elders". In modern societies, however, the pace of change has been so quick that some of the experiences of older people and grandparents are seen as irrelevant.

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Economic and Health Status of Elderly Workers of Unorganized Sector

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ABSTRACT

The purpose of the present study was to find out the health status and socioeconomic condition of the elderly workers belonging to unorganized sector. It was hypothesized that the elderly belonging to this sector are more prone to suffer from ill health in comparison to elderly of organized sector and the younger age groups. The sample of 110 elderly workers was selected randomly and were interviewed individually to assess their socio-economic and health status.. The findings of this study revealed that the economic condition of these aged workers is very poor and the health status was also not very satisfactory.

Key words: Ageing, Health, Unorganized workers

Study of human life cycle is the area of interest for many scholars of various disciplines. Of late there are number of studies concentrated on adulthood and old age. These studies were undertaken because human population is ageing and ageing is a demographic reality and it is an obvious consequence of the process of demographic transition. (Liebig and Rajan, 2005). There are mainly three factors contributing for the population ageing in the world. These are : declining fertility, declining mortality and increasing life expectancy or longevity. India is also not exception to this. Current projections indicate that from 1980 to 2020 about 75 per cent of the additional numbers in the global elderly will be in developing countries. (United Nations, 1988). The aged

population has special health problems that are basically different from those of adult or young. Most diseases in aged are chronic in nature – cardiovascular, arthritis stroke, cataract, deafness, cancer, chronic infections etc. Chronic conditions which produced infirmity and disability became more common in old age. Considering all these, the present investigation was planned to study the socio-economic and health status of unorganized elderly workers. It was also aimed to find out the relation between health and the type of occupation of these elderly workers.

Method

Sample: As it has been said earlier that the present study was aimed to determine the socioeconomic status and to find out their health status of 110 elderly workers (belonging to unorganized sector) living in Kundapur Taluka of Udupi district of Karnataka. The study was purely exploratory. Randomly selected sample of 110 elderly workers were interviewed individually at their residences to assess their socio-economic and health status.

In the selection of sample it was kept in mind that the respondent must be aged 60 and above and should belong to unorganized working class. It was also seen that his monthly income is in between Rs. 500 to Rs.5000 per month and was willing to participate in the study.

Tool : The interview schedule used for data collection covered the following aspects:

1. *Identification data* : this aspect covers the socio demographic background of the respondents. Information regarding gender, education, rural-urban, locality, caste, religion, occupation, personal income, marital status.
2. *Living arrangements*: items dealt with the living pattern, property, type and nature of house.
3. *Needs and problems*: this section dealt with the nature of house, health and health problems as well as the nature of relationships they were having with their family members.

In order to obtain a free response, the subjects of this study were informed about the purpose and usefulness of the study and an assurance

was given to them about the confidentiality of the responses given by them. The interview was conducted in local language.

Analysis of data

The data received was manually and electronically coded using SPSS package 13.

Results

Socio Economic Profile of the Respondent

Age : The age distribution of the samples was classified into five categories, such as : 60-64, 65-69, 70-74, 75-79, 80 and above. The study findings revealed that out of 110 respondents 45(40.9%) belonged to the age group of 60-64 years, 39 (35.5%) belonged to the age group of 65-69 years, 15(13.6%) fell within the range of 70-74 years, 7(6.4%) belonged to 75-79 age group. Only 4(3.6%) of them belonged to the age group of 80 and above. From the data, it can be observed that an overwhelming majority of elderly (76.4%) are working up to the age of 69 years. From the age of 70 years and onwards we can observe a declining trend in working.

The findings reveal that out of 110 elderly workers 66 belonged to rural areas and 44 came from urban areas. Thirty three per cent of the males were from rural areas and twenty seven per cent were from urban areas. The elderly who are hailing from rural areas were not having much of education.

Marital Status : Maximum number of the respondents had spouses 67 (60.9%) and only 1 (0.9%) was un married and remaining were either widows or widowers.

Caste : Majority of the elderly workers 96(87.3%) belonged to backward castes (SC/ST) and only 14(12.7%) from them belonged to upper castes.

Education : Majority of the respondents 67(60.9%) were illiterate. Only 28.2 percent had education up to primary school level and 3(2.7%) respondents had completed middle school level education.

