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YOU ARE INVITED TO JOIN US

We are Working to Protect the Rights and Social Welfare of the Elderly

Indian Gerontological Association (Registration No 212/ 1968) is an independent grassroot non-profit organization based in Jaipur (Rajasthan). Our efforts **empower** and **support** the underprivileged elderly in rural and urban communities.

We strive to **ensure social justice and welfare for people over 60**, focusing on those elders who are the most disadvantaged such as elderly women. We protect the civil liberties of elderly citizens as a part of the **struggle for individual rights and social progress** in India.

Currently, the elderly community comprises approximately 10% of the total population of India. This number will increase to nearly 16% within the next twenty years. **Neglected and abandoned by society and sometimes their own families, elders are increasingly subject to conditions of disease and poverty.** They lack access to health care, and often face serious discrimination as well as physical and emotional abuse.

As a public interest group, **we work for and with the elderly to protect their rights and access to a better quality of life.** We seek to both empower and serve by working directly with rural communities. By facilitating the growth of citizen's groups, raising public awareness on aging, promoting public action and participation, and advocating public policy changes, Indian Gerontological Association hopes to alter the current trends in elder relations for the better.

Our work includes :

- **Community Centers for the Elderly** that Offer Communal Support and Interaction
- **Training on Legal Rights** by Offering the Elderly Practical Knowledge on Their Rights
- **Public Helpline for the Elderly that** Offers Legal Referrals and Assistance (Helpline : 0141-2624848).
- **Public Accessibility for the Elderly** Advocating More Available Access to the Public Sphere
- **Use of various forms of media** to Raise Public Awareness on Elder Rights
- **Counselling** and Helping elderly to Relieve Psychological Stress and Depression
- **Elder Women's Cooperatives** that Provide Grants and Assistance to Elderly Women
- **Public Awareness Raising** to Promote Public Action for Helping Disadvantaged Elderly
- **Field Study of Rural Areas** to Analyze Challenges Faced by Aging Rural Population

Our plan of action includes:-

- **Campaign for Elder Rights**
- **Campaign Against Elder Abuse especially toward Elderly Women**
- **Training of Social Workers and Caregivers**
- **Capacity Building of Civil Servants or organizations Working on Aging**
- **Research & Publication.**

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Status of Nutrition Iron, Serum Iron, TIBC, Lipid Peroxidation and α-tocopherol levels in Autoimmune Disease Rheumatoid Arthritis (ACD) of Middle Age

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ABSTRACT

The purpose of this paper was to study the status of nutritional intake, serum iron, TIBC, lipid peroxidation and a-tocopherol levels in autoimmune disease rheumatoid arthritis with ACD in middle aged patients. Forty individuals between 35-55 years were categorized into two groups i.e. control group and patients group. Results showed significantly decreased nutritional status of iron, serum iron, Hb%, total iron binding capaicity and a-tocopherol levels in patients group as compared to the control group. While increased MDA levels were observed in the patients group with rheumatoid arthritis. In conclusion it was found that oxidative stress may be involved in loss of Hb%, lower serum iron, TIBC and nutritional intake of iron in rheumatoid arthritic patients.

Keywords: Autoimmune diseases, Oxidant-antioxidant balance, Serum Iron, Nutritional status of iron, TIBC, MDA, Vitamin E, Middle age

Rheumatoid Arthritis is a chronic inflammatory disease that affects an estimated 2.1 million people in the world (NIH, 2002). The goal of therapy is to control inflammation in order to prevent long term joint damage (Pincus, 1994; Emery and Salman 1995; Weindatt, 1996; Pincus *et al.*, 1999). The variables that best identify and predict severe outcomes, include work disability, high-functional status, co-morbidities, old age and low socioeconomic status, and to a lesser degree, high radiographic scores and rheumatoid factor titer (Pincus & Sokka, 2001). Anaemia of Chronic Disease (ACD), usually distinguished from Iron Deficiency Anaemia by the evaluation of body iron stores, was found in the majority of patients. However, as the diagnosis Iron Deficiency Anaemia (IDA) can only be confirmed by the results of supplementation with iron (Cook, 1982; Hansen & Hansen, 1986; Urengdenhil *et al.*, 1989), it is not clear to what extent, anaemia of chronic disease (ACD) and iron deficiency can simultaneously have a role in the development of the anaemia (Smith *et al.*, 1977).

The aim of our study was to investigate the status of nutrition, serum iron, TIBC, oxidant and antioxidant levels in this auto immune disease in middle age.

Materials and Methods

The study was conducted in the Department of Biochemistry, Moti Lal Nehru Medical College, Allahabad, Uttar Pradesh, India. Forty clinically diagnosed patients from OPD, who had not undergone any previous treatment for their arthritis, were chosen for the study. An equal number of age and sex matched healthy subjects with similar socio-economic status were also investigated. The complete clinical, personal history and nutritional intake of the subjects was recorded. The subjects were ranging in age 35-55 years. All the patients in the study were clinically diagnosed as patients with rheumatoid arthritis.

The lipid peroxidation (MDA) levels and a-tocopherol (Vitamin E) determined by the method of Utley *et al.* (1967) and Emmerie (1966) respectively while serum iron and Total Iron Binding Capacity (TIBC) were estimated by using standard methods.

Statistical analysis between control group and patient group was

performed by the student 't' test. The data were expressed as Mean ± SD. $p < 0.001$ was considered as highly significant while $p < 0.02$ and $p > 0.001$ were considered as significant.

Results

The Mean ± SD of MDA, Vitamin E, Hb%, serum iron, TIBC and nutritional status are described in the table 1. There was a statistically significant increase in erythrocyte MDA levels in patients with RA compared to controls. The levels of plasma vitamin E, serum iron, Hb%, TIBC and nutritional status were significantly decreased in patients with rheumatoid arthritis compared to the controls group. Levels of MDA, vit. E, status of nutritional iron, Hb%, serum iron and serum TIBC levels in control and rheumatoid arthritis patients are given in Figs. 1-6.

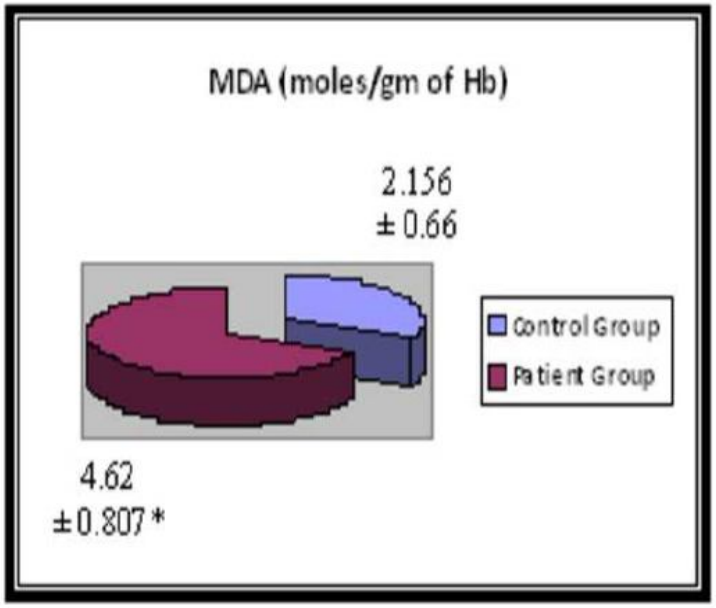

Fig. 1 : MDA levels in control RA (ACD) patients.

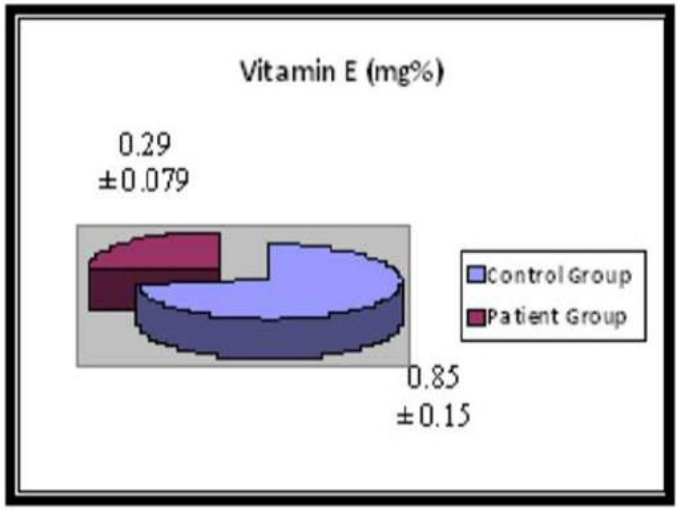

Fig. 2 : Vit. E levels in control RA (ACD) patients

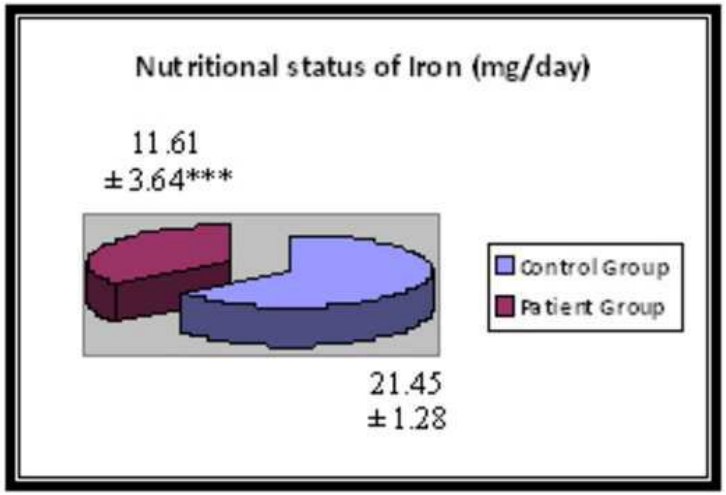

Fig. 3 : Nutritional status of Iron in control and RA (ACD) patients

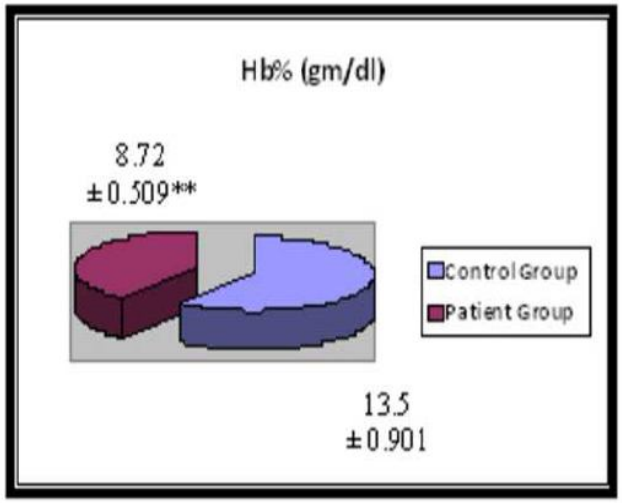

Fig. 4 : Hb% levels in control and RA (ACD) patients

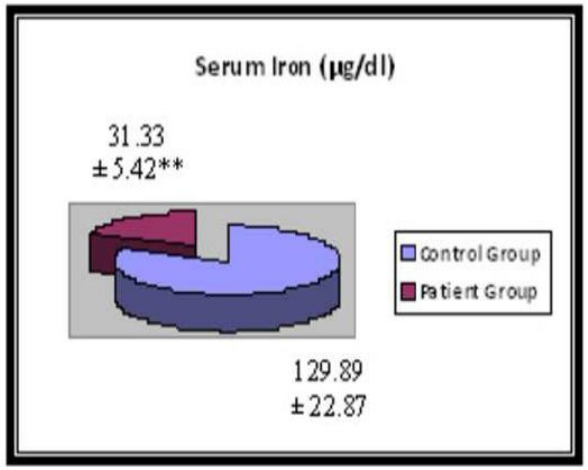

Fig. 5 : Sserum Iron levels in control and RA (ACD) patients.

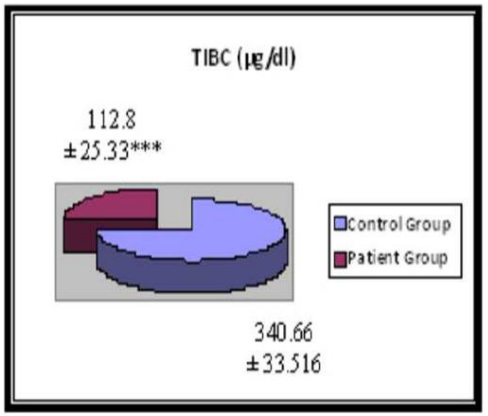

Fig. 6 : Serum TIBC levels in control and RA (ACD) patients.

Discussion

We have considered both the sexes in equal ratio and observed a significant decrease in the nutritional intake of iron (Fig-3), Hb% (Fig-4), serum iron (Fig-5), as well as TIBC levels (Fig-6) in the patient groups. Anaemia in the patients group with active rheumatoid arthritis may occasionally result from blood loss or haemolysis. Intake of iron was also very low, according to prescribed RDA but in the majority of cases had the features of anaemia resulting from any chronic inflammatory disease.

The studies of Bentley and William (1974), Hansen *et al*. (1983) and Bertero and Caligaris (1997) are characterised by decreased serum iron, decreased total iron binding capacity (TIBC) and increased iron stores occuring in a wide variety of diseases including cancer, chronic inflammation and inflammatory disorder like rheumatoid arthritis. Other feature of anaemia of chronic disease in rheumatoid arthritis included decrease in transferrin saturation with iron. However, there was a marked increase in serum ferritin in rheumatoid arthritis, which may reach 250% of initial values. Our findings support these studies that there was a marked decrease in haemoglobin percentage, serum iron and TIBC in rheumatoid arthritic patients. In contrast to our study, American

Association for clinical chemistry to Lab Tests Online (2001), reported that serum iron levels was decreased but TIBC was increased in rheumatoid arthritic patients.

Ravindran *et al.* (2008) bserved that the correlation between disease activity and serum ferritin was significant in both groups and correlation between bone marrow iron stores and serum ferritin in patients with IDA was poor whereas the correlation was significant in patients with ACD. Higher cut off level of serum ferritin has been proposed to overcome this problem. However, little consensus exists regarding the cut off level.

According to Graham and Smith (1986) and Double and Collins (1998), the major origin of iron deficiency in RA is bleeding due to inflammation and ulceration on gastrointestinal mucosa as a consequence of nonsteroidal anti-inflammatory drug and corticosteroid therapy. In most cases of anemia in RA, it is difficult to distinguish between ACD and IDA accurately. In fact, many anaemic RA patients have both types of anaemia. Once iron deficiency is suspected, gastrointestinal endoscopy, stool occult, blood test, examination for parasitic infestations, gynaecologic examinations, rectal examinations and other tests for evaluation of the bleeding are needed. Vreugdenhil and Swaak (1990) showed that iron deficiency is detected by transferrin, ferritin and cellular indices after adoption of their normal values. Treatment of the anaemia consited merely of antirheumatic treatment. Iron administration is counterproductive since iron chelators or exogenous erythropoietin administration might increase erythropoiesis.

In the present study, the lipid peroxidation product MDA levels (Fig. 1) increased significantly in erythrocytes of patients with rheumatoid arthritis. Rise in MDA could be due to the increased generation of reactive oxygen species (ROS) due to the excessive oxidative damage generated in these patients. These oxygen species in turn can oxidize many other important biomolecules including membrane lipids. Similar reports of elevated MDA levels have been reported in patients with rheumatic disease (Surapnani and Gopan, 2008). In contrast to our study, Kajanachumpol et al reported no significant change in MDA levels in patients with rheumatoid arthritis compared to the control group (Kajanachumpol *et al.*, 2000).

In this study the plasma non antioxidant enzyme i.e. vitamin E (Fig. 2) activities decreased significantly in patients. Reason may be due to the increased turnover for preventing oxidative damage in these patients suggesting an increased defense against oxidant damage in rheumatoid arthritis. Similar reports of elevated MDA levels have been reported in patients with rheumatoid arthritis (Jaiswal *et al.*, 2003; Kardas *et al.*, 2003).

In conclusion, oxidative stress is involved in rheumatoid arthritis. There is a shift in the oxidant-antioxidant balance, loss of Hb percentage, serum iron and total iron binding capacity in favour of lipid peroxidation which could lead to the tissue damage observed in this disease. Low socioeconomic status, age, comorbidities and several pregnancies also contribute to lower TIBC levels in middle aged RA patients. Significant changes in nutritional intake of iron and alpha-tocopherol during middle age might change in Hb%, generation of free radicals & serum iron levels in RA patients.

References

Bentley D.P. and William P. (1974). Serum ferritin concentration an index of storage iron in rheumatoid arthritis. *J. Clinical Practitioner* 27 : 786-788.

Bertero, M.T. and Caligaris Cappio F. (1997). Anaemia of chronic disorders in systemic autoimmune disease. *Heamatologica* 82(3): 375-381.

Cook, J.D. (1982). Clinical evaluation of iron deficiency (Review). *Semin Hematol.* 19 : 6-18.

Double, A. and Collins, A.J. (1998). Anaemia in patients with arthritis: are simple investigations helpful ? *Br. J. Rheumatol.* 27: 303-305.

Emery, P. and Salmon, M. (1995). Early rheumatoid arthritis: time to aim for remission: *Ann Rheum Wis.* 54 : 944-947.

Emmerie, E. (1996). *American J. of Clinical Nutrition*, 19.

Graham, D.Y.and Smith, J.L. (1986). Aspirin and the stomach. *Ann Intern. Med.* 104 : 390-398.

Hansen, T.M., Hansen, N.E., Birgens H.S. and Holund Lornzeni. (1983). Serum ferritin and the assessment of iron deficiency in rheumatoid arthritis. *Scand J. Rheumatol.* 12 : 353-359.

Hansen, T.M. and Hansen, N.E. (1986). Serum ferritin as indicator of iron responsive anaemia in patients with rheumatoid arthritis. *Ann. Rheumo Dis*. 45 : 590-602.

Jaiswal, S., Mehta, H.C., Sood, A.K. and Kaur, J. (2003). Antioxidant status in rheumatoid arthritis and role of antioxidant therapy. *Clin Chim. Acta* 338 (1-2) : 123-129.

Kajanachumpol S., Vanichapuntu M., Verasertniyom O., Totemchokchyakarn, K. and Vatanasuk, M. (2000). Levels of plasma lipid peroxide products and antioxidant status in rheumatoid arthritis. *Southeast Asian J Trop Med. Public Health* 31(2) : 335-338.

Kartas, F., Ozates, I., Canatan, H., Halijeoglu, I., Karatepe, M. and Colakt, R. (2003). Antioxidant status and Lipid peroxidation in patients with rheumatoid arthritis. *Ind JMed Res.* 118 : 178-181.

Lab Tests Online. A public resource in clinical lab testing from the laboratory professionals. *Ameri. Associ. Clini Chem.* 2001-2007.

National Institute of Arthritis and Musculoskeletal and Skin Diseases, National Institute of Health, Handout on health: rheumatoid arthritis. Available at: http://www.niams.nih.gov/hi/topics/arthritis/rahandout.htm. Accessed January 12, 2002.

Pincus, T. (1994). Rheumatoid arthritis: a medical emergency: *Scand J. Rhematol Supple* 100 : 21-30.