Table 1: Distribution of respondents according to their occupation

S.No.	Employment status	Frequency	Percentage
1	Part time employed	26	23.6
2	Domestic servant	30	27.3
3	Agriculture labours	21	19.1
4	Construction workers	4	3.6
5	Semi skilled worker	12	10.9
6	Skilled worker	6	5.5
7	Others	11	10.0
	Total	**110**	**100.0**

Majority of the elderly 82(74.5%) of this sample had three or more children, 14(12.7%) respondents had two children and 8(7.3%) are had only one child. 6(5.5%) respondents did not have children.

The data also show that irrespective of the number of children an overwhelming majority 86(78.2%) of these elderly workers live in joint family, which is healthy sign of well integrated society. On the other hand only 24(21.8%) live in nuclear families.

Income of the respondents

Out of 110 elderly workers, 60(54.5%) elderly had their monthly income just about Rs.500/- only. The low income of these elderly workers may be attributed to the irregularity in getting work and the nature of their work. 25 (22.7%) of the respondents income ranges between Rs.501/- to 1000/-. 16.4 percent of them had their income ranging from Rs. 1001/- to 3000/-. Further only 7 (6.4%) had monthly income above Rs.3001/-.

Type of lineage

Majority of the respondents of this samples, say 76 (69.1%) respondents belonged to the patrilineal society and only 34(30.9%) belonged to matrilineal type of family.

Living arrangements

49(44.5%) respondents were living with their spouses and other family members. 28 (25.5%) respondents who were living with their

children and grandchildren after the demise of their spouses or they were separated. 18.2 per cent (N=20) elderly workers were living with their spouses. 9(8.2%) respondents are living alone and 4(3.6%) are living with other relatives.

More than three fourths (N= 84 ;76.4%) of these elderly unorganized workers have their own house to live in, and 62(56.4%) respondents possess ancestral property and 22(20%) had managed to construct the house by their self earning and the remaining 3 (2.7%) of them had obtained it through other means (not explained properly). Only 23(20.9%) elderly reported that they did not have any property (house) because due to their inadequate income and family liabilities they could not construct any dwelling unit and are living in rented space.

Table 2: Regularity of getting work as expressed by the respondents

Sl. No.	Gender	Months in a year work				Total
		Whole year	7-10 months	3-6 months	Below 3 months	
1	Male	21(33.8%)	16(25.8%)	13(20.96%)	12(19.35%)	62
2	Female	10(20.83%)	6(12.5%)	10(20.83%)	22(45.83%)	48
	Total	**31**	**22**	**23**	**34**	**110**

Out of the total 110 respondents majority of the male respondents21(33.8%) had occupation through the whole year, 16(25.8%) had work only for 7-10 months. 13(20.96%) male respondents had work for 3-6 months and 12(19.35%) had their work for less than 3 months in the whole year. In comparison to the male respondents, 22(45.83%) female respondents had work only for less than 3 months in a whole year.10(20.83%) females had work throughout the whole year and similar percentage of the females had work for 3-6 months. Only 6(12.5%) female respondents had work for 7-10 months.

Health Problems of the Elderly Unorganized Workers

Biological ageing and poor economic conditions affect the physical health of the older people. Biological ageing process decreases the activity and physical strength and poor economic conditions aggravate the diseases and ailments.

Table 3: General nature of health of the respondents

Sl.No.	Level of health	Frequency	Percentage
1	Excellent	2	1.8
2	Very good	5	4.5
3	Good	51	46.4
4	Fair	32	29.1
5	Poor	20	18.2
	Total	**110**	**100.0**

The 110 respondents of the samples were asked to evaluate their health status by themselves. Most of the respondents 51(46.4%) reported to have a good health status.32 (29.1%) had a subjective feeling of having a fair health in spite of suffering from minor ailments. Only 2(1.8%) elderly reported to have an excellent health . There were 20(18.2%) respondents who agreed that their health condition is poor since they are suffering from chronic illness like diabetes, hypertension, cardiac disease and arthritis.

To confirm the nature of suffering respondents were asked how they would rate their health one year ago.