Pincus, T., Breedveld, F.C. and Emery, P. (1999). Does partial control of inflammation prevent long term joint damage? Clinical rationale for combination therapy with multiple disease modifying antirheumatic drugs. *Clin Exp. Rheumatol.* 17: 82-87.

Pincus, T. and Sokka, T. (2001). How can the risk of long term consequences of rheumatoid arthritis be reduced. *Best Pract Res Clin Rhematol.* 15 : 139-170.

Ravindran, Vinod; Jain, Sandeep and Mathur, Dinesh S. (2008). The differentiation of anaemia in rheumatoid arthritis: parameters of iron-deficiency in an Indian rheumatoid arthritis population. *Rheumatol Int* 28 : 507-511.

Smith, R.J., Davis, P., Thomson, A.B.R., Wadsworth, L.D. and Factere, P. (1977). Serum ferritin levels in the anaemia of rheumatoid arthritis. *J. Rheumatol* 4 : 389-402.

Surapneni, K.M. and Gopan, V.S.C. (2008). Lipid peroxidation and antioxidant status in patients with rheumatoid arthritis. *Indian J. Clin. Biochemistry* 23(1) : 41-44.

Ureugdenhil, G., Balrus, J.A., Van Eijk, H.G. and Swaak, A.J. (1989). Prediction and evaluation of the effect of iron treatement in anaemic RA patients. *Clin Rheumatol.* 8 : 352-362.

Utley, Hu, Bernhein, F. and Hoclstein, P. (1967). *Arch. Biochem. Biophys.* 28 : 118.

Vreugdenhil, G. and Swaak, A.J.G. (1990).. Anaemia in rheumatoid arthritis : pathogenesis, diagnosis and treatment (A Review) *Rheumatol. Int.* 9 : 243-257.

Weindatt, M.E. (1996). Rheumatoid arthritis; treat now, not later! *Ann Intern Med.* 124 : 773-774.

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Characteristics of Older Patients Admitted to a Tertiary Care General Medical Unit in Sri Lanka

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ABSTRACT

Little data is available on the care of the elderly in Sri Lanka, and geriatric medicine is not an established specialty. We conducted a preliminary study of the disease patterns and characteristics of hospitalized elderly people in Sri Lanka. Of the hundred patients (mean age, 71.1 yrs) studied, data on age, marital status, living arrangements, conditions, medication history, distance to hospital, monthly cognitive impairment, depression, monthly income and dependence were collected. Common reasons for admission were; acute coronary syndrome (16%), fever (14%) and complications of renal failure (13%). About 57% had a chronic medical condition (IHD – 24%, DM – 17%, HT – 16%). Mean number of medication patients was 3. 35% had depression; over 50% had cognitive impairment, 87% had good family support. A impressive information gathered on characteristics of elderly patients supports the need for dedicated geriatric services in our setting. Establishment of such services is likely to improve care of the elderly.

Key words : Elderly, Non communicable diseases, Dementia, Depression, Compliance Characteristics of older patients admitted to a tertiary care general medical unit.

Sri Lanka's population is one of the fastest aging in the world. The percentage of total population (20 million) above the age of 65 years was estimated to be 6.3% in 2000 and is projected to rise to 21.3% by 2050 (UN, 2004). The dependency ratio at old age will rise from 9.3% to 34.7%. The country's policies must necessarily adapt to accommodate the extra burden on the economy and health sector by establishing geriatric care services at hospital and community levels and establishing geriatric medicine as a sub-specialty in physician training. Dedicated geriatric care services are virtually non-existent in Sri Lanka at present, with elderly patients being cared for in general medical or surgical wards. Published data on disease patterns and characteristics of older patients admitted to hospital is extremely limited.

The objective of this preliminary study was to assess the characteristics of morbidity, social background and support, treatment compliance and mental well being of elderly people admitted to a general medical unit in the major tertiary care referral center in Sri Lanka (National Hospital of Sri Lanka, NHSL).

Methods

We defined 'elderly' as age 65 years or older. This prospective study included all patients over 65 years admitted to the University Medical Unit of NHSL over a period of 4 weeks. The unit is an acute general medical unit in a tertiary care hospital, with unselected medical intake. Verbal consent was taken prior to enrolment. The data collection was a pre-tested interviewer administered questionnaire containing items of basic demography, details of presenting complaint, past medical history, drug history, compliance and outcome of the current admission. The Barthel Index (BI) was used to assess independence in activities of daily living, the Mini Mental State Examination (MMSE) to assess cognitive status, and the geriatric depression scale to assess depression. Data was analyzed using SPSS® (version 15) statistical software package. Findings relevant to descriptive statistics were summarized into proportions and averages. Significance of associations was calculated using appropriate statistical tests such as chi square test and Fisher's exact test. Univariate analysis of variance (UNIANOVA) was used to analyze the effect of several independent variables on BI and MMSE. The study was approved by the Ethics Review Board of the National Hospital of Sri Lanka.

Results

Demographics

We enrolled 100 eligible patients to the study (Table 1). The mean age of the sample was 71.1 years (SD ± 6.324) (male 51%, female 49%). The demographic data of the sample are summarized in table 1. The percentages of males and females and those of different ethnicities in the sample did not differ significantly from the population average ($p>0.05$) (Dept. Cen. State Govt. Sri Lanka, 2008). The proportion of married patients and divorced patients were significantly more than the age matched population average ($p<0.01$) but it's difficult to make inferences in this regard due to the small sample size. Age matched data on income and level of education for the population was not available to make a comparison.

Current admission

The most common reason for admission was chest pain due to acute coronary syndrome (16%), followed by fever (14%), complications of renal failure (13%), and breathlessness due to exacerbations of asthma and chronic obstructive airway disease (COAD) (10%) (Table 2).

Family support

Ninety four (94%) patients were accompanied by a relative or carer to admission while six (6%) came alone. Eighty seven (87%) had relatives visiting them daily, who lived with spouse and children while 9 stated that relatives visit only occasionally. Four (4%) had no visitors. Six (6%) in the sample lived alone while only one person was homeless. Another six (6%) lived with a caregiver other than family.

Past medical history, drug treatment and compliance

There were 63 patients with a chronic medical condition needing long term medication. Some had multiple pathologies (Table 3). A significant number (24%) had had an episode of ischaemic heart disease (IHD) in past. The other common diagnoses were diabetes mellitus (DM), hypertension (HT), asthma / COPD and chronic renal failure.

Table 1. Demographic data

Variable	Numbers	Percentage
Sex		
Male	51	51
Female	49	49
Total	100	100
Ethnicity		
Sinhala	68	68
Tamil	15	15
Muslim	17	17
Total	100	100
Civil Status		
Married	81	81
Unmarried	5	5
Divorced	2	2
Widowed	12	12
Total	100	100
Education Level		
No education	6	6
Grade 1 - 5	36	36
Grade 6 - 11	32	32
Grade 12 – 13	22	22
Graduate	4	4
Total	100	100
Distance from Hospital		
Less than 5 km	31	31
5 – 20 km	32	32
20 – 50 km	25	25
More than 50 km	12	12
Total	100	100
Monthly income (Rs.)		
< 6999	72	72
7000 - 12999	18	18
13000 – 24999	5	5
25000 – 49999	4	4
>50000	1	1
Total	100	100

Table 2. Reason for current hospital admission

Complaint / Diagnosis	Number	Percentage
Acute coronary syndrome	18	18
Fever	14	14
Complications of renal failure	13	13
Asthma / COPD exacerbation	10	10
Respiratory tract infection	8	8
Stroke	6	6
Reduced level of consciousness	6	6
Hyperglycaemia	5	5
Diarrhoea	4	4
Fall	2	2
Heart failure	14	14
Total	**100**	**100**

Table 3 : Number of people with chronic diseases needing long term drug therapy

Condition	Number	Percentage
Ischaemic heart disease	24	24
Diabetes Mellitus	17	17
Hypertension	16	16
Asthma / COPD	15	15
Chronic renal failure	10	10
Stroke	3	3
Epilepsy	3	3
Heart failure	3	3
Dyslipidaemia	3	3
Migraine	1	1
Osteoarthritis	1	1
Post kidney transplant	1	1
Rheumatoid arthritis	1	1
Interstitial lung disease	1	1
Other	4	4

Regarding long term medication, the mean number of drugs that the patients were on at the time of admission was 3, while in the ward, the mean number of drugs each patient received was 5 (5.2, SD±2.13). Antiplatelet agents and statins were the most commonly used long term medication followed by angiotensin converting enzyme inhibitors and calcium channel blockers (table 4).

Table 4 : Most commonly prescribed drugs for patients on long term medication

Type of drug	Number	Percentage
Antiplatelet drugs	50	50
Statins	48	48
Angiotensin converting enzyme inhibitors(ACEI)	35	35
Calcium channel blockers	23	23
Sulphonylureas	22	22
Beta Blockers	20	20
Biguanides	20	20
Steroids (Oral and inhaled)	16	16
B adrenergic agonists (salbutamol)	15	15
Insulin	11	11
Nitrates (ISDN, ISMN)	9	9
Vitamins and Fe, Ca supplementation	9	9
Alpha blockers	5	5
Theophyllins	3	3
Glitazones	3	3
Antidepressants	2	2
Anti epileptics	1	1

Of the patients on long-term medication, 35 (55.6%) patients admitted that they miss some doses. Forgetfulness was the main reason for non-compliance (60%); 17.1% defaulted because they thought the drugs were unnecessary and 5.7% thought that there was no illness in the first place to take treatment. Males were more compliant with long term medication than females ($p = 0.001$). However no significant difference in compliance was observed with level of education ($p = 0.284$) or availability of social support.

Depression, activities of daily living and cognitive impairment

We used the geriatric depression scale with fifteen standardized questions to assess depression. A score greater than 5 suggested depression while a score greater than 10 is almost always depression. Thirty one patients (31%) had scores lower than 5 while 34 had scores ranging from 6– 10. Thirty five (35%) had scores equal or greater than 11 (7.81, SD ± 4.22).

Table 5 : Number of patients belonging to each category of dependence according to BI

Score	Category of dependence	Number	Percent
0 – 24	Total	6	6
25 – 49	Severe	3	3
50 – 74	Moderate	14	14
75 – 90	Mild	17	17
91 – 99	Minimal	60	60

The standard MMSE with thirty items was employed as a screening test for cognitive impairment. Any score over 27 is unlikely to be dementia. A score of 22/23 for patients over 60 is 88% sensitive for cognitive impairment and 74% specific. Adjustments were made taking into consideration the norms for Sri Lankan older patients (DeSilva *et al.*, 2009) and their level of education. There were 24 (57.1%) people out of 42 who had not received secondary education scoring less than 23 (Sensitivity 86%, Specificity 73%). Thirty two (55.2%) from the 58 people who had a secondary education also scored at or below 23 (Sensitivity 71%, Specificity 100%). We also assessed the impact of educational level and social support on cognitive impairment with a statistical model. It was hypothesized that a better educational level and more social support will protect against cognitive impairment. However (holding age and gender constant), the cognitive impairment did not correlate with either factor, alone or in combination (UNIANOVA, $p > 0.05$).

Barthel's Index (BI) is a measure of independence in activities of daily living (ADL) scored on 10 aspects (Shah *et al.*, 1989). The categories of dependence according to Barthel's index and the number

of patients belonging to each category are shown in table 5. The mean score was 83.6 (SD ± 23.7). There was no significant association between ADL and social support variables (living with family vs. living alone and frequently visiting caregivers vs occasionally visiting relations) indicating that independence in ADL is not dependent on having close family ties (assessed with UNIANOVA, $p > 0.05$).

Outcome

There was only one death in the sample. Fourteen (14%) were discharged without the need for follow up. Eighty one (81%) needed clinic follow up. Three left against medical advice and one patient was transferred to local hospital. The mean duration of hospital stay was 5 days (5.06, SD ± 2.96).

Discussion

It is expected that in the coming two decades, the global population of the elderly will increase by 200% - 400% in developing countries (WHO, 2000). Sri Lanka is no exception. Several important issues need to be highlighted regarding this transition which is discussed below.

Symptoms and diagnoses: a shift towards non communicable diseases (NCD)

The global statistics for overall mortality shows that NCD have overtaken the communicable diseases as the leading cause in mortality and morbidity. Interestingly, morbidity of elderly with NCD (expressed in disability adjusted life years, DALYs in millions) was more in middle and low income countries than in high income countries for ischaemic heart disease (11.9 vs 2.0), cerebrovascular disease (4.9 vs. 2.2) and COAD (8.0 vs. 4.5) (WHO, 2004).

Exacerbations or complications of NCDs made up the bulk of admissions in our sample (63%). This confirms the shift of disease burden as expected. The most commonly observed triad of NCD was ACS, DM and hypertension. In a parallel study published earlier in the same unit on elderly people (n = 150), ischaemic heart disease topped the diagnoses (13%) followed by respiratory tract infections (12%) and strokes (11%) (Weerasuriya and Jayasinghe, 2005). The need for early identification and proper management of these patients is obvious to avoid massive financial and personal losses.

Cognitive impairment and its impact

Interestingly, there is not much of a difference between DALYs (in millions) between low/middle income countries and high income countries (7.0 Vs. 6.2) for dementia (WHO, 2004). However, It is also estimated that by 2050, the numbers suffering from dementia will increase up to 114 million (25 million in 2000) and 73.7% of them will be in the developing countries (Anders *et al*., 2003).

The cognitive impairment in our sample was assessed by the MMSE. A large multicenter study on cognition and survival of individuals over 65 years of age (n = 12,552) has shown that there is a strong and consistent reduction in survival probability for each decrement in MMSE (Neale, 2001). More than 50% of our sample had evidence of cognitive impairment based on this tool of measurement. The parallel study mentioned previously also found a significant proportion of people with cognitive impairment (73%, assessed by a five minute recall test) (Weerasuriya, 2005). As two studies on our population have consistently shown significantly higher rates of cognitive impairment in elderly patients, it is important to popularize MMSE as a standard assessment tool in hospitals and clinics.

Depression, activities of daily living and social support

Though it is often said that depression is under-diagnosed in developing world, the available data show a significant morbidity with depression in middle and low income countries compared to high income countries (DALYs in millions; 4.8 vs. 0.5) (WHO, 2004). Though family support and closer social networks in developing nations are assumed to protect against depression, the facts show otherwise and this study also reflects it. Eighty seven percent of the sample lived with family or spouse. However, only 31% had a score less than 5 in the geriatric depression scale. Again, the parallel study in 2005 has recorded a high percentage of depression (40%, assessed by a 5 item geriatric depression scale). The problems related to mental well-being are not routinely identified in practice and cannot be attributed to non availability of social support alone.

In assessment of ADL, 60% of the patients were minimally dependent while 6% were totally dependent on care givers. Considering

the mean age of the sample was 71.1 years and this is a sample of ill people, the independence in ADL was commendable. Less dependence equates with less burden on caregivers. It is assumed that a totally dependent person requires at least 27 hours per week from caregivers time while the requirement for a minimally dependent person is less than 10 hours (Rollnik, 2009). A study involving 161 patients in a neurological rehabilitation unit has shown that BI was significantly associated with duration of hospital stay and costs (correlation coefficient -0.34).

Since, data on care of the elderly in Sri Lanka is extremely limited, with very few published studies, this was a preliminary study, aimed at identifying the key areas which need further study. The study was conducted in a tertiary care hospital. The disease patterns therefore may be different from the characteristics of elderly patients in the community.

Conclusions

The disease burden among elderly in this study was mainly on non communicable diseases. This observation was expected according to the global trends of disease burden in elderly.

Two independent studies have repeatedly shown that cognitive impairment is significant in the elderly population admitted to our unit. The social support was satisfactory for many patients but did not show an association with drug compliance, MMSE and BI. It may also not represent better mental health as a considerable proportion scored poorly on the geriatric depression scale. A large scale population based study on the prevalence on NCD, especially IHD, DM, HT, dementia and depression in older patients will help enormously in budgeting for and prioritizing health care needs of the elderly population. Training physicians in the subspecialty of geriatrics will be another important step in improving the quality of care of older people.

Author contributions

SR and AR conceptualized the study; AR provided expertise on standards of geriatric care. SR, YSP, MA and CR developed the protocol and questionnaire. YSP and MA collected data. All authors were involved in analysis, and preparation of the manuscript.

References

Anders, W., Bengt, W., Aguero-torres, H., von Strauss, E. (2003). The magnitude of dementia occurrence in the world. *Alzheimer Dis Assoc Disord.* 17 : 63-67.

DeSilva, R., Disanayaka, S., De Zoysa, N., Sanjeewanie, N., Somaratne S., Foster, J., Srikanth, S., Kathriarachchi, S.T. and Martins, R.M. (2009). Norms for the mini-mental state examination from a sample of Sri Lankan older people. *Int J Geriatr Psychiatry*, Jan 8. [Epub ahead of print]

Government of Sri Lanka,Department of Census and Statistics, Statistical abstract 2008 [online], 2008. [accessed 10 Jan 2010]; available from: http://www.statistics.gov.lk/Abstract_2008_PDF/abstract2008/pagesPdf/pdfindex.htm

Neale, R., Brayne, C. and Johnson, A.L. (2001). Cognition and survival: an exploration in a large multicentre study of the population of age 65 and over. *Int J Epidemiol*. 30 : 1383-1388.

Rollnik, J.D. (2009). Barthel index as a length of stay predictor in neurological rehabilitation. *Rehabilitation (Stuttg)*. 48(2) : 91-94.

Shah, S., Vanclay, F. and Cooper, B. (1989). Improving the sensitivity of the Barthel Index for stroke rehabilitation. *J Clin Epidemiol*. 42(8) : 703-709.

United Nations Population Division, Department of Economics and Social Affairs, World population aging. New York; United Nations 2004: 422-423.

Weerasuriya, N. and Jayasinghe, S. (2005). A preliminary study of the hospital admitted older patients in a Sri Lankan Tertiary Care Hospital. *Cey Med J*. 50 : 18-19.

World Health Organization. Social development and ageing; crises or opportunity?. Geneva; WHO, 2000.

World Health Organization. The global burden of disease: 2004 update. Geneva; WHO, 2004

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Quality of Life of Elderly Outpatients Served by Traditional Oriental Medicine

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ABSTRACT

This research aimed to establish parameters of traditional oriental medicine (TOM) impact on the quality of life (QOL) of elderly outpatients. Non-selected population of 28 elderly volunteer outpatients attended at ABACO/Sohaku-in TOM ambulatory in Copacabana, Rio de Janeiro, Brazil during October 2008. In this correlational descriptive research, the specific to the elderly QOL questionnaire WHOQOL-Old was answered; revealing in these answers the level on each of its six facets in priority. The coefficient of variation showed a homogenous sample so the mean was chosen as the central tendency measure. The dimensional techniques of descriptive statistics (mean + SD) were adopted. A comparison with researches on elderly outpatients QOL adopting non TOM treatments was held via WHOQOL-Old. It was noted that these elderly presented a QOL percentile mean TS = 77.25% supported by facets 2, 3, 4 and 6. Death and dying (score 5) with the lowest score appeared to be a substantial preoccupation, opposed to sensorial functioning (score 1) that raised the QOL level. It was concluded that the elderly outpatients reported the highest feeling of well-being found in any WHOQOL researched scientific studies with elderly outpatients adopting non-TOM treatments. This suggests that TOM raises the level of QOL.

Keywords: Quality of Life; Traditional Oriental Medicine; East-West Medicine; Elderly; WHOQOL-Old questionnaire.

Classical Traditional Oriental Medicine (TOM) that can be traced back at least 2500 years is growing in popularity all over the world (Kim *et al.*, 2005). It is one of the most popular complementary and alternative therapies in developed countries (Yamashita & Tsukayama, 2008). These oriental medical therapeutic techniques are used for treating in various conditions, for therapeutic or preventive purposes (Jong *et al.*, 2009). The preventive and curative effects of the TOM treatments have been well noted (Kawakita *et al.*, 2008), as complementary and alternative medicine recently from advanced basic research to clinical reports (Noguchi, 2008). Quality of life (QOL) is an eternal quest for human being (Figueira *et al.*, 2009) recognized as the individual perception of someone's position in life, both in the cultural context and in the value system, related to someone's goals, expectations, patterns and worries, depending on satisfaction of social, economical, physical, emotional, psychical and mental conditions. Conceptualized as a generic, multidimensional parameter describing an individual's subjective perception of his/her physical and psychological health, as well as his/her social function, environmental, and general life status, the QOL is defined as a subjective well-being that reflects the distance between individual hopes and expectations and the effective experience (WHO, 2008). For the elderly subjects, QOL is more than rating physical health status: emotional and social health are also very important factors (Srapyan *et al.*, 2006). The WHOQOL-Old is a specific QOL instrument to the aged (Peel *et al.*, 2007) elaborated by the WHO. Investigation on the TOM effects on aged QOL discloses relevant realities; therefore, the purpose of this study was to present the elderly outpatient served by TOM personalized QOL evaluation.

Subjects and methods

Data collection : In this study, two steps were taken: (i) approval by the authority in ABACO/Sohaku-in; and (ii) participants' agreement; and later the application of the WHOQOL-Old. This assay complies with the principles laid down in the Helsinki Declaration to the Human Being Research Rules. This research project was approved by ABACO/Sohaku-in Institute Research Ethics Committee.

The utilized protocol for QOL observation was the WHOQOL-Old questionnaire developed by the WHO in a transcultural approach, that contains six facets of items each: facet 1 on sensorial functioning; facet 2 on autonomy; facet 3 on future, present and past activities; facet 4 on social participation; facet 5 on death and dying; the facet 6 on intimacy. It was individually applied and was asked to individuals to have in mind their own values, hopes, pleasures and concerns, based on the last two weeks (Power *et al.*, 2005).

Sample : This sample comprised 28 non-selected elderly volunteers (over sixties) served with TOM at ABACO/Sohaku-in ambulatory in Rio de Janeiro, Brazil.

Data analysis : Descriptive statistical techniques were used together with the variation coefficient checking the normality of the distribution.

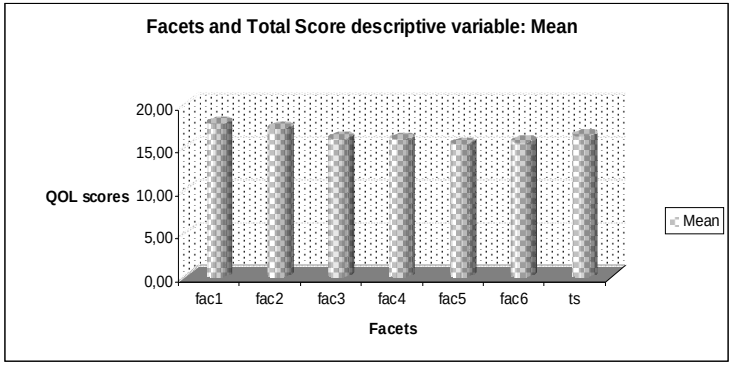
Results

The facets and the total score (TS) as empirical evaluation of the elderly QOL, are presented in Table 1.

Table 1 - QOL Facets and Total Score (TS)

	FAC 1	FAC2	FAC3	FAC4	FAC5	FAC6	TS
Mean	17.78	17.22	16.06	16.00	15.44	15.67	16.36
SD	2.39	1.70	2.55	2.68	3.50	2.35	1.69
% Mean	86.13	82.63	75.38	75.00	71.50	73.00	77.25
Median	18,50	18,00	15,50	16,00	16,00	15,50	16,58

As the variation coefficient was inferior to 25% (14) the mean was chosen as the central tendency measure.



The TS was supported by facets 2, 3, 4 and 6. Score 5 (death and dying) reduced the TS and score 1 (sensorial functioning) raised it.

Discussion

Over the last few years, there has been a growing consensus that QOL includes objective dimensions, e.g., housing, and economy, as well as subjective dimensions (Luleci *et al.*, 2008), hence a broad approach is essential for the purpose of comprising human being as a whole.

In China (Zhang *et al.*, 2008) 360 elderly rated their QOL as around 75%. That is equivalent to TS=77.25% in this research. In Brazil, wealthy active elderly women reported TS=72.3% (Pereira *et al.*, 2005) and non-active (Cader *et al.*, 2006) reported TS=58%. Poor elderly individuals (Figueira *et al.*, 2008) reported TS=49%, and the whole elderly population in Rodeo Bonito informed QOL TS=60.76 (Prosenewicz, 2006). All of them below this research finding. Also a demented elderly population (Scocco *et al.*, 2006) with TS = 72 and a healthy one with TS = 71, as much as a Dutch elderly sample in Turkey (Ceremnych, 2003) with TS=54.29% sums up with a comparative observation on an elderly random sample (Hawthorne *et al.*, 2006) with TS<70% showing that this study presents high QOL, with its 77.25%. Furthermore, comparing with another finding (Rocha & Fleck, 2002) with TS between 50 and 72 in Brazil and in RJ (Varejão *et al.*, 2007), this research's finding of TS is quite superior.

The elderly individuals in this project were negatively influenced on death and dying opposed to India (Verma, 2008), as each population has a personal evaluation. The WHOQOL Group's definition of QOL (Skevington *et al.*, 2004) indicate that those who reported the poorest QOL will be the least likely to have met their own goals, or expectations, standards and concerns.

The relevent question to the elderly what they do consider important in determining their QOL makes it possible to help them in this new phase of their lives, as to transcend their aging dilemmas (Figueira *et al.*, 2009). Considering health as a state of complete physical, mental and social well-being (W.H.O, 2008), the WHOQOL-Old sought to translate the elderly preferences peculiarities (Ceremnych, 2003).

Conclusions

The basic intention of this research was to present the QOL of the elderly outpatients served by TOM that is known as safe and effective. Searching for the perception of the elderly needing it is possible to develop strategies on their aging process, as greater effort is devoted to translating science into practice. Using population impact measures it is possible to quantify the health gain to a practice population from improving care in line with achieving the quality indicator targets (Mcelduff *et al.*, 2004). These research elderly outpatients reported a feeling of well-being regarding their QOL that was not found in any scientific research with elderly outpatients adopting other treatments. This suggests that TOM raises the level of QOL.

References

Cader, S.A. *et al.* (2006). Pimax analysis and life quality among sedentary elderly women, sheltered elderly women and elderly women who practices hidrogym comparison. *Fitness & Performance Journal* 5, 101-108.

Ceremnych, J. (2003). Focus group discussions with older adults and carers for development of pilot WHOQOL-OLD measure. *Acta Medica Lituanica* 10, 152-9.

Figueira, H. *et al.* (2009). Old Aged Quality of Life : Brazil - India a Cross-cultural Perspective. *Indian Journal of Gerontology* 23, 66-78.

_____ (2008). Quality of life throughout ageing. *Acta Medica Lituanica* 15, 169-172.

_____. (2009). Quality of Life (QOL) axiological profile of the elderly population served by the Family Health Program (FHP) in Brazil. *Archives of Gerontology and Geriatrics* 49, 368-372.

Hawthorne *et al.* (2006). Issues in conducting cross-cultural research: implementation of an agreed international protocol designed by the WHOQOL Group for the conduct of focus groups eliciting the quality of life of older adults. *Quality of Life Research* 15, 1257-1270.

Jong, J. *et al.* (2009). Randomized Clinical Trials on Acupuncture in Korean Literature: A Systematic Review. *Evid Based Complement Alternat Med* 6,. 41-48.

Kawakita, K. *et al.* (2008). Do Japanese Style Acupuncture and Moxibustion Reduce Symptoms of the Common Cold? *Evidence-based Complementary and Alternative Medicine* 5, 481.

Kim, Y. *et al.* (2005). The practice of Korean medicine: an overview of clinical trials in acupuncture. *Evidence-based Complementary and Alternative Medicine* 2, 325-352.

Luleci, E. *et al.* (2008). Assessing selected quality of life factors of nursing home residents in Turkey. *Archives of Gerontology and Geriatrics* 46, 57-66.

Mcelduff, P. *et al.* (2004). Will changes in primary care improve health outcomes? Modelling the impact of financial incentives introduced to improve quality of care in the UK. *Qual Saf Health Care* 13, 191-197.

Noguchi, E. (2008). Mechanism of Reflex Regulation of the Gastroduodenal Function by Acupuncture. *Evid Based Complement Alternat Med* 5, 251-6.

Peel, N. *et al.* (2007). Measuring quality of life in older people: Reliability and validity of WHOQOL-OLD. *Australasian Journal on Ageing* 26, 162-167.

Pereira, F. F. *et al.* (2005). Profile of elderly women Residents in Rio-2 Condominium in Rio de Janeiro County. *Fitness & Performance Journal* 4, 352-357.

Power, M. *et al.* (2005). Development of the WHOQOL-Old module. *Quality of Life Research* 14, 2197-2214.

Prosenewicz, I. *Relação entre Qualidade de Vida e Atividade Física nos idosos de Rodeio Bonito - RS.* (2006). Mestrado, do Oeste de Santa Catarina, Joaçaba, 2006.

Rocha, N., Fleck, M. (2002). Health status and quality of life - the effect of spirituality, religiosity and personal beliefs. *Qual Life Res* 11, 654.

Scocco, P. *et al.* (2006). Role of depressive and cognitive status in self-reported evaluation of quality of life in older people: comparing proxy and physician perspectives. *Age and ageing* 35, 166-171.

Skevington, S. *et al.* (2004). Can we identify the poorest quality of life? Assessing the importance of quality of life using WHOQOL-100. *Quality of Life Research: An International Journal of Quality of life aspects of treatment, care and rehabilitation Life Aspects of Treatment, Care & Rehabilitation.* 13, 23-34.

Srapyan, Z. *et al.* (2006). Role of depressive and cognitive status in self-reported evaluation of quality of life in older people: comparing proxy and physician perspectives. *Age and Ageing* 35, 190-193.

Varejao, R. *et al.* (2007). Comparison of effects of stretching and flexing on the levels of flexibility, autonomy and quality of life of aged. *Brazilian Science and Movement Review* 15, 87-95.

Verma, M. (2008). Working and non-working rural and urban older people: subjective well-being and quality of life. *Indian Journal of Gerontology* 22, 107-118.

WHO (2008). Older persons in emergencies: an active ageing perspective.In : Organization, W. H. (Ed.).

Yamashita, H. and Tsukayama, H. (2008). Safety of Acupuncture Practice in Japan: Patient Reactions, Therapist Negligence and Error Reduction Strategies. *Evidence-based Complementary and Alternative Medicine* 5, 391.

Zhang, J. *et al.* (2008). Factors influencing the subjective well being (SWB) in a sample of older adults in an economically depressed area of China. *Archives of Gerontology and Geriatrics* 46, 335-347.

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Sociodemographic and Clinical Correlates of Patients With Dementia Attending Private Hospital

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ABSTRACT

Family physicians play a key role in assessing and managing patients with dementia and in linking the families of these patients to supportive services within the community. As part of comprehensive management, the family physician may be responsible for coordinating assessments of patient function, cognition, and comorbid medical conditions, disorders of mood and emotion, and caregiver distress. This study intends to focus on the sociodemographic and clinical correlates of persons with dementia consulting a psychiatrist in a private hospital: A retrospective chart review of the patients with dementia being treated by the private hospital in a rural set up. Seventy patients seen between 2004 -2005 with dementia were reviewed and 42 patients with all details formed the sample of this study. A standardized format is used routinely in addition to a semi structured interview is conducted to generate ICD 10 diagnosis. Additional assessments are conducted for those suspected to have dementia. 20(47.6) were males and 22(52.4) were females. The mean age of the sample was 72.6(S.D. 9.8) and there was no significant difference in age between sexes. About 28.6 % were functionally dependent for the ADL activities. 42 8 % exhibited three or more difficult behaviours. The most common behaviours were disturbing others at night due to insomnia, bowel and bladder incontinence, psychotic symptoms, anger and aggressive behaviours. Disinhibited behaviours, wandering and delusions were also behaviours causing concern among caregivers. Various disturbing behaviours of the patients with dementia need to be addressed by the clinicians to improve the quality of life of the caregivers.

Keywords : Dementia, Distressing behaviours.

Introduction

Dementia is one of the commonest and most disabling late-life mental disorders. Its prevalence in developed countries, in adults older than 65 years is 3-11% (Evans *et al.*, 1989) and increases as the population ages further, 20% in the over 80s (Saunders, 1993).

The prevalence of dementia in India varies from 0.84% to 3.5 % (Shaji *et al.*, 2005; Vas *et al.*, 2001; Chandra *et al.*, 1998; Rajkumar *et al.*, 1997; Shaji *et al.*, 1996).A higher proportion of older people live in developing countries, little research have been carried out in these settings. There is some evidence that age-specific prevalence rates for dementia in developing countries may be relatively low (Chandra *et al.*, 2001; Hendrie *et al.*, 2001). There have been limited studies from India as dementia is often not recognized as an illness but is construed as part of normal aging (Patel and Prince, 2001).

More research is needed to allow developing countries to estimate issues related to dementia- the current extent, type, cost of medical, and social service provision, and to make confident predictions of future needs.

We therefore attempted to examine patients who sought consultation for their cognitive complaints presenting to the services of our hospital with the following aims - to ascertain sociodemographic and clinical correlates of persons with dementia consulting a psychiatrist in a private hospital and to assess the distressing behaviours of the patient, which is a source of stress to the caregivers.

Patients and Methods

This was a retrospective chart review of the patients being treated by the first author. All the general practitioners in their catchment area were encouraged to refer all patients with cognitive impairment. The study was carried in a rural set up in Udupi district. This catchment area is comprised of three taluqs - *Karkala, Udupi and Kundapur with* a total population of about 11,53,662. There are approximately 887

doctors including specialists. On an average there are about 8 doctors for 10.000 population .Of the three taluqs Udupi is the largest with a population of 5,66,929 and there are 586 doctors with three private psychiatrists. This is the district head quarters (Roopalekha *el al.,* 2007)

The current study was conducted in a private hospital, which has 110 beds, of which 30 beds are allotted for psychiatry; 35 for substance use disorders. Out patient services are run thrice a week and on an average there are about 85-90 cases/out patient, with 3-4 new cases and 5-6 admissions on out patient days. The common disorders being substance abuse, depression and psychotic disorders. The mental health team is comprised of 2 psychiatrists, 1 psychologist, 5 social workers besides nursing and other auxiliary staff.

All the patients who sought consultation in our hospital during a period of one year (2004-2005) were evaluated in detail. Of the seventy patients with dementia seen between these periods, forty-two patients with complete details of sociodemographic and clinical data formed the sample of this study.

Inclusion criteria were as follows

(a) Diagnosis of dementia according to ICD-10 categories. Subcategorisation of dementia was done based on ICD-10 diagnostic criteria (WHO, 1992).

Exclusion criteria included patients with delirium, which is transitory and associated with altered sensorium, aphasias and patients with focal syndromes, incomplete records were also not taken up. Younger patients with a depressive disorder with pseudo dementia were also excluded.

The ICD-10 has an extensive definition of dementia. For practical purposes, it is fitting to remember that any patient (elderly) with progressive intellectual decline in two or more spheres, severe enough to impair daily social and vocational performance from previous level of functioning, has dementia. Standardized format is used routinely in addition to a semi-structured interview to generate ICD-10 diagnosis. In addition, all patients and the key caregivers were interviewed to obtain scores on the following scales - mini-mental state examination (MMSE) (Folstein *et al.,* 1975). MMSE is probably as good as any;

when used to detect Alzheimer's disease, sensitivities and specificities of greater than 80 per cent are to be expected using a cut-off of 23 or less (out of 30). Neuropsychiatric Inventory (Cummings *et al.,* 1994) was used to assess behaviours of patients considered as 'distressing' by caregivers.

The Functional Activities Questionnaire (FAQ) (Pfeffer *et al.,* 1982) measures functional activities that may be impaired by dementia (e.g., ability to shop, cook, pay bills). The FAQ is answered by a family member or friend who knows and has observed the patient. The "informant" is asked to rate the performance of the patient in 10 activities as someone who is dependent, requires assistance, or has difficulty but does independently. Scores range from zero to 30 with a cutoff of 9 (i.e., dependent in three or more activities) signifying impairment.

The SPSS statistical package (Windows Version 11.0) used for data analysis. Descriptive statistics were used to determine categorical variables and Chi Square/Fisher's Exact Test was carried to find the statistical significance across genders on sociodemographic and some clinical variables.

Results

Forty-two patients with dementia with complete sociodemographic and clinical details formed the sample for analysis. The sample comprised of 20(47.6%) males and 22(52.4%) females. The mean age of the sample was 72.6(±S.D.9.8) with a range 53-90 years. The mean age of males being 73.3(S.D.± 10.6) and that of females 70.04 (±S.D.9.3). Majority of females were above 60 years in the sample 95.5 vs. 90 % males [Table 1]. There was a significant difference between age and gender which was significant at < 0.05 level (Fisher's exact test). In both sexes majority were married 32(76.2%) and 10(23.8%) were widowed.

In both sexes majority had no formal education. A higher proportion in the sample was Hindus, Christians & Muslims- though statistically significant ($p < 0.05$) shows a general population distribution [Table 2]. Males were either in skilled or unskilled laborers and females were homemakers. 78.8% hailed from middle class suburban families.

Table 1 : Distribution of Gender & Age in dementia

Age	Male	Female	X^2
45-59	2	1	24.96
60-69	7	7	df-22
70-79	4	9	.059 *
>80	7	5	

<0.05

Table 2: Distribution of Gender & Sociodemographic Characteristics

Variable	Males	Females	X^2
Eeducation			
No formal education	11	18	
Primary	1	3	4.75
High school	2	1	df4 NS
PUC/ Inter	2	0	.314
Graduate & above	4	0	
Religion			
Hindus	17	17	4.916
Christians	0	4	df-2 <0.05
Muslims	3	1	.086*
Family Type			
Nuclear	6	10	1.06
Extended	14	12	df-1 NS
			.303
Type of Occupation			
Retired	0	1	38.66
Housewife	0	20	df-5 <0.001
Skilled	13	0	.001**
Unskilled	5	0	
Service	1	0	
Missing data	1	1	
Socioeconomic Status			
Low	1	4	2.741
Middle	16	17	df-2 NS
Upper	3	1	.254

With regard to the clinical features of patients, there was substance use either amounting to harmful use or dependence in majority of males and was statistically significant (p- <0.001), but reflecting the sociocultural sanctions of substance use across the sexes. There was none who used other drugs. Those who did, used either alcohol or tobacco/pan not both. There were no differences in the course and onset of the disorder across both sexes. [Table 3].