Table 4: Rating of the health One year ago

Sl.No	Rating of health	Frequency	Percentage
1	Much better than one year ago	15	13.6
2	Some what better now	9	8.2
3	About the same	58	52.7
4	Some what worse now	26	23.6
5	Much worse now	2	1.8
	Total	**110**	**100.0**

It is interesting to note that 58(52.7%) of them reported to have the same health status.23.6 percent had some what worsened their health condition.1.8 percent reported to have much worsened their health condition in view of changes in the physiological and psychological health status.15(13.6%) reported to have much better health condition compare to earlier.

In this study, an attempt was made to ascertain the type of disease the respondents of this sample are suffering from.

Table 5: Type of ailments suffered by the respondents

Sl.No.	Type of ailments	Frequency	Percentage
1	Epilepsy	2	1.8
2	Hypertension	42	38.2
3	Mental illness	1	.9
4	Heart disease	2	1.8
5	Diabetes	8	7.3
6	Renal problems	1	.9
7	Eye sight problem	14	12.7
8	General weakness	4	3.6
9	Difficulty in hearing	2	1.8
10	Digestion problem	1	.9
11	Ulcer	1	.9
12	Asthma	1	.9
13	Sleeplessness	1	.9
14	Cough	5	4.5
15	Joint pain	24	21.8
16	Loss of vision	1	.9
	Total	**110**	**100.0**

The findings in table 5 show that 42(38.2%) elderly workers were having hypertension, 24 (21.8%) of them were suffering from ' pain in joints (it is a common diseases reported by elderly) and 7.3 percent of these elderly were diagnosed with diabetes . Other minor ailments suffered by these respondents were : mental problems, loss of vision, asthma, sleeplessness, ulcer digestion problems.

63.6 percent of the total respondents suffered from some kind of diseases . 42.7 percent suffered from one chronic illness and 14.5 percent suffered from two chronic illnesses and only 7.3 percent of them had clinically diagnosed more than two chronic illnesses.

Out of 110 respondents 78.2 per cent perceived themselves as ill and were seeking treatment (taking medicines) regularly . 68.2 per cent were on allopathic treatment and 10.9 per cent were receiving Ayurvedic treatment and 5.5 per cent were taking homeopathic medicines (see table no.6 given below)

Table 6: System of medicine adopted in sickness

Sl.No.	System of medicine adopted	Frequency	Percentage
1	No care	12	10.9
2	Allopathy	75	68.2
3	Ayurveda	12	10.9
4	Homeopathy	6	5.5
5	Para medical care	1	.9
6	Home remedies	3	2.7
7	Combination of any both	1	.9
	Total	**110**	**100.0**

The data presented in table 6 show that 3.6 per cent respondents adopted home remedies and para medical care such as physiotherapy to treat their minor ailments.

An analysis of the data indicated that 52(47.3%) respondents were hospitalized for their treatment and 58 (52.7%) elderly workers did not go for any hospitalization.

It was find out that for minor ailments the respondents used to take rest at home and only for the treatment of chronic illness they were hospitalized less than one week only.

Table 7: Duration of hospitalization by the respondents

Sl.No.	Duration of hospitalization	Frequency	Percentage
1	Less than a week	29	26.4
2	1-2 weeks	12	10.9
3	2-3 weeks	8	7.3
4	More than a month	3	2.7
	Total	**52**	**47.3**
	No hospitalization	58	52.7
	Total	**110**	**100.0**

The data presented in the table no. 7 given above show that only 29(26.4%) elderly reported that they were hospitalized for less than a week.12 (10.9%) and 8(7.3%) respondents were hospitalized for 1-2 weeks and 2-3 weeks respectively. Only 3(2.7%) reported that they were hospitalized for more than a month for the sake of the severity of the disease.

When the elders fell sick invariably they are hospitalized, but the selection of the hospital depends on their financial condition of the sick elderly person or the financial position of the care provider member of the family. In this study, the 34(30.9%) respondents opted for private hospitals. Only18 (16.4%) preferred hospitalization in the government hospitals. It suggests that wherever the care taker could afford they provided best possible treatment to their elderly relatives..

The hospitalized elders' (N=30; 27.3%) expenses during hospitalization were incurred by their sons.12.7 percent elderly reported that their hospitalization expenses were incurred by themselves. It was also found out that in 4.5 percent cases daughters incurred the expenditure of their elder parents. Approximately one per cent of these respondents reported that their hospitalized expenses were met by their grandchildren, in-laws, and friends respectively. It is heartening to note that 61(55.5%) respondents preferred to continue to work in spite of their ailing health condition and on the other hand 49(44.5%) respondents were not willing to work in their illness.