Table 3 : Distribution of illness variables in dementia

Variable	Males	Females	X^2
Substance Use			
Absent	5	17	
Harmful use	7	0	
Dependence	2	0	20.83
Smoking	2	0	df-7
Snuff	3	1	.004*
Pan/ betal chewing	0	3	
Missing data	1	1	
Onset			
Early	8	8	.059
Late	12	14	df-1
			.808
Course			
Episodic	6	4	2.45
Continuous	13	15	df-3
Missing data	1	3	.484

<0.001

There was 15(35.7%) in the sample with a physical illness and 14(33%) with a psychiatric disorder however it was not significant. There was a family history of psychiatric disorder in 6 (14.3%) which was significant at p < 0.001 level [Fisher's Exact Test].

Table 4 gives the Distribution of Physical Disorders in the sample.

In both sexes, Alzheimer's was the most common subtype of dementia in 76.2% [Table 5] shows the Distribution of Dementia–Subtype

Table 4 : Distribution of Physical Disorders

Physical Disorder	Males*	Females*
Hypertension	3	3
Cervical spondalyisis	4	0
Diabetes mellitus	1	2
I.H.D*.	1	1
Anaemia	4	3
Slow Motor disorder	1	0
Hemiparesis	0	0
C.V.A.**	1	0
Huntington's	0	0
Myocardial infraction	0	1
Brain injury	1	0
Juvenile Parkinson's	1	1

* Ischemic Heart Disorder ** Cerebrovascular Accident
*Many had more than 1 or more disorders

Table 5 Distribution of Dementia -Subtype

Dementia subtype	Males	Females	
Alzheimer's	14	18	
Vascular	0	1	
Parkinson's	1	0	4.74
Multiinfract	3	1	df -5
Picks	0	2	.447 NS
Dementia NOS	1	0	
Unspecified	1	0	

The most distressing symptoms reported by the caregivers were delusions (76.2%); hallucinations (66.7%); agitation/aggression (90.5%); depression (90.5%); anxiety (52.4%); disinhibition (85.7 %);irritability(90.5 %); disturbances in motor activity(78.6%);night behaviours like disturbing others and insomnia(59.5 %); and changes in appetite(64.3 %). Many caregivers reported more one distressing

behaviours for example about 42.8% had more than 3 'difficult' behaviours. However these findings were not statistically significant across genders [Table 6]. In addition the caregivers were also disturbed by symptoms of incontinence (bowel and bladder), in 70% of their wards.

Table 6 : Distribution of Distressing Behaviours

Distressing behaviours	Males	Females	Total	%
Delusions	14	18	32	76.2
Hallucinations	13	15	28	66.7
Agitation/aggression	11	16	27	64.3
Depression/dysphoria	18	20	38	90.5
Anxiety	06	16	22	52.4
Euphoria/elation	-	-	-	-
Apathy/indifference	-	-	-	-
Disinhibition	17	19	36	85.7
Irritability	19	19	38	90.5
Aberrant motor activity	16	17	33	78.6
Night time behaviours	10	15	25	59.5
Appetite/eating changes	16	11	27	64.3

*Many had more than one or more symptoms.

On the functionality of patients in ADL (Activities of Daily Living) with dementia, about 28.6% of the patients required total assistance in Activities of Daily Living and the rest needed little assistance. However, no differences emerged in this domain across genders on the Fisher's Exact Test.

Discussion

Our main finding in this retrospective study of patients with dementia is that a high proportion of patients were above 72 years and the males were older than females in this sample. Although dementia can occur at any age, it is rare below the age of 60 years (Jorm, 1991).In this study in both the sexes, Alzheimer's was the most common subtype of dementia. Most of the evidence shows that there is no sex difference in the overall prevalence of dementia. However, some studies show a slightly higher prevalence rate of Alzheimer's disease in women (White *et al.*, 1996). Evidence suggests that dementia and Alzheimer's disease

may be less common in rural than urban areas, and in developing rather than developed countries (Shaji *et al.,* 1996)

Dementia can be considered as a global impairment of intelligence, memory and personality. The impairment of personality is the most distressing for carers, the patient becoming a "different" person. Disinhibition may produce aggressive or promiscuous behavior. As the dementia progresses habits, moral standards and personal hygiene all deteriorate. Early in the dementing process, the loss of ability to function adequately may cause the patient to feel useless, dependent, and burdensome (Cotrell & Schulz, 1993). For families of persons with more advanced stages of dementia, the major problems of care include impairments of communication, eating and bathing, and wandering (Rabins *et al.,* 1982). Incontinence is also a significant problem that causes stress for the patient and caregiver. In the current study nearly 50 percent of the patients exhibited at least three distressing behaviours, some of which would have caused more embarrassed being out of context with the social norms.

In the present study nearly one thirds of the patients required total assistance in their daily care. Decline in functional abilities is one of the most troubling aspects of dementia for patients (Cotrell & Schulz, 1993 and their caregivers (Green *et al.,* 1993). Detailed information about the functional performance of persons with dementia is important for planning their care needs(Green *et al.,* 1993; Mahurin *et al.,* 1991).

Depression is a common but little recognized complication of dementia. In the current study over 90 percent of the patients reported of depression. Depression and dementia are common in older people and their association is very complex. Major and minor depression occurs often in patients with dementia and can be associated with deterioration in cognitive functioning. The diagnosis of depression in dementia is not an easy task. Although the majority of patients with dementia do not develop major depression (Olin *et al.,* 2002), more than half suffer from one or more depressive symptoms such as anxiousness, sadness, irritability, agitation or psychomotor retardation, sleep problems, diminished social activity, or loss of interest (Gruber-Baldini *et al.,* 2003)

In our sample psychotic features were predominant. Psychotic manifestations and other behavior problems may be more troubling and pose a greater challenge than cognitive decline for patients with dementia and their caregivers. Delusions and hallucinations, both visual and auditory are found in up to 25% of patients at some stage (usually later) of their illness (Cooper *et al*; 1991). Various medical and psychiatric conditions are common among those suffering from dementia. Medical causes of deterioration in the cognitive state need to be excluded.

The alcohol use in our sample was both harmful use and dependence was 45% in males. Alcohol consumption in females are not common as in the eastern cultures as it is a taboo and using other substances such as betal nut/snuff is acceptable as it has no effects of intoxication.

A few limitations of this study need to be pointed out. This being a retrospective review with a small sample size has its own drawbacks and the findings cannot be generalizable. A prospective study with a larger sample and formal assessments is recommended.

Between 1990 and 2010, the number of people aged 65 or over in the less developed countries is projected to increase from 183 million to 325 million (a 78% increase). It is imperative that government, clinicians and policy makers understand these statistics and make provision for sufficient dementia care. Policies need to be well formulated and planned keeping in tune with these projections.

Under the present circumstances of India, this study is expected to offer important materials for those who are playing active roles in community, such as medical professionals, welfare professionals, and public health nurses.

Firstly, care for the aged with dementia will remain to be the important issue hereafter. The increase in the aged people population and bearing fewer children will make it more difficult to care for the aged at home. Dementia like the other various illnesses of the aged who need care, dementia, causes the more difficult situation.

Secondly, the aged who used to be cared in community will increase in number. It is an urgent issue for medical professionals, including public health nurses, to examine how to support such families. This

study intended to assess the present situation and to make the better care available. The ultimate goal is to provide care aimed at minimizing the effects of dementia on the quality of life of the patient as well as the caregiver.

References

Chandra, V., Ganguli, M., Pandav, R, Johnston J, Belle, S.(1998). Prevalence of Alzheimer's disease and other dementias in rural India. The Indo-US study. *Neurology*, 51:1000-1008.

Chandra,V., Pandav,R., Dodge,H.H. *et al*. (2001). Incidence of Alzheimer's disease in a Rural Community in India: The Indo-U.S. Study *Neurology* 57 : 6985-989

Cooper, J.K., Mungas, D., Verma, M., Weiler, P.G.. (1991). Psychotic symptoms in Alzheimer's disease. *International Journal Geriatric Psychiatry*, 6, 721-726.

Cotrell V, Schulz R.(1993). The perspective of the patient with Alzheimer's disease: a neglected dimension of dementia research. *Gerontologist*, 33 : 205-11.

Cummings, J.L., Mega, M., Gray, K., Rosenberg-Thompson, S., Carusi, D.A., Gornbein, J. (1994). The Neuropsychiatric Inventory: comprehensive assessment of psychopathology in dementia. *Neurology* 44 : 2308-14.

Evans, D.A., Funkenstein, H.H., Albert, M.S., Scherr, P.A., Cook, N.R., Chown, M.J. *et al.*(1989). Prevalence of Alzheimer's disease in a community population of older persons. Higher than previously reported. *Journal of American Medical Association* 262 : 2551-6.

Folstein, M.F., Folstein, S.E., McHugh, P.R. (1975). "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *Journal Psychiatric Research* 12 : 189-98.

Green, C.R., Mohs, R.C., Schmeidler, J. *et al*. (1993). Functional decline in Alzheimer's disease: a longitudinal study. *Journal of American Geriatric Society* 1993. 41: 654-61.

Gruber-Baldini, A., Zimmerman, S., Watson, L. *et al*. (2003), Recognition and treatment of depressive symptoms among residents with dementia in assisted living. Symposium 117. *Presented at the 56th Annual Scientific Meeting of the Gerontological Society of America, San Diego*; Nov. 22.

Hendrie, H.C., Ogunniyi, A., Hall,K.S. *et al*. (2001). Incidence of Dementia and Alzheimer's disease in 2 communities: Yoruba residing in Ibadan, Nigeria and African Americans Residing in Indianpolis, Indiana *Journal of American Medical Association*, 285:6 739-747

Jorm, A.F. (1991). Cross-national comparisons of the occurrence of Alzheimer's and vascular dementias. *European Archives of Psychiatry and Clinical Neuroscience*, 240 : 218-222

Mahurin, R.K., DeBettignies, B.H., Pirozzolo, F.J. (1991). Structured assessment of independent living skills: preliminary report of a performance measure of functional abilities in dementia. *Journal of Gerontology* . 46: 58-66.

Olin JT, Katz IR, Meyers BS et al. (2002), Provisional diagnostic criteria for depression of Alzheimer disease: rationale and background. [Published erratum *American Journal of Geriatric Psychiatry* 10(3):264.] *American Journal of Geriatric Psychiatry* 10(2):129-141.

Patel, V and Prince, M (2001)Ageing and Mental Health in developing countries: who cares? Qualitative studies from Goa, India. *Psychological Medicine* ,31,2-38

Pfeffer, R.I., Kurosaki, T.T., Harrah, C.H., Jr. Chance, J.M., Filos, S. (1982) Measurement of functional activities in older adults in the community. *Journal of Gerontology*, 37:323-9.

Rabins P.V., Mace N.L., Lucas MJ.(1982). The impact of dementia on the family. *Journal of American Medical Association* 248: 333-5.

Rajkumar S, Kumar S, Thara R.(1997) Prevalence of dementia in a rural setting: A report from India. *International Journal of Geriatric Psychiatry, 12:702*-7

Roopalekha, J., Sabu, KM., Nair, S (2007) Population based study on Health Status of Udupi District, July 2007- *Unpublished report*

Shaji, S., Promodu, K,, Abraham, T., Roy, K.J., Verghese, A.(1996) An epidemiological study of dementia in a rural community in Kerala, India. *British Journal of Psychiatry*, 168:745-9.

Shaji S, Bose S, Varghese A.(2005) Prevalence of dementia in an urban population in Kerala, India. *British Journal of Psychiatry*,186:136-40

Vas CJ, Pinto C, Panikker D, Noronha S, Deshpande N, Kulkarni L, et al. (2001) Prevalence of dementia in an urban Indian population. *International Journal of Psychogeriatrics* 2001;13:439-50.

White L, Petrovitch H, Ross GW et al.(1996) Prevalence of dementia in older Japanese-American men in Hawaii: The Honolulu-Asia Aging Study [see comments]. *Journal of American Medical Association* 276:955-960.

World Health Organization. *International statistical classification of diseases and related health problems, tenth revision*. Geneva: World Health Organization, 1992.

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Delirium in the Elderly – A Review

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ABSTRACT

Delirium is the most common complication of hospital admission for the elderly but often goes undiagnosed, resulting in substantial morbidity and mortality. A discussion on different aspects of delirium, including the aetiology, presentation, diagnosis and management, is warranted in order to help the physician better understand, identify and manage this debilitating condition.

Keywords : Delirium, elderly.

Delirium is the behavioural response to widespread disturbances in cerebral metabolism. Delirium is not a disease but a syndrome with many possible causes that result in a similar constellation of symptoms. It is a major cause of morbidity and mortality, but often goes unrecognized despite clear evidence that it is usually the cognitive manifestation of serious underlying medical or neurological illness.

Delirium is a commonly encountered psychiatric disorder in general hospitals. In a systematic review, the reported prevalence of delirium in hospital inpatients was 10% to 31%, but higher prevalence has been reported in selected subgroups such as elderly patients, cancer patients, and patients recovering from cardiac or hip-replacement surgery (Siddiqi *et al.*, 2006). Indian researchers have reported 27% prevalence of delirium in hospitalised geriatric general medical patients (Khurana *et al.*, 2002). Delirium is the most common complication of hospital admission for older people (Rothchild *et al.*, 2000). It develops in up to a half of older patients postoperatively; especially after hip fracture and vascular surgery (Marcantonio *et al.*, 2000). Delirium has a negative

impact on health outcomes. It is associated with a longer length of hospital stay, an increased morbidity and mortality, a worse functional and cognitive recovery, and higher admission rate (Siddiqi *et al.*, 2006).

Clinical features and Types of Delirium

The cardinal features of delirium are recent onset of fluctuating awareness, impairment of memory and attention, and disorganised thinking. Additional features may include hallucinations and disturbance of the sleep-wake cycle. Symptoms of delirium are characteristically global, of acute onset, fluctuating and of relatively brief duration. In most cases of delirium, an often overlooked prodrome of altered sleep patterns, unexplained fatigue, fluctuating mood, sleep disturbance, restlessness, anxiety and nightmares occurs.

There are three clinical subtypes of delirium: hyperactive, hypoactive, and mixed. In hyperactive delirium a patient has heightened arousal and can be very sensitive to his or her immediate surroundings. They can be restless, sometimes pulling repeatedly at clothing, and wandering is a common feature. Hypoactive delirium is less likely to be recognised as the patient is less alert, quiet and withdrawn.

Diagnosis

The diagnosis of delirium rests solely on clinical skills. This may partly explain why it is undiagnosed in over a half of patients with the condition (Rockwood *et al.*, 1994; Schuurman *et al.*, 2001). Delayed or missed diagnosis is an important issue because non-detection of delirium in emergency departments leads to seven times greater mortality (Kakuma, 2003).

As the diagnosis of delirium is clinical and made at the bedside, a careful history and physical examination is imperative for evaluation. Screening tools can also be helpful in identifying patients with delirium. Some important tools are as follows: the Confusion Assessment Method (CAM); the Organic Brain Syndrome Scale; the Delirium Rating Scale; and, in the ICU, the Delirium Detection Score and the ICU version of the CAM. The Mini-Mental State Examination is widely used in routine care, but full completion is often difficult in an acute setting in patients who are ill or in pain.

Differential Diagnosis

Delirium must be differentiated from dementia because the two conditions may have different prognoses. In contrast to the changes in dementia, those in delirium have an acute onset. The symptoms in dementia tend to be relatively stable over time, whereas clinical features of delirium display wide fluctuation with periods of relative lucidity. Clouding of consciousness is an essential feature of delirium, but demented patients are usually alert. Attention and orientation are more commonly disturbed in delirium, although the latter can become impaired in advanced dementia. Perception abnormalities, alterations in the sleep–wakefulness cycle, and abnormalities of speech are more common in delirium. Most important, delirium is more likely to be reversible than is dementia. Delirium and dementia can occur simultaneously; in fact, the presence of dementia is a risk factor for delirium.

Delirium must be differentiated from psychotic states related to such conditions as schizophrenia or mania and factitious disorders with psychological symptoms or malingering. Generally, the psychotic features of schizophrenia are more constant and better organized than are those in delirium, and patients with schizophrenia seldom have the clouding of consciousness seen in delirium. The “psychosis” of patients with factitious disorder or malingering is inconsistent, and these persons do not exhibit many of the associated features of delirium.

Pathophysiology

A range of neurochemical abnormalities have been implicated in delirium. A simplified pathophysiological mechanism for the symptoms of delirium is based on reduced central nervous system cholinergic activity in conjunction with increased dopaminergic transmission; excess of dopamine may result in a hypocholinergic state (Trzepacz, 2000). Underlying this is a complex and acute imbalance of other neurotransmitters. The dopaminergic and cholinergic systems modulate and interact via the cortex, striatum, and thalamus with glutaminergic, GABA (gamma-amino-butyric acid) and serotonergic systems. A recent finding is reduced activity of plasma esterases in delirium (White *et al.*, 2005); these are important drug metabolising enzymes and may partly explain why drugs are common precipitants for delirium. A unifying approach is to regard delirium as a clinical syndrome resulting from an

interconnection of several pathological mechanisms (Flacker & Lipsitz, 1999).

Risk Factors

The concept of patient vulnerability (risk factors) in relation to stressor events (precipitants that trigger an episode of delirium) has proved to be a practical approach in understanding delirium (Inouye & Charpentier, 1996). In most old patients, several precipitants may exist. The precipitants alone do not cause delirium; they interact with the underlying risk factors. Thus, a major insult, such as a serious infection, is required to trigger delirium in a previously fit person, but even a minor perturbation (such as a change in medication) can result in delirium in a person with many risk factors. Older people with multiple chronic diseases are therefore especially prone to delirium.

There have been studies investigating risk factors in medical and surgical patients (Elie *et al.*, 1998). The commonly encountered risk factors for delirium are - old age (over 65 years), physical frailty, severe illness, multiple diseases, dementia, admission to hospital with infection or dehydration, visual impairment, deafness, polypharmacy, alcohol abuse, renal impairment, and malnutrition. Easily modifiable environmental factors like moves within the hospital, absence of a clock or watch, absence of reading glasses, and use of restraints (physical or drugs) can also increase the risk for delirium. Important precipitating factors may be lower respiratory tract infection, urinary infection/ catheters, constipation, electrolyte disturbance (dehydration, renal failure, hyponatraemia or hypernatraemia), drugs (especially those with anticholinergic activity or psychoactive drugs), alcohol withdrawal, pain, neurological disorder (stroke, epilepsy, subdural haematoma), hypoxia, sleep deprivation, surgery (such as fractured neck of femur).

Preventing Delirium

Prevention of delirium can be targeted towards reducing the risk and incidence of delirium (primary prevention) or towards early detection and treatment (secondary prevention). Many of the risk factors for delirium are susceptible to modification (e.g., hearing and visual impairment, medication, electrolyte disturbances, infections, environmental factors, urinary catheterization, nutrition, pain, and

constipation). Drugs are an important risk factor and precipitant for delirium in older people: medications may be the sole precipitant for 12%-39% of cases of delirium (Alagiakrishnan & Wiens, 2004). The most common drugs associated with delirium are psychoactive agents such as benzodiazepines, narcotic analgesics such as morphine, and drugs with anticholinergic effects. Many commonly used drugs in older people have anticholinergic effects, although these effects may not be well known. Whenever possible, these drugs should be discontinued in patients who are at risk of or have developed delirium.

Health care systems should routinely incorporate protocols to detect and ameliorate risk factors for delirium, aiming for primary prevention. Indeed, intervention studies based on structured clinical protocols to assess individual patients for delirium risk factors, followed by targeted risk factor modification, have demonstrated a reduction in delirium of about one third (Inouye *et al.*, 1999).

Patients deemed at high risk for developing delirium related to a combination of vulnerability and/or predictive stress may benefit from prophylactic use of antipsychotics or cholinesterase inhibitors. There are a few randomized controlled trials that have studied the efficacy of a prophylactic pharmacological intervention in the primary prevention of delirium. Prakanrattana and Prapaitrakool (2007) used a single 1-mg dose of risperidone administered sublingually after cardiac surgery and reported a reduction in postoperative delirium (relative risk = 0.35, 95% CI = 0.16 – 0.77). Kalisvaart *et al.*, (2005) on the other hand reported no effect on postoperative delirium incidence by the prophylactic administration of a low dose of haloperidol, but the severity and duration of delirium were significantly reduced, with a shortened length of hospital stay. These studies are encouraging but need replication before the prophylactic use of antipsychotic agents to prevent delirium in high-risk patients can be recommended for routine practice.

Managing Delirium

Although the importance of secondary prevention of delirium, including strategies for early detection and treatment, seems clinically obvious, it is also supported by evidence. Delayed or missed diagnosis is an important issue as failure to detect delirium in emergency

departments has been shown to be associated with a sevenfold hazard for increased mortality (Kakuma, 2003). Improving the management of patients with delirium requires prompt and accurate recognition of the condition, including systematic assessment for the underlying precipitants and the provision of high-quality supportive care. Sequential cognitive assessments, for example using the Mini-Mental State Examination score daily, can successfully monitor development and resolution of delirium.

The use of antipsychotic medication to shorten the duration of delirium is recommended in APA guidelines (1999) but is not well supported by evidence. A systematic review of antipsychotic treatment of delirium identified 14 studies that were individually small and methodologically weak (Seitz *et al.*, 2007). It is also unclear whether the newer, atypical antipsychotic agents are superior to haloperidol. A systematic review of comparison studies identified only four studies involving 79 patients (Rea *et al.*, 2007), but in a large cohort study of 37,241 elderly patients, mortality was lower in the group receiving atypical agents (9.6% vs. 14.1%) (Schneeweiss *et al.*, 2007). A systematic review of psychotropic medication in delirium showed the paucity of reliable information available (four heterogeneous studies involving only 174 patients) but recommended low dose haloperidol as the best studied agent (Lacasse *et al.*, 2006). The atypical antipsychotic drugs risperidone and olanzapine should be avoided in patients with dementia complicated by delirium because of the associated increased risk of stroke (Wooltorton, 2002; Wooltorton, 2004).

Conclusion

Delirium is a major healthcare concern in countries with ageing populations. It is associated with poor outcomes and is expensive. The existing research evidence suggests that delirium could be prevented in at least one third of cases, but more research is needed to better understand the causal mechanisms, including the relation of delirium to dementia. Unfortunately, health service planners and practitioners have yet to systematically tackle the potential for delirium prevention and delirium remains disproportionately ignored relative to its impact.

References

Alagiakrishnan, K. and Wiens, C.A. (2004). An approach to drug induced delirium in the elderly. *Postgrad Med J*, 80, 388-393.

Elie, M., Cole, M.G., Primeau, F.J. and Bellavance, F. (1998). Delirium risk factors in elderly hospitalised patients. *J Gen Intern Med*, 13, 204-212.

Flacker, J.M. and Lipsitz, L.A. (1999). Neural mechanisms of delirium: current hypotheses and evolving concepts. *J Geront A Biol Sci Med Sci*, 54, 239-246.

Inouye, S.K., Bogardus, S.T., Charpentier, P.A., Leo-Summers, L., Acampora, D., Holford, T.R. and Cooney, L.M. (1999). A multicomponent intervention to prevent delirium in hospitalized older patients. *N Engl J Med*, 340, 669–676.

Inouye, S.K. and Charpentier, P.A. (1996). Precipitating risk factors for delirium in hospitalised elderly persons: predictive model and inter-relationship with baseline vulnerability. *JAMA*, 275, 852-857.

Kakuma, R., Galbaud du Fort, G., Arsenault, L., Perrault, A., Platt, R.W., Monette, J., Moride, Y. and Wolfson, C. (2003). Delirium in older emergency department patients discharged home: effects on survival. *J Am Geriatr Soc*, 57, 443-450.

Kalisvaart, K.J., de Jonghe, J.F.M., Bogaards, M.J., van der Ploeg, T., van Gool W.A., and Eikelenboom, P. (2005). Haloperidol prophylaxis for elderly hip-surgery patients at risk for delirium: a randomized placebo-controlled study. *J Am Geriatr Soc*, 53, 1658–1666.

Khurana, P.S., Sharma, P.S.V.N. and Avasthi, A. (2002). Prevalence of delirium in geriatric hospitalized general medical population. *Indian Journal of Psychiatry*, 44(1), 41-46.

Lacasse, H., Perreault, M.M. and Williamson, D.R. (2006). Systematic review of antipsychotics for the treatment of hospital-associated delirium in medically or surgically ill patients. *Ann Pharmacother*, 40, 1966-1973.

Marcantonio, E.R., Flacker, J.M., Michaels, M. and Resnick, M. (2000). Delirium is independently associated with poor functional recovery after hip fracture. *J Am Geriatr Soc*, 48, 618-624.

Practice guideline for the treatment of patients with delirium. (1999). American Psychiatric Association.

Prakanrattana, U. and Prapaitrakool, S. (2007). Efficacy of risperidone for prevention of postoperative delirium in cardiac surgery. *Anaesth Intensive Care*, 35, 714–719.

Rea, R.S., Battistone, S., Fong, J.J. and Devlin J.W. (2007). Atypical antipsychotics versus haloperidol for the treatment of delirium in acutely ill patients. *Pharmacotherapy*, 27, 588–594.

Rockwood, K., Cosway, S., Stolee, P., Kydd, D., Carver, D., Jarret, P. and O'Brien, B. (1994). Increasing the recognition of delirium in elderly patients. *J Am Geriatr Soc*, 42, 252-256.

Rothchild, J.M., Bates, D.W. and Leape, L.L. (2000). Preventable medical injuries in older patients. *Arch Intern Med*, 160, 2717-2728.

Schneeweiss, S., Setoguchi, S., Brookhart, A., Dormuth, C. and Wang, P.S. (2007). Risk of death associated with the use of conventional versus atypical antipsychotics among elderly patients. *CMAJ*, 17, 627–632.

Schuurman, M.J., Duursma, S.A. and Shortridge-Baggett, L.M. (2001). Early recognition of delirium: a review of the literature. *J Clin Nurs*, 10, 721-729.

Seitz, D.P., Gill, S.S. and van Zyl, L.T. (2007). Antipsychotics in the treatment of delirium: a systematic review. *J Clin Psychiatry*, 68, 11–21.

Siddiqi, N., Home, A.O. and Holmes, J.D. (2006). Occurrence and outcome of delirium in medical in-patients. *Age Ageing*, 35, 350–364.

Trzepacz, P. (2000). Is there a final common neural pathway in delirium? Focus on acetylcholine and dopamine. *Semin Clin Neuropsychiatry*, 5, 132–148.

White, S., Calver, B.L., Newsway, V. Wade, R., Patel, S., Bayer, A. and O'Mahoney, S. (2005). Enzymes of drug metabolism during delirium. *Age Ageing*, 34, 603-608.

Wooltorton E. (2004). Olanzapine (Zyprexa): increased incidence of cerebrovascular events in dementia trials. *CMAJ*, 170(9), 1395.

Wooltorton, E. (2002). Risperidone (Risperdal): increased rate of cerebrovascular events in dementia trials. *CMAJ*, 167(11), 1269-70.

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Validity of WHO-Five Well-Being Index for Screening of Depression in an Elderly Indian Population

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ABSTRACT

The objective was to determine the validity and reliability of WHO-Five Well-Being Index (WHO-5 WBI) (1998 version), as a screening instrument for identifying depressive disorders in elderly population in an Indian situation. A cross-sectional study was conducted in an elderly population of rural area of Udupi district, Karnataka, India involving 627 elderly individuals aged 60 years or above, selected by simple random sampling method. WHO-5 WBI and Major Depression (ICD-10) Inventory were used for assessment. Clinical confirmation of the diagnoses was made. WHO-5 WBI showed a sensitivity of 97.0%, specificity of 86.4%, positive predictive value of 66.3% and an overall accuracy of 0.89. Reliability was high (k = 0.71) (total area under the curve was 0.870 (SE = 0.021, 95% CI = 0.828-0.911, p = 0.0001). The prevalence of depression in elderly population was found to be 21.7% (95% CI = 18.4-24.9). Our findings demonstrated that WHO-Five Well-Being Index is a valid and reliable instrument for screening of depressive disorders in elderly population in India.

Key Words : Depression, Validity, Reliability, Well-Being, Elderly, India, WHO-5 Well-Being Index

There is a high prevalence of mental disorders in the old age. Predominant among these are mood disorder especially depression (Kar *et al*, 2009). In terms of global disease burden, unipolar major depression has been projected to become the second leading cause in the disease burden after ischemic heart disease in the year 2020, especially in high-income countries (WHO, 2001; Wig, 2001). Yet it is common knowledge that depression goes unidentified and the diagnoses are missed especially in community.

The community-based mental health studies have revealed that the point prevalence of depressive disorders among the geriatric population in India varies between 13 and 25 percent (Nandi *et al*, 1976; Ramachandran *et al*, 1982). The Indian aged population is currently the second largest in the world (WHO, 2001). Though depression is the commonest mental health problem in old age (Satapathy *et al*, 1997), very few community-based studies had been conducted in India, to understand the problem. Depression especially in the elderly population can be easily over-sighted. There can be various reasons for this including inadequate training of staff and lack of a valid, population based and easy-to-administer screening measure.

With the above background, we intended to determine the validity and reliability of WHO-Five Well-Being Index (1998 version) (WHO-5 WBI) (WHO, 1998) as a screening instrument for identifying depressive disorders in elderly population in Indian setting. Secondarily it was aimed to determine the prevalence of depression in this population.

Methods

A cross-sectional study was conducted for 8 months from 1st March to 31st October 2002 in Udayavara, Kadekar and Katapady villages of Udupi District in rural Karnataka state of South India. The total geriatric population (aged 60 years and above) in these three villages was reported to be of 2259. The sample size for the study was estimated for finite population with the help of EPI-info version 5.0 for windows, statistical package. The prevalence rate of depression was taken as 11.2% (Newman *et al*., 1998); required relative precision of

the estimate was set at 20%; confidence level was set at 95%; and a non-response rate of 10% was included. Hence, the final sample size was determined as 627.

Elderly persons, who were permanent members of their respective households, were selected for the study by Simple Random Sampling without replacement method using the probability proportionate to size (PPS) technique. If a designated house was found locked during the first visit and the eligible residents could not be contacted and even after two successive revisits, then they were excluded from this study. Individuals who were non-cooperative, or had severe cognitive impairment, had loss of hearing, articulation disorder, had any terminal illness or if he could not be contacted during two separate revisits after the first, was considered as a non-respondent.

Study instruments

A face sheet was used for information regarding the household of the respondent. We used WHO (five) Well-being Index (1998 version) for screening of depression, and Major Depression (ICD-10) Inventory from Mastering Depression in Primary Care Version 2.2 (WHO, 1998). The WHO-5 WBI is a brief patient-rated questionnaire with 5 items scored from 0 to 5. The raw score ranges from 0 to 25, 0 representing worst possible quality of life and 25 representing best possible quality of life. A percentage score can be calculated by multiplying raw score by 4 (a 10% difference then demonstrates a significant change). If the person has answered 0 or 1 in any of the 5 items, or if the patient's percentage score is less than 50, it is recommended to administer the Major Depression (ICD-10) Inventory. The Major (ICD-10) Depression Inventory contains 10 items measuring negative well-being and reflecting the presence or absence of depressive symptoms according to ICD-10.

The WHO-5 WBI and the Major Depression (ICD-10) Inventory were translated into Kannada by one of the authors and back-translated into English by a professor of Sociology, not acquainted with the original versions. The back-translation was subsequently compared with the original version by a bilingual psychiatrist for conceptual equivalence

of the items. Minor modifications were made to the translated questionnaires to remove discrepancies.

Data collection

All our study instruments were pre-tested to determine whether they optimally suit our field conditions. The study was explained to the participants and confidentiality was ensured. Informed verbal consent was obtained. A brief general health check-up of the respondent was conducted to establish a good rapport with him. All the questionnaires administered in the field were evaluated and rated on the spot, and if a respondent became positive in WHO-5 WBI screening or Major Depression (ICD-10) Inventory he or she was provided a referral slip and requested to visit the psychiatry outpatient department of Kasturba Medical College Hospital, Manipal, situated in the same district of Udupi at the earliest for a free consultancy. The participants having obvious medical disorders were referred for a free health check-up through Kasturba Medical College, Manipal. The results of the instruments were analysed and diagnoses generated were reconfirmed by consulting a senior faculty in department of psychiatry before arriving at a final ICD-10 diagnosis by Diagnostic Classification for Research Criteria (ICD-10-DCR) (WHO, 1992).

Data analysis

The collected data were tabulated and analysed by using a Statistical Package for Social Sciences (SPSS) version 10.0 for Windows. Findings were described in terms of proportions and their 95% Confidence Intervals (CI). Kappa statistics was applied to study the reliability of the screening instrument. *P* value less than 0.05 was considered as significant.

Results

A total of 487 households were visited and 627 individuals in the geriatric age group of 60 years and above were contacted. Of these 627 elderly people, only 609 (97.1%) were interviewed (Table 1). Individuals (n =18) who were not interviewed due to various reasons, were categorized as non-respondents (2.9%). The sample comprised of 226 males and 401 females. The age distribution suggested that

around half were in the age group of 60-69 years (52.6%), 37% in 70-79 and 10.4% were 80 year or older.

Based on major depression (ICD-10) inventory and following clinical confirmation, the overall prevalence of depressive disorders among the elderly was found to be 21.7% (95%CI=18.4-24.9). The prevalence rates of depression among the males and females were 19.9% and 22.6%, respectively.

Further, the following observations were made : sensitivity : 97.0%, specificity: 86.4%; Positive Predictive Value: 66.3%; Negative Predictive Value: 99.0%; False Positive Ratio: 0.14; False Negative Ratio: 0.03; Likelihood Ratio (+ve Test): 7.1; Likelihood Ratio (-ve Test): 0.03; and the Overall Accuracy: 0.89 (table 1). The reliability using Kappa statistics was: k=0.714 (p=0.0001). Validity and reliability of individual items in WHO-5 WBI is given in table 2. Assessment of external validity of WBI-5 WBI for detection of depression in elderly through analysis of the receiver operating characteristic (ROC) curve is given in table 3.

Table 1: Screening result of WHO-5 WBI and depressive disorders in the elderly population.

Screening result		Depressive disorders		Total
		Present	Absent	
WHO-5 WBI	Positive	128	65	193
	Negative	4	412	416
	Total	132	477	609

The status of positive well-being among the study subjects was also assessed by using the WHO-5 WBI. The prevalence of depressive disorders was high among individuals whose status of positive well-being was poor (66.3%) as compared to those whose status was satisfactory (0.96%) (X^2:327.9, df:1, P: <0.0001).

Table 2: Validity and reliability of individual items in WHO-5 well-being index (1998 version) as a screening instrument for identifying depressive disorders in elderly population

WHO-5 Well-Being Index (Score d"1)	Depressive disorders*									
	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	LR (+)	LR (-)	Overall Accuracy	Reliability (kappa)	Correlation	p-value
1. I have felt cheerful and in good spirits	77.3	94.1	78.5	93.7	13.1	0.2	0.90	0.718	0.718	0.0001
2. I have felt calm and relaxed	74.2	94.8	79.7	93.0	14.3	0.3	0.90	0.707	0.708	0.0001
3. I have felt active and vigorous	35.6	97.3	78.3	84.5	13.2	0.7	0.84	0.410	0.455	0.0001
4. I woke up feeling fresh and rested	68.2	92.0	70.3	91.3	8.5	0.3	0.87	0.609	0.609	0.0001
5. My daily life has been filled with things that interest me	37.9	97.5	80.6	85.0	15.2	0.6	0.85	0.438	0.482	0.0001
Overall Performance of WHO-5 Well-Being Index	97.0	86.4	66.3	99.0	7.1	0.03	0.89	0.714	0.738	0.0001

* Diagnosed by Major Depression (ICD-10) Inventory and reconfirmed through clinical diagnosis.

Table 3. Assessment of external validity for detection of depression in elderly through analysis of the ROC curve

Item	Area under the Curve	SE	95% CI	p
Whole scale	0.870	0.021	0.828-0.911	0.0001
Item 1	0.857	0.022	0.813-0.901	0.0001
Item 2	0.845	0.023	0.799-0.891	0.0001
Item 3	0.664	0.030	0.605-0.723	0.0001
Item 4	0.810	0.025	0.751-0.851	0.0001
Item 5	0.677	0.030	0.618-0.736	0.0001

ROC: receiver operating characteristic

Discussion

To our knowledge, this is the first study validating WHO-5 WBI in an Indian elderly population. The study was conducted in a representative sample of elderly population in rural India. The prevalence figures observed in this study are consistent with the findings in other Indian studies on prevalence of depressive disorders in the geriatric population in West Bengal (Nandi *et al.*, 1976) and Madras (Ramachandran *et al.*, 1982), where these were noted to be 22.0% and 24.1% respectively.

In our study the WHO-5 WBI showed a good internal and external validity and reliability. This has been observed in elderly populations in other countries too (WHO, 1998a). A previous study showed that the WHO-5 has a good internal consistency and homogeneity, equivalent to the longer precursor versions of Well-Being Index. The study was conducted to compare the validity of the first (1995 version) and the second (1998 version) of the WHO-5 Well-Being Index (Bonsignore *et al*, 2001). It suggested that due to its higher Loevinger coefficient (0.38) and Mokken coefficient (>0.3 in nearly all items), the second version (of 1998) was superior to the first (1995 version) for detection of depressive disorders. The external validity ranked highly, as indicated by ROC analyses. WHO-5 scores were related to the absence or presence of depression.

Item numbers 1, 2 and 4 (which enquired questions like I have felt cheerful and in good spirits, I have felt calm and relaxed and I woke up feeling fresh and rested on only a very few occasions during the last two weeks) had a higher sensitivity, specificity as well as reliability like the overall performance of the WHO-5 WBI instrument. These results suggest that the WHO-5 WBI (WHO, 1998) is a useful instrument for identifying elderly subjects with depression in an Indian set up.