Major findings of the study

1. An overwhelming majority of the elderly workers who are working in unorganized sectors are active or working till the age of 69 years.
2. Unorganized elderly workers were largely confined to rural areas.
3. Widows were greater in number than widowers.
4. Majority of the backward castes are working in unorganized sectors than other castes.

5. Majority of the respondents are working as domestic servants and quite a large number of them were working on a part time basis.
6. Majority of the subjects studied earned below Rs.1000/month.
7. Nearly 76.4 per cent of the subjects have either ancestral property or self earned property. The earnings of these elderly workers is not sufficient to maintain their family's basic requirements. Their earnings are sufficient only for their day to day expenditure. Due to health problems, majority of them do not work continuously or through out the year.

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Role of Pancreatic Adrenergic Receptors in Modulating Glucose Induced Insulin Secretion as a Function of Age

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ABSTRACT

Age related increase in blood glucose levels were observed in male Wistar rats. Islets of langerhans isolated from these rats were stimulated with 4mM and 20 mM glucose in vitro and insulin content in the media was estimated. Our results showed a significant decrease in glucose induced insulin secretion in vitro with age. The cAMP content showed a very significant increase in young rats at 20 mM Glucose while in old rats the extent of increase was not so pronounced. The receptor analysis revealed that there is enhancement of α_2-adrenergic receptor function in old compared to young. There was also a desensitization of β_1-adrenergic while, α_1-adrenergic receptor function was not altered in old rats. This might play a role in the impairment of insulin release in response to glucose and may also contribute to the age dependant risk in the development of diabetes mellitus.

Key words: Ageing, cAMP, Glucose, insulin secretion, adrenergic receptors

Age related decrease in glucose-stimulated insulin secretion has been described (Molina *et al*., 1985; Aizawa *et al*., 1994; Perfetti *et al*., 1995;). Glucose–induced insulin secretion is accompanied by an increase in islet content of cyclic AMP (Rabinovitch *et al*., 1976) probably by activation of β_2- and β_3-adrenoceptors. cAMP through the activation of protein kinase A, increases Ca^{2+} influx through voltage

dependent L-type Ca^{2+} channels, thereby elevating $[Ca^{2+}]i$ and accelerating insulin exocytosis (Breen *et al*.,1997; Dukes *et al*.,1997). The inhibition of insulin release is mediated mainly through α_{2A}-adrenergic receptors (Niddam *et al.,* 1990) present in the pancreatic islets, which are linked to adenylate cyclase, resulting in reduction in the content of cAMP.

Neurotransmitters and their receptors undergo age related changes. Adult pancreatic islets of hamsters exhibited higher number of α_2-adrenoceptors than young while, the dissociation constant (the affinity) did not change (Lacombe *et al.,* 1993). There is also a suggestion that adrenergic system may play a greater role in the regulation of insulin release from neonatal rats than from adult rats (Gembal & Wojcikowski, 1993).

In the present investigation, the insulin release and cAMP content in pancreatic islets in response to glucose stimulation *in vitro* were analyzed as a function of age in Male Wistar rats. Also, the various adrenergic receptor subtypes were screened on the pancreatic islets.

Materials and Methods

Chemicals

HEPES- [N' (2-hydroxy ethyl] piperazine –N'-[2- ethane sulphonic acid], Tris Buffer, Collagenase Type V, D-glucose, Calcium Chloride and Bovine serum albumin fraction V were purchased from Sigma Chemical Company USA. cAMP $[^3H]$ assay system and radioimmunoassay kit for insulin were purchased from Amersham, England and Bhabha Atomic Research Centre, Mumbai, India respectively. All other chemicals were of analytical grade purchased from Merck, India.

Animals

Male Wistar rats 10 weeks old (young) and 104 week old (old) were purchased from Central Institute of Fisheries Technology, Kochi, Kerala. These rats were housed in groups of three in separate cages and fed lab chow and water *ad libitum.* They were maintained in twelve hour light and dark cycles. All experiments were conducted in accordance to the institutional ethics committee.