Limitation

The results are restricted to an elderly population; the transferability to other age groups needs to be assessed.

Conclusion

The WHO–Five Well-Being Index (1998 version) showed a good internal and external validity and reliability for identifying Depressive Disorders in elderly population in a rural Indian community. WHO-5 WBI could be considered as a useful instrument for screening of depression in elderly subjects in Indian community. Additionally, the study found out that almost one fifth of the elderly in rural India had diagnosable depressive disorders.

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References

Bonsignore, M., Barkow, K., Jessen, F., Heun, R. (2001): Validity of the five-item WHO Well-Being Index (WHO-5) in an elderly population. *European Archives of Psychiatry and Clinical Neurosciences*; 251 Suppl 2: II/27-31.

Kar, N., Khurana, P.S., Sharma, P.S.V.N. (2009): Profile of psychiatric and physical morbidity of elderly patients attending psychiatric department in a general hospital in India: Reflecting service needs. *Indian Journal of Gerontology* 23(4): 399-410.

Nandi, D.N., Ajmany, S., Ganguli, H., Banerjee, G., Boral, G.C., Ghosh, A., et al. (1976): The Incidence of mental disorders in one year in a rural community in West Bengal. *Indian J Psychiatry* 18: 79-87.

Newman, S.C., Bland, R.C., Orn, H.T. (1998): The prevalence of mental disorders in the elderly in Edmonton: a community survey using GMS-AGECAT. *Canadian Journal of Psychiatry* 43: 910–14.

Ramachandran, V., Menon S.M., Arunagiri, S. (1982): Socio-cultural factors in late onset Depression. *Indian J Psychiatry* 24(3),: 268-73.

Satapathy, R., Kar, N., Das, I., Kar, G.C. and Pati, T. (1997): A study of major physical disorders among the elderly depressives. *Indian J Psychiatry* 39(4):278-81.

Wig, N.N. (2001): World Health Day 2001. *Indian J Psychiatry* 43(1): 1-4.

World Health Organization (1998): *Mastering depression in primary care, Version 2.2. Info Package*. Copenhagen, Denmark: World Health Organization, Regional Office for Europe.

World Health Organization (1998a): *Wellbeing measures in Primary Health Care / The DEPCARE project*. Stockholm, Sweden: World Health Organization.

World Health Organization (1992): *ICD-10 Classification of Mental and Behavioural Disorders, Diagnostic Criteria for Research*. Geneva: World Health Organization.

World Health Organization (2001): *World Health Report: Mental Health: New understanding New Hope*. Geneva: The Institute.

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Nutritional Status, Dietary Adequacy and Health Problems of Institutionalized Elderly

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ABSTRACT

The study aims to assess the nutritional status, dietary intake and health problems of institutionalized elderly in Jodhpur. Data used in this study were collected from an old age home with sample of 56 respondents aged 60 or older. The present study reveals that more elderly females (28.0%) were underweight than males (16.1%) where as, majority of the respondents had normal nutritional status. Higher number of females (52.5%) had abdominal adiposity than males (9.5%). The disease profile of institutionalized elderly showed higher prevalence of dental diseases, diabetes, arthritis, hypertension, asthma and gastric disturbances. 90% of the elderly were suffering from depression and negative thoughts. With respect to dietary intake, reduction in consumption of foods like milk, curd, raw vegetables and sweets was observed in some male and female subjects mainly because of health reasons. Energy, protein, iron, calcium, b-carotene and fiber consumption was lower than RDA i.e. between 55-95% in majority of the subjects. The study observes better nutritional status and dietary intake in majority of institutionalized elderly and suggests counseling to safeguard them from age related diseases and psychological problems.

Key words: Institutionalized elderly, Health problems, Nutritional status, Old age home.

Old age is a product of history, individual experiences and social forces. It is not a separate issue from social integration, gender advancement, economic stability or poverty. The elderly comprise a larger proportion of the population today than ever before. The rapid and fast technological progress in medical science control the fertility

and mortality rates considerably, and the average composition exhibits a relatively larger proportion of the elderly person. Increased age normally brings considerable change in the individual needs. With the disintegration of the traditional extended family in India, in the recent years and the increase in average life expectancy, increasing number of elderly need to fend for themselves and might be forced to take refugee in old age homes. Hence, the social and health problems of institutionalised elderly needs to be identified. Institutionalisation has been suggested as one of the few factors that renders elderly people particularly vulnerable to nutritional deficiency. Thus, with the above view an attempt has been made to study the aged residing in old age home. The aspects studied were nutritional status, dietary and health profile.

Material and Methods

The sample consisted of 56 (31 males and 25 females) elderly persons aged 65 to 75 years who were cooperative, mentally receptive and articulate. All these elderly were from a old age home of Jodhpur. The tool for data collection consisted of questionnaire and interview. Both subjects and owner cum care taker of the institution were interviewed. The techniques used in the assessment of nutritional status of elderly included anthropometry and dietary survey. A questionnaire was developed to collect the information regarding socio-demographic profile, life style, dietary modifications, anthropometric measurements, health problems and dietary intake of elderly. The anthropometric measurements included weight, height, mid upper arm circumference, waist and hip circumference. Twenty four hour recall method was used for dietary assessment. The adequacy of dietary intake was determined by comparing the mean daily intake of nutrients of the subjects to the recommended dietary intakes for sedentary male and female (Gopalan *et al.*, 2000).

Results and Discussion

The average age of the subjects studied was 69 years which ranged between 65 and 75 years. The socio-demographic data of the elderly revealed that 90% of institutionalised aged people were single i.e. had lost there partner, rest of 10% were living with their spouse in old age home. All subjects were from low income status and in past were engaged in jobs like small shopkeeper, gardner, vegetable sellers. Only 5 subjects

received pension. At the time of the study all subjects were dependent on the institution. Out of 31 males, 22 were either educated till high school, rest of the males and all females were uneducated. The visits by family and friends were occasional. Only 18% of elderly rated their health condition as 'good' and rest as 'not good'. The individuals who rated themselves in good health condition were not necessarily free from chronic diseases. Therefore, the perceived health condition was more of an attitude towards life and themselves rather than other diseased condition.

Life style factors revealed a marked reduction in addiction and habits like smoking, tobacco chewing and alcohol. 50% of males were found to be ex-smoker and ex-drinker while 14% females were addict to tobacco chewing in the past. Reduction in addictions may be because of various health problems, due to advancing age or lack of availability of such unnecessary and harmful addiction items being in old age home.

Results of activity pattern showed that all of the institutionalized elderly were involved in sedentary activities. Apart from their own personal care and activities like bathing, washing cloths, bed making, walking, all the elderly were engaged in other activities too. Males were involved in reading, chatting, gardening, praying and playing cards while, females spent most of their time in chatting and praying. Due to the availability of time the subjects were more inclined towards spiritual activities which also helped reduce their mental stress.

The gender wise mean anthropometric measurements are presented in Table 1. All anthropometric measurements were found to be higher in males as compared to females, except the hip circumference which was 2.65 cm greater in females than males. Males were 5.68 kg heavier and 5.8 cm taller than females. Mid upper arm circumference (MUAC) of males was also found to be 1.37 cm. higher than their female counterparts. Though the mean body mass index of institutionalised males (24.8 kg/m^2) and females (23.88 kg/m^2) was almost similar and within norms. Best the lower BMI values of 21.4% elderly suggested their nutritional status of being underweight (16.1%) males and 28.0% females). 51.6% of males and 36.0% of females had normal BMI (18.5-24.9), which indicate that these elderly enjoyed normal nutritional status. 32.3% males and 36.0% females were in overweight category. None of the subject was found obese.

Majority of the elderly subjects enjoyed normal, nutritional status (44.7%) while, almost similar number of elderly males and females were found overweight. Of the underweight subjects higher proportion was of females than males Absence of obesity may be because, all the subjects came from lower income group to the old age home, where measured amount of food is being served.

Waist hip ratio of elderly males (0.92) were in within range while in females (0.87), it was above the limit. Only 9.5% males had abdominal adiposity while higher percentage of females (52.5%) were observed centrally obese having excess fat distribution at the abdominal region.

A high incidence of morbidity was reflected in the group with almost 60% of the subjects suffering from chronic diseases like diabetes, arthritis, hypertension and asthma. 17.6% of the females had urinary infections. Gastric disturbances were found to affect 35.5% of men, with constipation as the most common problem while, acidity was found in 38% of females. Almost 70% of the elderly were on dental treatment. Depression and negative thoughts were reported by most of the institutionalised elderly (90%). In the old age home there is an under current of feeling that they are being forsaken by their families and friends and the feeling of unwantedness pervades thereby, leading to depression.

A set meal pattern was provided by the institution. The servings of *chappatis*, vegetables and pulses were not restricted; only milk, curd, fruit, biscuits were served in measured portions. Limited amount of fat is used in cooking due to different health problems faced by elderly.

Table1: Mean Anthropometric Measurements of Institutionalised Elderly

Anthropometric measurements	Male	Female
Body weight (kg)	60.57±10.24	54.89±5.47
Height (cm)	157.0±6.96	151.71±4.46
BMI (kg/m^2)	24.28±3.60	23.88±4.24
MUAC (cm)	25.17±2.18	23.70±3.14
Waist circumference (cm)	84.61±13.35	81.21±10.67
Hip circumference (cm)	90.4±10.13	93.05±15.08
WHR	0.92±0.08	0.87±0.08

Table : 2 Nutritional Status of Institutionalisd Elderly

Nutritional Status	Male (N = 31)	Female (N = 25)	Total (N = 56)
Underweight	5 (16.1)	7 (28)	12 (21.4)
Normal	16 (51.6)	9 (36)	25 (44.7)
Overweight	10 (32.3)	9 (36)	19 (33.9)
	Obesity	-	- -

With respect to dietary intake, a reduction was observed in the consumption of all the nutrients except vitamin C. The mean nutrient intakes were found to be low in males as compared to females except for vitamin C. Consumption of energy was 91.2% and 95% of the RDA in males and females, respectively. Protein consumption was 86.2% of the RDA in males and 95.2% of the RDA in females. Intake of fat was nearly 50% of RDA in males and 55.4% of RDA in females. Iron consumption was ¾ of RDA in male while in females it was 83.5% of RDA. Almost similar intake of calcium and b carotene were observed by the males and females. Vitamin 'C' intake was found to be higher than RDA in males and females while, consumption of fiber was 60% of the RDA in males and 55.2% of the RDA in females.

All food groups of daily diet were provided by the institution. Some self imposed restrictions were made by elderly due to different health problems. Milk and curd were avoided by some elderly men due to asthma while raw vegetables were avoided by males and females due to dental problems. Better nutrient intake of elderly living in old age home was observed which may be due to very regular meal service provided by the institution. Most of the elderly especially female subjects expressed the desire to have more quantity of fruits, milk, sweets etc., the reason may be because all these subjects were from lower income group and now being in the institution they want to make up, of what they have been deprived in the past. A study by Mehta (1999), on institutionalised elderly found low calories, protein, and other nutrient

intake in institutionalized elderly as compared to free living elderly. Height, weight and BMI were also lower in institutionalized elderly. Saletti *et al.*, (2000) reported that 25% of the elderly were malnourished in an old age home while Hewitt *et al.*, (2006) reported 29.3% of the elderly as malnourished and 19.2% being classified as overweight in public old age home.

Table 3 : Mean Nutrient Intake of Institutionalisd Elderly

Nutritional Status	Male (N = 31)	Female (N = 25)
Energy (k cal)	2006±169.2	1614±332
Protein (g)	56±3.5	47±6.24
Fat (g)	24.5±5.67	22.94±3.94
Calcium (mg)	825.5±120.48	774.4±122.5
Iron (mg)	28.6±4.2	25.04±5.8
b-carotene (mg)	3562.09±592.3	3378.81±699.7
Vitamin C (mg)	56.5±7.6	52.5±16.8
Fiber (g)	15.27±3.5	13.8±2.86

The current nutritional condition seems to be satisfactory as they are being taken care of by the institution which provides them a proper and a well balanced diet in required amount. All their personal needs and health care are being met by the institution. Thus, the problem which they face is related, of being away from the family.

Conclusion

Old age home is a new phenomenon for present studied area. These homes meet the needs of those elderly who are unable to live by themselves or who have been abandoned or neglected. The old-age homes cater to the various needs of the elderly so they can live with dignity and respect and not being burden to society. Present observations reveal, better nutritional status and care of the institutionalized elderly. The number of elderly living in a joint family is shifting to the nuclear family in Jodhpur city. Therefore, it is very essential to open Day Care Centres and Old age homes for the vulnerable elderly. The study also emphasizes the importance of managing the ever increasing health and psychological problems of the elderlies under the care of institution.

References

Gopalan C, Ramashastri BV and Bala Subramanium SC (2000). *Nutritive value of Indian Foods*. National Institute of Nutrition, ICMR, Hyderabad.

Hewitt G, Ismail S, Patterson S and Draper A (2006). The nutritional vulnerability of older Guyaneses in residential homes. *West Indian Medical Journal*, 55(5).

Mehta P (1999 Diet, Nutrition and health profile of elderly population of urban Baroda. *Aging, Nutrition and Health,* 54-60.

Saletti A, Lindgren EY, Johanson L and Cederholm M (2000). Nutritional Status According to Mini Nutritional Assessment in an Institutionalized Elderly Population in Sweden. *Gerontology,* 46, 139-145.

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Health Status of the Elderly

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ABSTRACT

Ageing is a natural phenomenon that makes people move from independent adulthood to a stage of dependency. The increase of demographic ageing process in our country has a series of socio-economic problems as well as health problems. Health status is an important factor that decides the quality of life of an individual. Problems of the ageing are mostly due to psychosocial environment, diminishing supports or changes in life situations. Elderly people are more prone to diseases due to lowered food intake, physical activity, and resistance to infection. Nutrition is the most single factor, which effect the health and well being of man. Though Kerala has the highest proportion of elderly with comparatively high life expectancy in India, the quality of life of elderly is very poor. The life of elderly, especially women, is becoming more and more miserable .Therefore it clearly indicates the importance of availability and accessibility of health and social care resources in our country.

Aging is generally defined as a process of deterioration in the functional capacity of an individual that results from structural changes, with advancement of age. High fertility and declining mortality are the major factors responsible for population increases in most countries of the world, especially the developing ones. Longevity has increased significantly in the last few decades mainly due to the socio-economic and health care developments. These factors are responsible for the

higher numerical presence of elderly people leading to higher dependency ratio. Demographers, researchers, and responsible citizens have started to think about the aged population and its problems because of the demographic transition in many countries of the third world now taking place in a much shorter period of time. Aging of the population will be one of the major challenges of the near future.

In India, the attainment of the age 60 has been mostly considered for the purpose of classifying aged persons, where as the USA, UK and other western countries, it is from 65 years. Current projections indicate that from 1980 to 2020 about 75% of the additional numbers in the global elderly will be in developing countries. Geriatric population is rapidly increasing and about 1 million elderly persons are added per month to the world.

The life expectancy at birth is 66 yrs in the world and 60 years in India and 68 years in Kerala. As per United Nations classification, Indian society would progress from a mature society (elderly population between 4-7% of the total population) to an aging society, (elderly population more than 7% of the total population) by the turn of the century.

The total population of Kerala is projected to increase from 27.6 million in 1986 to 45 million in 2026. During the first quarter of the 21st century, the population of Kerala will experience a dramatic aging. Old age dependency in Kerala will be 18.13 in 2011 when compared to 13.77 in 1991.

Advancing age seems to bring meaningless misery mainly because the elderly have been neglected by the modern society. Aging may be viewed as a biological process, psychological and social development process of individuals including transition in social position, roles, status and attitude. This makes it necessary to look into the various aspects of their problems, social, economic, psychological health and other allied aspects.

Older people usually suffer from chronic conditions. Frequent chronic ailments among the elderly are Diabetes Mellitus, Hypertension,

Cardiovascular diseases, Cancer, Arteriosclerosis, Kidney diseases, Parkinson's disease, Arthritis, Dementia etc. Most often elderly may suffer from multiple chronic conditions, visual defects, hearing impairment and deterioration of speech which can cause social isolation. These will be more severe among elderly women as they suffer specific health problems than the usual. Though a large number of studies on various factors influencing the aged especially elderly women during the process of censuses are available in western countries not much data has been generated as applicable to the Indian situation

In this context the present study was conducted in Kerala, where ageing society occurs more rapidly than in other states of India. With the aged population constituting 10% (India 7.8%) and moving towards 20% in another 25 years (India 14%), Kerala is moving fast towards an 'aged society'. The percentage of aged population is hence close to that of the developed countries of the world.

Old age in general is associated with multi dimensional problems. Health status of the elderly is one of the prime areas that need special care and attention. In the present study, an attempt was made to find out the health status of the elderly

800 elderly men and women from both rural and urban area of Thiruvananthapuram, the capital district of Kerala, were selected for the study .Proportionate sampling method was adopted for this purpose. Interview schedule and other appropriate tools were used to collect data.

Major findings

1. Health in General

Analysis of data in terms of age shows that as one gets older, health deteriorates. As age increases, the physical health deteriorates. Hence their self confidence wanes off and the incidence of diseases tends to go up with the advancement in age. Table 1 represents the general health of the samples.

Table 1 : Health in General of the Elderly

Health in general	Male	Female	Total
Excellent	9 (2.25)	7 (1.75)	16 (2.0)
Good	103 (25.75)	57 (14.25)	160 (20.0)
Average	230 (57.5)	237 (59.25)	467 (58.4)
Poor	52 (13)	84 (21)	136 (17.0)
Very poor	6 (1.5)	15 (3.75)	21 (2.6)

From the above table, it was understood that the health of the elderly in general is found to be an average level (58.4 percent), of which 59.25 percent are women and 57.5 percent are men. Women elderly are experiencing poorer health (21 percent) when compared to the male counterparts (13 percent).

This result is in support with the view of Strauss (1992). According to him, as women live longer than men, the most common belief is that they are healthier. In reality, women are more likely to experience poor health. Even though, women live longer, they are more sickly and disabled than men through out their life cycle.

2. Chronic morbidity pattern of the Elderly:

Old age is accompanied with a number of diseases. It varies from person to person depending upon their life style, heredity, eating habits, socio economic standards etc. Table 2 reveals the chronic morbidity pattern of the elderly studied.