Blood glucose estimation

Blood was collected by tail snipping method. The glucose content was measured by glucose oxidase-peroxidase method using glucose estimation kit (Merck, India)

Isolation of pancreatic islets and insulin secretion studies

Islets were isolated from young as well as old rats by standard collagenase digestion method (Howell and Taylor 1968) using aseptic techniques and washed with HEPES- buffered Earle's medium (EH) (Pipeleers *et al.,* 1985). The islets were pre incubated for one hour at 37º C in EH containing 4 mM glucose to remove inherent insulin. The islet suspension was centrifuged at 4 ºC at 1500 x g. The pre incubated islets were then washed thrice with cold 10 mM Tris/HCl buffer, pH 7.4 and finally resuspended in the same buffer. Each 0.5 ml of reaction mixture contained 50 µl of islet suspension, 4 mM glucose and 20 mM glucose respectively in EH medium. The islets were incubated for 40 minutes at 37 ºC in a CO_2 incubator (Nuaire, USA). After incubation, the supernatant was removed by centrifugation at 13,000 x g for 10 minutes. The supernatant was stored at -20 ºC for insulin assay and the islet pellet was stored at -70ºC for cAMP assay. Insulin content was assayed using radioimmunoassay kit (BARC, India).

Estimation of c AMP

The pancreatic islets stored after insulin secretion studies were sonicated in 200 µl of acid ethanol and centrifuged at 13,000 x g for 10 minutes at 4 ºC. The supernatant was stored and the pellet was washed with 100 µl of ethanol: water (2:1), recentrifuged and the supernatant was pooled with the first supernatant. This was evaporated to dryness at 55 ºC under vacuum. The residue was resuspended in 50 Mm Tris/ 4 mM EDTA buffer. The suspension was recentrifuged to sediment any undissolved residue and clear supernatant was used for the cAMP assay using the cAMP assay kit.

Analysis of nor-adrenergic subtypes on the pancreatic islets by competitive binding assays

The cold antagonists used for competitive binding assays with [^{3}H]-nor-epinephrine were prazosin for α_1-adrenergic, yohimbine for

α_2-adrenergic, propranolol for β-adrenergic and atenolol for β_1-adrenergic receptors.

The mixture (0.5ml) contained 0.15-2.0mg. protein of islet cell suspension, 10mM Tris/275mM sucrose buffer pH 7.4 containing 1mM EGTA, 0.8mM ascorbic acid, 3mM catechol, 10mM magnesium chloride, 5nM [^{3}H]-norepinephrine and 10^{-8} M to 10^{-4} M concentration of various competing antagonists dissolved in ascorbic acid. The mixture was incubated for 15 minutes at 37°C. The reaction was stopped by filtering immediately through Whatman GF/B filters with three washes of 5ml ice cold 50mM Tris / HCl buffer pH 7.4, using manifold filtering unit. [^{3}H] Norepirephrine bound to the cell surface was determined using liquid scintillation counter.

Estimation of protein content

The protein content was determined by the method of Lowry *et al.,* (1951).

Receptor data analysis

The receptor data was analysed using nonlinear regression using a computer program Prism, Graph Pad Software, Inc. USA. The concentration of competitor that competes for half the specific binding was defined as EC_{50}. In tables, EC_{50} values are expressed as log EC_{50}. The affinity of the receptor for the competing drug designated as the K_i and defined as the concentration of the competing ligand that will bind to half the binding sites at equilibrium in the absence of radioligand or other competitor (Cheng and Prusoff, 1973). The displacement data were analysed using one site versus two site binding models.

Statistical analysis

Values were expressed as mean ± SEM for 12 rats in each group and significant differences between mean values were determined by one way analysis of variance (ANOVA) followed by the Tukey's test for multiple comparisons. Statistical analysis carried out by Ms-Windows based graph pad Instat software (Graph Pad Software, San Diego, CA, USA) 2.04a version was used and $p< 0.05$; and $p< 0.001$ were considered to be significant

Results

There is a significant ($p<0.001$) age related increase in blood glucose levels in the rats (Table -1). There is a significant decrease ($p< 0.05$) in the amount of insulin secreted *in vitro* by the islets of the old rats compared to young at both 4 mM and 20Mm glucose concentrations respectively (Table-2). Pancreatic islets of old rats showed significant increase ($p< 0.001$) in cAMP content when incubated with 4mM glucose compared to young rats. At 20 mM glucose, both young and old islets showed significant increase ($p< 0.001$ and $p< 0.01$) in cAMP content respectively.

Table 1. Age related changes in blood glucose levels in male Wistar rats

Young (10week old)	Old (104 weeks old)
88.67 ± 3.74	138.0 ±1.42 P < 0.001

Values are Mean ± S.E.M; n= 12 rats

Table 2. Glucose induced insulin secretion and cAMP production *in vitro*

	YOUNG		OLD	
	4mM Glucose	20mM Glucose	4mM Glucose	20mM Glucose
Insulin (μ Units/mg islet protein)	190.38 ± 22.15	245.57 ± 30.14	36.38 ± 12.04 P< 0.05	70.88 ±19.50 P< 0.05
cAMP (p moles/mg islet protein)	0.078 ±0.01	0.86 ± 0.01 P< 0.001	0.42 ± 0.03 P< 0.001	0.52 ±0.02 P< 0.05

Mean ± S.E.M. of 3-4 separate determinations

Table 3. Binding parameters of [^{3}H] Nor-epinephrine vs Yohimbine in pancreatic islets

	YOUNG	OLD
BEST	2	1
LogEC_{50}1	-8.778	-8.324
Log EC_{50}2	-5.174	-
Ki 1 (M)	1.11 e-009	3.38 e-009
Ki 2 (M)	4.45 e-006	-

Table 4. Binding parameters of [^{3}H] Nor-epinephrine vs Prazosin in pancreatic islets

	YOUNG	OLD
BEST FIT MODEL	2	2
LogEC_{50}1	-8.4	-8.759
Log EC_{50}2	-5.23	- 5.064
Ki 1 (M)	2.65 e-009	1.24 e-009
Ki 2 (M)	3.89 e-006	6.15 e-006

Table 5. Binding parameters of [^{3}H] Nor-epinephrine vs Atenolol in pancreatic islets

	YOUNG	OLD
BEST FIT MODEL	2	2
LogEC_{50}1	-9.22	-9.394
Log EC_{50}2	-5.49	- 4.69
Ki 1 (M)	3.98 e-010	1.24 e-009
Ki 2 (M)	2.13 e-006	1.46 e-005

Fig. 1. Non linear regression curve for [^{3}H] Norepinephrine vs Yohimbine in pancreatic islets

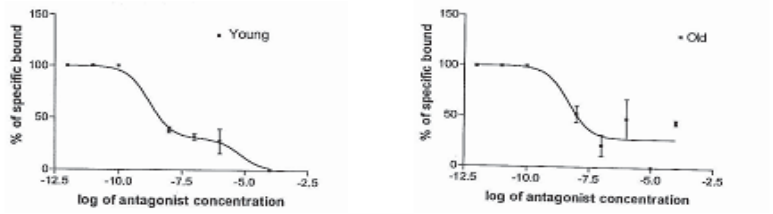


Fig. 2. Non linear regression curve for [^{3}H] Norepinephrine vs Prazosin in pancreatic islets

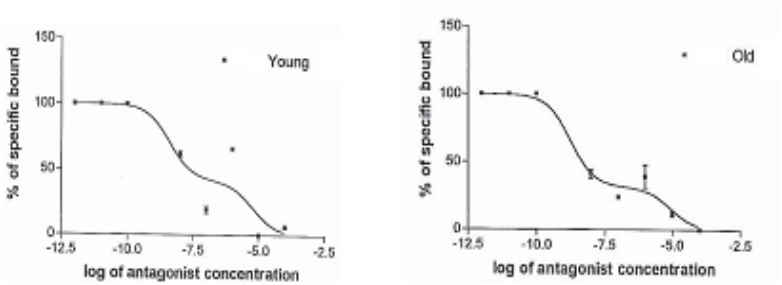
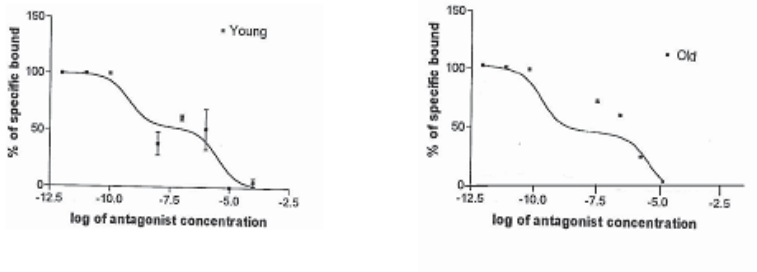