Table 2 : Chronic Morbidity Pattern of the Elderly

Diseases	**Male**	**Female**	**Total**
Hypertension	108(27%)	159 (39.75)	267 (33.37)
Diabetes	136(34%)	130 (32.5)	266 (33.25)
Poor vision	81 (20.25)	103 (25.75)	184 (23)
Asthma	41 (10.25)	48 (12)	89 (11.12)
Arthritis	20 (5)	49 (12.25)	69 (8.62)
Rheumatism	16 (4)	50 (12.5)	66 (8.25)
Cardiac problems	34 (8.5)	31 (7.75)	65 (8.12)
Dementia	12 (3)	28(7.0)	40 (5)
Gynecological problems	0	21(5.25)	21 (2.62)
Loss of hearing	9 (2.25)	9(2.25)	18 (2.25)
Hyper cholestremia	9 (2.25)	8 (2)	17 (2.12)
Spondylosis	5 (1.25)	11(2.75)	16 (2.0)
Urinary problems	11 (2.75)	4 (1.0)	15 (1.87)
Cancer	3 (0.75)	3(0.75)	6 (0.75)
Paralysis	1 (0.25)	3(0.75)	4 (0.5)
Accidents	1 (0.25)	2 (0.5)	3 (0.375)
Parkinson's	2 (0.5)	1 (0.25)	3 (0.375)
Alzheimer's	2 (0.5)	0	2 (0.25)
Kidney failure	2 (0.5)	0	2 (0.25)
Hernia	2 (0.5)	0	2 (0.25)
Skin diseases	1 (0.25)	1 (0.25)	2 (0.25)
Tuberculosis	0	1 (0.25)	1 (0.125)

Table 2 reveals that about 33.37 percent of the elderly suffer from hyper tension, which is high among women elderly (39.75 percent) when compared to male elderly (27 percent). It was followed by Diabetes (33.25 percent), Poor vision (23 percent), Asthma (11.12 percent), Arthritis (8.62 percent), Rheumatism (8.25 percent), Cardiac Problems (8.12 percent) etc. It was also found that women elderly are having more chronic morbidities than male elderly. Some of the common old age morbidities like Alzhemeir's, Kidney failure etc were reported "nil" among women elderly.

Birren and Schaie (1997) and Sivaraju (2002) in their study on elderly had reported similar results regarding the chronic diseases among the elderly. According to them poor vision, diabetes mellitus, arthritis, hypertension, rheumatism etc were the most common problems associated with old age. It is not unusual that aged people are susceptible to multiple diseases as evident from the data given above. The common ailments referred to could be attributed generally to the aged in the society also.

2.1 Comparison of illness based on gender

The chronic morbidity of the elderly was also compared based on gender. Table 2.1 represents the comparison of the illness based on gender.

It was found that certain illnesses like hypertension (48.8 percent), rheumatism (15.4 percent), arthritis (15.1 percent), dementia (8.6 percent) etc were found to be high among elderly female than elderly male and is found to be statistically significant at one percent level, where as diabetes is found to be higher among elderly male (47.9 percent). This may be due to the life style adopted by the elderly through out their life.

Table 2.1 : Comparison of Illness based on Gender

Illness	Gender				χ^2	p
	Male (N=284)		Female (N=324)			
	Count	Percent	Count	Percent		
Asthma	41	14.4	48	14.8	0.02	0.895
Cancer	3	1.1	3	0.9	0.03	0.871
Diabetes	136	47.9	130	40.1	3.71	0.054
TB	0	0.0	1	0.3	0.88	0.349
Paralysis	1	0.4	3	0.9	0.76	0.383
Blind	81	28.5	103	31.8	0.77	0.381
Kidney failure	2	0.7	0	0.0	2.29	0.130
Hypertension	108	38.0	158	48.8	7.09**	0.008
Cardiac problems	34	12.0	31	9.6	0.92	0.339
Gynecological problems	1	0.4	20	6.2	15.38**	0.000
Urinary problems	11	3.9	4	1.2	4.38*	0.036
Rheumatism	16	5.6	50	15.4	15.01**	0.000
Arthritis	20	7.0	49	15.1	9.82**	0.002
Loss of hearing	9	3.2	9	2.8	0.08	0.776
Spondyloses	5	1.8	11	3.4	1.58	0.209
Dimentia	12	4.2	28	8.6	4.8*	0.028
Hyper cholesteremia	9	3.2	8	2.5	0.27	0.601
Alzheimer's	1	0.4	0	0.0	1.14	0.285
Parkinson's	3	1.1	1	0.3	1.29	0.255
Hernia	2	0.7	0	0.0	2.29	0.130
Skin disease	1	0.4	1	0.3	0.01	0.926
Accident	1	0.4	2	0.6	0.22	0.642
Others	11	3.9	11	3.4	0.1	0.753

2.2 Comparison of illness based on Age

A comparison was made on the chronic morbidity pattern of the elderly based on their age. The elderly samples were categorized into three according to their age such as 60-69 years,70-79 years and above 80 years.Table 2.2 reveals the findings of the same.

Table 2.2 : Comparison of Illness based on Ager

Illness	Age						χ^2	p
	60-69 (N=333)		70-79 (N=204)		80+ (N=71)			
	Count	%	Count	%	Count	%		
Asthma	39	11.7	37	18.1	13	18.3	5.05	0.080
Cancer	5	1.5	0	0.0	1	1.4	3.07	0.216
Diabetes	154	46.2	88	43.1	24	33.8	3.73	0.155
TB	0	0.0	1	0.5	0	0.0	1.98	0.371
Paralysis	0	0.0	3	1.5	1	1.4	4.88	0.087
Blind	77	23.1	80	39.2	27	38.0	17.82**	0.000
Kidney failure	0	0.0	2	1.0	0	0.0	3.97	0.137
Hypertension	147	44.1	93	45.6	26	36.6	1.77	0.413
Cardiac problems	27	8.1	34	16.7	4	5.6	11.86**	0.003
Gynecological - problems	9	2.7	10	4.9	2	2.8	1.93	0.380
Urinary problems	8	2.4	5	2.5	2	2.8	0.04	0.979
Rheumatism	35	10.5	22	10.8	9	12.7	0.29	0.867
Arthritis	32	9.6	25	12.3	12	16.9	3.34	0.188
Loss of hearing	2	0.6	8	3.9	8	11.3	24.17**	0.000
Spondyloses	5	1.5	10	4.9	1	1.4	6.18*	0.046
Dimentia	9	2.7	21	10.3	10	14.1	19.23**	0.000
Hyper-cholesteremia	11	3.3	4	2.0	2	2.8	0.84	0.657
Alzheimer's	0	0.0	1	0.5	0	0.0	1.98	0.371
Parkinson's	1	0.3	3	1.5	0	0.0	3.18	0.204
Hernia	1	0.3	1	0.5	0	0.0	0.4	0.817
Skin disease	2	0.6	0	0.0	0	0.0	1.66	0.437
Accident	2	0.6	0	0.0	1	1.4	2.3	0.317
Others	14	4.2	7	3.4	1	1.4	1.34	0.511

From the above table it was found that certain illnesses like poor vision(chi square value = 17.82), cardiac problems (11.86) etc were found to be high among the age group 70-79 years of age, where as incidents like loss of hearing (24.17) and dementia (19.23)were high among the age group above 80 years of age. Thus it can be concluded that as age increases the ability to hear, see and remember things decreases. The functioning of the heart also tends to lower when one gets aged. These results were found to be statistically significant at one percent level.

3. Physical health of the Elderly

The physical health refers to the status of the sense organs of the elderly. The capability of the sense organs such as hearing, seeing, smelling and taste were rated using a three point scale- normal, moderate and very poor. The result of the same is presented on Table 3.

Table 3 : Physical Health of the Elderly

Senses	Normal			Moderate			Very Poor		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Hearing	334	313	647	49	74	123	17	13	30
	(83.5)	(78.3)	(80.9)	(12.3)	(18.5)	(15.4)	(4.3)	(13.3)	(3.8)
Vision	271	219	490	120	155	275	9	26	35
	(67.8)	(54.8)	(61.3)	(30)	(38.8)	(34.4)	(2.3)	(6.5)	(4.4)
Smell	363	341	704	35	52	87	2	7	9
	(90.8)	(85.3)	(88)	(8.8)	(13.0)	(10.9)	(0.5)	(1.8)	(1.1)
Taste	367	342	709	31	52	83	2	6	8
	(91.8)	(85.5)	(88.6)	(7.8)	(13)	(10.4)	(0.5)	(1.5)	(1)

It was evident from the table that the capability of the sense organs of the elderly were found to be normal for both the male and female samples. Moderate problem is with the visual ability, where only 54.8 percent of the female elderly were having normal vision, when compared to the male elderly (67.8 percent).

4. Mobility pattern of the Elderly

The ability to move in and around is very important as far as old

age is considered. Age related disorders or weaknesses results in poor mobility among the samples, which can even affect their mental health status there by ensuring a poor quality of life. The extend of mobility of the elderly was assessed using 18 statements and the response were marked on a four point scale which includes points like - without difficulty, with some effort, with others help and not able to do and is scored as 4, 3,2 and 1 respectively. The sum of the scores for all the statements represents the score for mobility of an individual. Thus the maximum score obtained by an individual is 72 and the minimum score is 18. The scores were then categorized in to Low, Medium and High. Those who obtain a score below 28 will fall under low mobility category, those between 29 and 57 will fall under medium mobility and those who scores above 58 have high mobility pattern and is detailed in Table 4.

Table 4 : Mobility Pattern of the Elderly

Mobility	Total	Gender				χ^2	p
		Male		Female			
		Count	Percent	Count	Percent		
Low	72 (9.0)	26	6.5	46	11.5	49.11**	0.000
Medium	333 (41.6)	127	31.75	206	51.5		
High	395 (49.4)	247	61.75	148	37		

It was found that majority of forty nine percent of the elderly have high mobility pattern, especially among male elderly (61.75 percent) when compared to their female counterparts (37 percent). Medium level of mobility was reported among female elderly (51.5 percent). The results were found to be statistically significant at one percent level.

4.1 Comparison on the mobility pattern of the elderly based on age

An attempt was also made to compare the mobility pattern of the elderly based on age and is depicted on table 4.1.

Table 4.1 : Comparison on the Mobility Pattern of the Elderly Based on Age

Mobility	Age						χ^2	p
	60-69		70-79		80+			
	Count	%t	Count	%	Count	%		
Low	12	2.6	32	12.9	28	34.1		
Medium	174	37.1	125	50.2	34	41.5	119.62**	0.000
High	283	60.3	92	36.9	20	24.4		

From the above table it was found that as age increases, the ability to move in and around decreases. High level of mobility is reported among the age group 60-69 years of age (60.3 percent) than the other age groups and is found to be statistically significant at one percent level (χ^2 = 119.62). This may be due to the fact that as age increases physical deterioration takes place, which reflects in the locomotor ability of a person (Dave and Mehta, 2008).

5. Health care of the Elderly

Care during old age is an important factor in determining the health status as well as the quality of life of the elderly. The data regarding the person who cares the elderly during illness is elucidated on Table 5.

Table 5 : Care During Illness

Person who cares	Total count
Spouse	426 (53.3)
Children	448 (56.0)
Servant	4 (0.5)
Relatives	23 (2.9)
Home nurse	1 (0.1)
No one	10 (1.3)

About fifty six percent of the elderly gets care from their children during illness, were as fifty three percent gets care from their spouse.

6. Preferred System of Treatment of the Elderly

Table 6 reveals the preferred system of treatment of the elderly. The three systems of medicines- allopathy, ayurveda and homeopathy were given as options for the elderly.

Table 6 : Preferred System of Treatment*

Type of treatment	Government	Private	Both	Total
Allopathy	269 (33.6)	416 (52.0)	48 (6.0)	733 (91.62)
Ayurveda	35 (4.4)	62 (7.8)	4 (5.0)	100 (12.5)
Homeopathy	6 (.8)	8 (1.0)	1 (.1)	15 (1.88)

* Multiple responses

Majority of the respondents prefer allopathy system of medicine (91.62 percent), which was followed by Ayurveda (12.5 percent). According to Nair (1998), adoption of allopathy system of treatment is a general trend in the society. Allopathic medicines are well known for their speedy recovery when compared to the other two groups. That is why the preference of allopathy is higher among the disabled elderly of Kerala.

It was also noted that majority of the respondents prefer private practitioners (52 percent), than Government doctors or hospitals (33.6 percent). When enquired informally about the reason for such a trend, it was found that the nearness of the hospitals and the quick reference and service extended by the private hospitals is the main reason for such a choice.

7. Periodical health check ups of the Elderly

Medical advances have brought about awareness among the society, regarding the need and significance of health care, especially among the elderly. An attempt has been made to find out the frequency of attending health checkups made by the elderly and is presented on Table 7.

Table 7 : Periodical Health Check up of the Elderly

Periodical health Checkups	Total count
Once in a month	195 (24.4)
Weekly	9 (1.1)
Whenever necessary	562 (70.3)
Not at all	34 (4.3)

It was found that about seventy percent of the elderly consult a doctor when ever they feel necessary. About twenty four percent of the elderly go for periodical health check ups once in a month, even though they don't have any specific ailments, or discomforts or illness. This clearly shows the interest of the elderly towards their health. Only four percent reported that they never go for a health check up. This may be either due to lack of finance or lack of care taker to take them to a doctor, or even may be due to lack of faith in doctors.

8. Use of intoxicants by the Elderly

Usage of intoxicants occurs when some one wishes to overcome their poor mental state of mind. This can take place at any stage of life. The State of Kerala since 1956 has always given much importance for health. Kerala is known for its highly developed health care system. The State is able to maintain a well developed health care system due to the high level of literacy among the population. Usage of intoxicants among the population was found to be comaparatively less in the State, when compared to other States in India (Nayar, 2003). Hence an attempt has been made to find out the percentage of usage of intoxicants among the elderly and is given on Table 8.

Table 8 : Use of Intoxicants by the Elderly

Use of intoxicants	**Total count**
Yes	148 (18.5)
No	652 (81.5)
Type of intoxicants	
Smoking	64 (8.0)
Tobacco	59 (7.4)
Chewing of heal leaves	40 (5.0)
Drugs	3 (0.4)
Alcohol consumption	0
Reasons for starting the habit	
To overcome anxiety	0
To keep body warm	6 (4.05)
Just as a time pass	46 (31.08)

For proper bowel movement	10 (6.75)
To reduce tension	7 (4.72)
For relaxation and enjoying company	10 (6.75)
Not aware of the reason	69 (46.7)

Results from the above table shows that only a minority of 18.5 percent of the elderly is using any sort of intoxicants. It includes smoking (8 percent), usage of tobacco (7.4 percent), chewing of heal leaves (5.0 percent), drug usage (0.4 percent) etc. It was interesting to find that there is no alcohol consumption among the elderly. The reasons cited for starting such a habit vary among the individuals. A majority of 46.7 percent of the elderly were not aware of the reason. About 31.08 percent of the elderly continues this habit just for a time pass. About 6.75 percent of the elderly cited that the reason for having such a habit is for the proper bowel movement and also for relaxation and enjoying the company of the friends. Another 4.72 percent of the samples said that, it helps them to reduce tension and to keep the body warm (4.05 percent).

9. Meal pattern of the Elderly

The meal pattern of the samples is computed on Table 9. It includes the frequency of the meal by the elderly and the type of food consumed.

Table 9 : Meal Pattern of the Elderly

Meal pattern	Total count
Only once	10 (1.3)
Twice	62 (7.8)
Thrice	698 (87.3)
Four times	28 (3.5)
Five or more	2 (0.3)
Type of food consumed	
Pure Vegetarian	81 (10.1)
Vegetarian, but occasionally non vegetarian	100 (12.5)
Non vegetarian	233 (29.1)
Non vegetarian, but usually vegetarian	386 (48.3)

A majority of 87.3 percent of the elderly follow the usual three time meal pattern in a day. About 7.8 percent takes only two meals a

day, and may be due to poor appetite. Four times a day meal pattern is followed by 3.5 percent and 0.3 percent takes food for five and more times in a day.

This result is in line with the study conducted on 'Kerala's elderly health' by Rajan (2001). According to the study, Kerala elderly eat three meals a day, which is the main reason for keeping them healthy (www.bio-medicine.org)

10. General food consumption pattern of the Elderly

Food habits of the elderly includes their appetite, level of satisfaction in eating, preference in food, type of preference, company while eating etc and is indicated on Table 10.

Table 10 : General Food Consumption Pattern of the Elderly

Food pattern	Male	Female	Total count
Appetite			
Very good	122 (30.5)	107 (26.8)	229 (28.6)
Good	227 (56.8)	223 (53.8)	450 (56.3)
Fair	44 (11.0)	61 (15.3)	105 (13.1)
Poor	7 (1.8)	9 (2.3)	16 (2.0)
Level of satisfaction			
Fully satisfied	340 (85)	306 (76.5)	646 (80.8)
Very much satisfied	47 (11.8)	70 (17.5)	117 (14.6)
Just satisfied	4 (1.0)	9 (2.3)	13 (1.6)
Not so much satisfied	6(1.5)	7 (1.8)	13 (1.6)
Not at all satisfied	3 (0.8)	8 (2.0)	11 (1.4)
Preference in food			
Yes	38 (9.5)	35 (8.8)	73 (9.1)
No	362 (90.5)	365 (91.3)	727 (90.9)
Type of preference			
Sweets	13 (3.3)	9 (2.3)	22 (2.8)
Only vegetarian foods	7 (1.8)	6 (1.5)	13 (1.6)
Spicy foods	5 (1.3)	4 (1.0)	9 (1.1)
Less oil and salt	1 (0.3)	1 (0.3)	2 (0.3)
Fish	12 (3.0)	15 (3.8)	27 (3.4)
Company while eating			
Eat alone	65(16.3)	102 (25.5)	167 (20.9)
With spouse	163 (40.8)	74 (18.5)	237 (29.6)
Alone, but some one will serve	30 (7.5)	37 (9.3)	67 (8.4)
With family	141 (35.3)	185 (46.3)	326 (40.8)
Any others	1 (0.3)	2 (0.5)	3 (0.4)

Physical aging has an impact on the appetite of the elderly, where either it is reduced or menu of meals and other eatables change (Saxena, 2006). Regarding the appetite of the elderly, about 56.3 percent have good appetite towards food. It was found that about eighty five percent of the elderly men were fully satisfied with their meals, where as it was 76.5 percent among elderly female. About 1.4 percent of the elderly were not at all satisfied about their meal. This may be due to poor appetite, or due to any particular likes or dislikes in their food choices.

About 9.1 percent of the elderly had some type of preference in their eating pattern. The choice of preference includes fish (3.4 percent), sweets (2.8 percent) etc. About 1.6 percent of the samples prefer to have pure vegetarian foods in their diet; where as 1.1 percent preferred to have spicy foods in their diet.

Nair (2001) stated that Kerala, a fish eating dtate does not differentiate much in between men and women as far as the food intake is concerned. A good number of the elderly population prefers to have fish compulsorily in their diet. This is the main reason that the health of the elderly is considerably better in the State.

Elderly people always enjoy the company of some one in their life. This is not exempted while eating is considered as well. It was found that a majority of 40.8 percent of the elderly had the company of their family while eating. About 29.6 percent of them had the company of their spouse while eating, where as 20.9 percent eat alone. Another 8.4 percent of the samples used to eat alone, but there was some one to serve them.

Conclusion

The increase of demographic ageing process in our country has a series of socio -economic problems as well as health problems. Female and those between the age of 70 to 79 were found to be weaker than

male and young–old. Mobility decreases when age increases Not much difference in food consumption pattern between male and female elderly were noted..

The increased life expectancy of elderly women in rural area does not mean that their life is free from morbidity or disability and it is not a healthy life expectancy. Problems of the ageing women are mostly not due to age, largely due to psychosocial environment, diminishing supports and changes in life situations. Psychological stress releasing strategies and social security needs of the elderly should be practiced nation wide. As women out number men, welfare interventions need to be planned and implemented for woman specifically to address their needs. Elderly-friendly society should be developed, especially those who belong to low socio economic category and rural elderly. A national security programme should be designed in such way that elderly people who are disabled, frail and destitute become eligible for governmental support.