Fig.3. Non linear regression curve for [^{3}H] Norepinephrine vs Atenolol in pancreatic islets



Analysis of nor-adrenergic subtypes on the pancreatic islets by competitive binding assays revealed that there is enhancement of a_2-adrenergic receptor function compared to young. In young control rats, the curve fitted best for two sites with greater strength of binding at the low affinity site. However, in the old control rats, the curve fitted best for one site model, with the loss of the low affinity site (Table-3; Fig. no 1), implying an enhancement of α_2-adrenergic receptor function in the pancreatic islets of old rats. No age-related changes were noted in the affinity status of a_1-adrenergic receptors in young and old rats as revealed by the displacement of norepinephrine by prazosin (α_1-adrenergic receptors antagonists) (Table- 4; Fig.no 2). In young and old rats, the displacement curve by Atenolol ($\alpha\,\beta_1$-adrenergic receptor antagonist) fitted for two site model. However, the ligand bound strongly in the low affinity site of older rats compared to young (Table-5 ; Fig. no. 3) implying a desensitization of b_1-adrenergic receptors in old rats.

Discussion

The age related increase in blood glucose levels in the rats could be due to a decrease in the levels of insulin as a function of age. It was demonstrated in Wistar rats that ageing is associated with progressive decline in beta cell number, the pancreatic insulin content, amount of insulin secreted and insulin mRNA levels (Perfetti *et al.*, 1995). The decrease in the amount of insulin secreted *in vitro* by the islets of the old rats compared to young at both 4 mM and 20Mm glucose concentrations respectively are in agreement to the findings of Bombara *et al.,* (1995). This might be due decrease in insulin content within the pancreatic islets (Aizawa *et al.,* 1994) and / or alterations in the signal transduction pathway leading to the exocytosis of insulin. Novelli *et al.,* (2000), observed a significant decline in the glucose-stimulated insulin secretion, starting at 12 months of age with a significant increase of the islets insulin content in older rats with respect to younger animals. This was attributed to a progressive age-related decline of the glucose transporter GLUT-2 in pancreatic islets.

Various agonists that induce insulin secretion do so by increasing the intracellular concentration of cAMP. Glucose has been reported to cause a small increase in the concentration of cAMP in the islets (Charles *et al.,* 1975). In the present investigation, the extent of cAMP increase

was more pronounced in young islets compared to old. The mechanism of stimulation of insulin secretion by cAMP is mediated through protein phosphorylation. Among the various islet proteins, cytoskeletal proteins have been implicated. It is also possible that cAMP may cause the phosphorylation and activation of Ca^{2+} channels or the inactivation of K^+ channel (Rasmussen and Barrett, 1984).

Analysis of nor-adrenergic subtypes on the pancreatic islets by competitive binding assays revealed that there is enhancement of α_2-adrenergic receptor function compared to young. α_2-adrenergic receptor stimulation results in inhibition of adenylated cyclase and therefore decreases insulin release in old rats. Lacombe *et al*., (1993) has reported that pancreatic islets of adult hamsters had higher number of α_2-adrenergic receptors with no change in affinity towards the ligand compared to young. No age-related changes were noted in the affinity status of α_1-adrenergic receptors in young and old rats as revealed by the displacement of norepinephrine by prazosin (α_1-adrenergic receptors antagonists). Also, a desensitization of β_1-adrenergic receptors in old rats was noted. β_1-adrenergic receptors are positively linked to adenylate cyclase. Therefore our results show that there is adrenergic receptor modulation occurring in the islets of old rats compared to young may account for the differences in cAMP in young and old rat islets as well as glucose induced insulin secretion.

Conclusion

Thus we conclude from our findings that the enhancement of α_2-adrenergic receptors and desensitization of β_1-adrenergic receptors on pancreatic islets might play a role in inactivating the cAMP system leading to impairment of insulin release in response to glucose and may also increase the age dependant risk in the development of diabetes mellitus.

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