References

Birren, J.T. and Schaie, W.l (1997). *"Hand Book of the Psychology of Ageing"*, Newyork; Vannostrand Reinhold Co., pp.164-178.

Dave, P. and Mehta, P. (2008). *"Mental Health and Ageing Women - Important Correlation*, New Delhi, Kalpaz Publications, p. 31.

Nair,V. Lakshmi. (1998). *"Aging Population and Health"*, *Kerala Sociologist*, Vol.26, No.2, pp. 87-91.

Nair, V. Lakshmi (2001). *"Nutritional and Health Status of Elderly Women in Kerala"*, Ph.D Thesis, Dept. of Sociology, University of Kerala, Trivandrum.

Nayar, P.K.B.(2003) "The Aging Scenario in Kerala; Holistic Perspective", *Research and Development Journal*,vol.6,No.2.

Rajan, I.(2001) "Social assistance for poor elderly: how effective?", Economic and Political Weekly, Mumbai; Sameeksha trust publications, Vol.36, No.8, Pp 613- 617 (February 2001).

Saxena, D,P (2006) "Sociology of Ageing", New Delhi; Concept Publishing Company, P 1-19, 40, 102.

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Psychosocial and Clinical Profile of Patients Diagnosed With Dementia in a Tertiary Care Centre

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ABSTRACT

Developing countries are undergoing a demographic transition that more and more persons are surviving to an old age thereby increasing the risk of dementia. Studies of their prevalence rates and determinants are of medical and social importance in planning adequate services as also resource allocation. Thus this study was designed to generate epidemiological and clinical data on dementia, in a teaching hospital of Manipal University in a tertiary care facility in India. This study intends to look into the psychosocial and clinical characteristics of patients diagnosed as Dementia and would compare the Alzheimer's from non Alzheimer's disease on various characteristics. Ninety three cases seen over a 4-year period formed the data of this study. Seventy one cases with complete data were analyzed. Assessments were done by the psychiatric residents in a semi structured interview to generate an ICD X diagnosis and there was consensus about the diagnosis between two independent senior consultants.

Of the total sample 51(71.8%) were males and 20(28.2%) females. Thirteen (18.2%) males had Alzheimer's and 5 (7.0%) among females. Thirty eight males (53.5%) and fifteen females (21.3) had a dementia of non Alzheimer's type. The mean age of those with Alzheimer's was 71.6(S.D. 6.3) and non Alzheimer's was 64.3 (±S.D.8.6).There was statistically significant difference between the gender and Alzheimer's vs. non Alzheimer's disease at 0.001. Analysis of the other

Sociodemographic and clinical variables such as physical and psychiatric morbidity, substances use, illness onset, course, and family history showed that both the groups varied across several variables such as residence ,socioeconomic status, presence of stressors, substance use physical and psychiatric morbidity, past h/o psychiatric illness and family history of psychiatric illness. The implications are discussed.

Keywords : Dementia; Alzheimer's disease; physical and psychiatric comorbidity; delirium; depression; hypertension; diabetes mellitus.

The ageing of the population has presented new challenges for meeting the rapidly increasing needs of the elderly and has become a global issue. Population ageing is also rising steadily in our country. The proportion of the elderly population has been growing and is predicted to grow further in the coming years. The dementias of late life now constitute a major public health challenge to our society. It is a clinical state in which acquired cognitive decline impairs occupational and social life.

Dementia is one of the commonest and most disabling late-life mental disorders. Its prevalence and incidence have been assessed in developed countries, and show little geographical variation between countries and regions. While more than two-thirds (66 percent) of all people with dementia live in developing countries, little research has been carried out in those settings (Prince 2000). Dementia can be considered as a global Impairment of Intelligence, Memory and Personality, in clear consciousness. It can occur at any age but becomes more frequent with age, with a prevalence of 5%-10% in the over 65s and 20% in the over 80s (Saunders 1993). It is seen more frequently in women, due to their increased longevity.

Less than one-tenth of all population-based research into dementia is directed towards the two-thirds or more of cases living in developing parts of the world. The 10/66 Dementia Research Group has been formed to redress this imbalance, encouraging active research collaboration between centres in different developing countries and between developed and developing countries.

More research is needed to allow developing countries to estimate the current extent, type and cost of medical and social service provision, and to make confident predictions of future need. Research in different cultures with different levels of economic and industrial development will also increase the variance of environmental exposure, facilitating the identification of environmental risk factors and gene–environment interactions for dementia. Research methodologies need to be adapted to the different circumstances of developing countries, with implications for sampling, cognitive screening and definitive dementia diagnosis.

Another challenge is the lack of awareness and understanding about dementia in developing countries, both in the general population and among healthcare professionals. For example, in India dementia is often perceived as a mere "brain weakness" connected to aging and is infrequently diagnosed by primary healthcare centers. There is a paucity of epidemiological data about dementia in our country where it is ignored and dismissed as a sign of senility.

This study intends to look into the psychosocial and clinical characteristics of patients diagnosed as Dementia in a tertiary care facility and would compare the Alzheimer's from non Alzheimer's disease on various characteristics.

Materials & Methods

All the cases seen in a tertiary care centre of a teaching hospital of Manipal University diagnosed as Dementia according to ICD-10 formed the sample of this study. Ninety three cases were reviewed of which 71, complete in all ways were analyzed. As part of the post graduate training in psychiatry, detailed assessments are carried out by psychiatric residents in a semi structured interview to generate an ICD-10 diagnosis. There is a predefined proforma for this which is routinely used. The intake by the residents is then discussed with usually senior consultants as well as other colleagues of a multidisciplinary team. Prior to the start of the interview the informant was questioned about whether they felt the patient had memory difficulties and if so whether they had a medical evaluation for their memory problems. All the cases had history of dementia as reported by reliable informants. A psychiatrist to confirm the diagnosis of dementia according to ICD-10 criteria reinterviewed

these individuals and there was consensus about the diagnosis between two independent senior consultants.

The inclusion criteria were patients with a primary diagnosis of Dementia and also those with other comorbid psychiatric and physical disorders. Cases with incomplete data were excluded. Details related to sociodemographic and illness related data were taken.

The SPSS statistical package (Windows version 11.0) used for data analysis. Descriptive statistics were used to determine categorical variables and chi square/Fisher's Exact Test was carried to find the statistical significance across genders on sociodemographic and some clinical variables.

Results

Ninety three patients with dementia had been seen in this centre. Around seventy one who had complete sociodemographic and clinical details formed the sample for analysis. The results would attempt to compare the Alzheimer's from non Alzheimer's disease on various characteristics. All the sub types of other dementia (other than Alzheimer's) were clubbed as "Non Alzheimer's" due to small numbers for analysis.

The sample comprised of 51(71.8 %) males and 20(28.2 %) females. Of this 51 males 13(25.5%) had Alzheimer's and 38 (74.5%) had non Alzheimer's dementia. Of the twenty females 5(25.0%) had Alzheimer's and 15(75.0 %) had non Alzheimer's dementia. Majority were in the non Alzheimer's type 53(74.6%) and the rest were in the Alzheimer's category. There was a statistically significant difference between males and females in the Alzheimer's category (p-<.001 level) [Table 1]

Table 1 Distribution of Gender & subtype of dementia Around here

Gender	Alzheimer	Non Alzheimer	Total	X^2
Male	13	38	51	000
Female	5	15	20	df-1
Total	18	53	71	1.000

*<0.001

The mean age of the males in the sample was 66.7(±S.D.7.9) with a range 50-85 years. The mean age of females being 64.7(S.D. ± 10.3) with a range of 45-86 years. The mean ages of the males in the sample were slightly more than the females.

In the sample those with an Alzheimer's disease were older i.e., 71.5 (±S.D.6.3) in comparison with the Nonalzheimer's who were 64.3 (±S.D.8.6).

Table 2 : Age-Gender Distribution of Alzheimer & Non-Alzheimer Dementia

Age (Yrs.)	No. of men		No. of women		Total	
	Alzheimer	Non Alzheimer	Alzheimer	Non Alzheimer	Alzheimer	Non Alzheimer
45-54	0	3	0	4	0	7
55-59	0	8	0	3	3	8
60-64	2	3	1	1	3	4
65-69	1	13	1	3	2	16
70-74	4	7	1	3	5	10
75-79	4	4	2	0	6	4
80-84	1	0	0	0	1	0
85-89	0	0	0	1	1	1
Total	**13**	**38**	**5**	**15**	**21**	**50**

As is evident from Table 2 majority of the Alzheimer's were above 70 years and those with a non Alzheimer subtype were below 70 years of age

Table 3 : Distribution of characteristics of the sample

Variable	Alzheimer's (18)	Non Alzheimer's (53)	X^2
Religion			
Hindus	13	39	.458
Christians	3	7	df 3
Muslims	2	6	.928
Others	0	1	
Marital status			
Married	14	40	.702
Single	1	5	df 3
Other	3	8	.873

Family type			
Nuclear	6	21	.252
Extended	10	26	df 3
Living alone	1	3	.969
Missing	1	3	
Education			
No formal education	3	9	.279
Primary	7	29	df-18
Secondary	3	9	
PUC	3	3	
Graduate	1	1	
Postgraduate	-	1	
Missing	1	1	
Residence			
Rural	10	29	1.000
Urban	3	6	df-3
Semi urban	4	13	.000*
Missing	1	5	
Socioeconomic status			
Upper	4	11	1.000
Middle	7	32	.000*
Lower	4	4	*<0.001
Missing	3	6	

Table 3 depicts the sociodemographic distribution in the two groups. Majority in both the groups were Hindus followed by other religions showing just the general population distribution pattern. There were many married in both the groups and in the non-Alzheimer's group there were about 15.1% widow/widowers. In both the groups about 50% were hailing from the extended families showing that the elderly had some one with them always whether or not the care extended was satisfying, reflecting that in India despite women attaining higher education and entering the labour force, nuclear families may not be in vogue especially in remote and rural regions. However, on chi square analysis there was statistically no differences across the two groups on religion, marital status and the type of family. Majority in the in Non

Alzheimer's group hailed from rural and middle class backgrounds and were statistically significant differences across the two groups on these variables. It was also noted that in the second group majority had on an average 9 years of schooling and about nine (16.9 %) had no formal education, graduates and postgraduates in the both the groups were negligible.

In majority of the families the patient himself (usually in males) was the head of the family-20(%); 8(%) spouses(wife or husband depending on who was the index patient); sons in 7(%);fathers in 5(%); siblings and others in the rest.

Table 4: Distribution of Illness related variables across the groups

Variable	Alzheimer's	Non Alzheimer's	X^2
Onset			
Early	4	-	3.07
Late	13	2	df-1
NA	1	-	.080*
			Fisher's Exact Test
Presence of Physical Illness			
Present	7	14	.726
Absent	8	38	df-1
NA	1	1	.394
Stressor			
Present	3	24	10.86
Absent	13	15	df-2
Not available	2	14	.004*
Family H/O Psychiatric Illness			
Present	8	23	2.45
Absent	8	26	df-2
Not available	2	4	.293
Past Psychiatric Illness			
Present	1	5	7.93
Absent	17	32	df 2
NA	-	16	.019*

*<.001

Table 4 shows the distribution of Illness related variables of the sample. Thirteen of the 18 in the Alzheimer's group i.e. 72.2 % had a late onset and 4(22.2%) had a presenile onset. The Fisher's Exact Test was statistically significant (p<.001 level).

In the non Alzheimer's group there was seven (13.3%) with vascular dementia; Multiinfract-3(5.7 %);dementia in other diseases-14(26.4 %);dementia in Picks-2(3.7 %); in Parkinson's-6(11.3 %); Unspecified-21(39.6 %).In this group there were additional specificers 2 were with predominantly delusional symptoms; two with depressive symptoms and three with mixed symptoms.

There was a significant proportion in the non Alzheimer's group with the presence of a stressor in comparison to the Alzheimer's group and this was statistically significant at P-<.001 level. There were six (33.3%) with a positive family h/o of psychiatric illness in the Alzheimer's group as against 23 (43.4 %) in the non-Alzheimer's group. In the non Alzheimer's group 7(13.2%) with a past history of psychiatric illness as against one (5.5%) in the Alzheimer's group.

Table 5 : Distribution of the Physical Illness across the groups

Diagnosis	Alzheimer's 18	Non Alzheimer's 53
DM	1	6
HTN	1	-
DM+HTN	3	9
HTN+CVA	-	2
Anemia	-	2
Huntington's disease	-	1
Parkinson's disease	-	1
IHD+HTN	-	1
HTN+MI	-	1
Brain injury	-	1
Hemi paresis + CVA	1	1
HTN+DM+IHD	1	1
Convulsions	-	2
Absent	11	36

Many had more than one disorder

DM-Diabetes Mellitus; HTN-Hypertension; CVA-Cerebrovascular Accident; IHD-Ischemic Heart Disease; MI-Myocardial Infraction

There was physical comorbidity in both the groups however was not statistically significant. Table 5 depicts the details of the diagnostic break-up in the two groups. There was 38.9% in the Alzheimer's group with physical comorbitity whereas in the other group there was about 32.1% with various physical illnesses. There were many with more than one illness and were mostly in the cardiovascular system in the non Alzheimer's group.

Table 6: Distribution of the Psychiatric Diagnostic Breakup across the groups

Diagnosis	Alzheimer's 18	Non Alzheimer's 53	X^2
Alcohol Dependence Syndrome	0	4	
Alcohol Harmful use	1	0	1.000
Nicotine Dependence Syndrome	0	2	df-5
Moderate Depressive Disorder	0	4	.000*
Anxiety Disorder	0	1	
Delirium superimposed on dementia	0	3	
Organic disorders	0	3	

*<.001

Table 6 shows the psychiatric morbidity in the two groups. As is evident from the distribution there was a predominance of psychiatric disorders in the non Alzheimer's category which was statistical significant p<.001. Substance use disorders both alcohol and nicotine dependence was present in six (11.3%) of the cases. Depressive disorder (Moderate Depression & Recurrent Depressive Disorder) in 4(7.5%); Delirium and organic disorders in 3 each i.e., 5.7%. Among those with a Depressive disorder three were males.

Table 7 Distribution of Nature of illness in family across three generations

Type of disorder	First Degree		Second Degree		Third Degree	
	ALZ	NALZ	ALZ	NALZ	ALZ	NALZ
	(18)	(53)**	(18)	(53)	(18)	(53)
Schizophrenia/psychosis	1	2	-	1	-	-
Completed suicide	1	3	-	-	-	3
Alcohol Dependence syndrome	-	6	-	-	-	2
Mental subnormality	-	1	-	-	-	-
Dysthymia /depressive disorder	-	4	-	-	-	-
Delirium	-	1	-	-	-	-
Dementia	-	2	-	-	3	-
Not known	1	1	-	-	-	-
Total	3	20	-	1	3	5

*Alzheimer ** non Alzheimer

Among the first degree relatives in the nonAlzheimer's group there was schizophrenia in two (3.7%); completed suicides in three (5.6); Alcohol dependence syndrome in six (11.3%); depressive disorder in four (7.5 %); two (3.7%) had dementia. Some of them had more the one illness. In the first degree relatives of the Alzheimer's family history was less common. In both the groups among second degree relatives it was almost virtually absent. It is also interesting to note that in the Alzheimer's group there was three (16. 7%) with a history suggestive of dementia in the third degree relatives.

Discussion

This study aimed to evaluate the psychosocial and clinical characteristics of patients diagnosed as Dementia in a tertiary care facility of a teaching hospital. The current study pointed that a significant proportion i.e. about 71.8% were males, 74.6% were diagnosed with other than Alzheimer's dementia. Those with Alzheimer's disorder were above 70 years and majority with non Alzheimer's disorders were in their late sixties. In majority of cases it was reported that either the 'patient himself' or their fathers usually among the males continued to be the heads of the family despite their illness status and disability as

we are strongly inclined to the male-dominated societies as most of the families in India is based on patrilineal descent (Sachdeva, 2000). Further, it was observed that most of them were from middle class and with rural backgrounds.

In this study in the non Alzheimer's group there were physical as well as psychiatric co morbidities, diabetes and hypertension being more common and depressive disorders or substance use disorders among the psychiatric disorders. Certain medical comorbidities may increase the risk of dementia, although genetics are also important in its etiology. The assessment and treatment of psychiatric symptoms in persons with cognitive dysfunction are becoming increasingly important. Up to 90% of patients with dementia have psychiatric comorbidities (Plassman *et al.*, 2007; Lyketsos & Olin, 2002)

Depression affects 20% to 32% of persons with dementia: the prevalence is higher in patients with vascular dementia than in patients with Alzheimer disease (AD) (Lyketsos *et al.*, 2000). Assessing depression in dementia patients poses several challenges. Depressive symptoms can be the initial manifestations of dementia and may fluctuate over time (Lyketsos & Olin, 2002; Rabins *et al.*, 2007).

Psychiatric comorbidities in dementia also include delirium, which is treated primarily by addressing underlying medical disorders Vascular factors, such as hypertension and type 2 diabetes, are likely to increase the burden of dementia. Most patients with dementia, because of their age, suffer from concurrent medical conditions in various body systems (Finkel *et al.*, 1996; Steinberg, 2004). Dementia, therefore, can have a substantial impact on morbidity and quality of life (Lyketsos *et al.*, 1999). Although physical and psychiatric comorbidities are known to exist in younger patients (Kisely and Goldberg, 1996) the association between these two variables in older patients with dementia is not well understood or documented. Greater clarity regarding this association would have bearing on both diagnosis and intervention.

Furthermore, the recognition of comorbid neuropsychiatric and medical conditions in patients with dementia will likely assist the physician in diagnosis and treatment, which, in turn, can improve the quality of life for patients and their caregivers. For example, an elderly patient with dementia and a urinary tract infection may lack the ability to meaningfully

express his or her physical discomfort and instead become agitated or irritable. Thus, recognizing the association between agitation and potential urinary infection would alert treating doctor of the possible urinary tract infection, thereby facilitating medical treatment and reducing patient discomfort.

It is also known that 15 to 25 percent of dementia cases are tied to alcohol abuse. (Smith & Atkinson 1995)) Alcohol related dementia tends to show up at a younger average age than Alzheimer disease (about 10 years younger). (Thomas & Rockwood 2001; Carlen *et al.* 1994). In this study a small number had Alcohol use amounting to dependence in the non Alzheimer's group. Clinicians need to be alert to the possibility that alcohol may be an etiological factor in their elderly patients presenting with dementia.

Whereas the effect of treatment for memory disturbances is modest, current treatment for comorbid psychiatric symptomatology such as depressive and psychotic disorders is moderately effective and can lead to improved functioning and decreased agitation (Kunik *et al.,* 1998, 1999) and perhaps reduced medical expenditures.

Worldwide, family caregivers are the cornerstone of support for people with dementia. They experience significant psychological, practical and economic strain. (Dias *et al.,* 2004). Dementia care is particularly time-intensive because of the need for close supervision. Many caregivers need to give up or take up part time work to care.

Dementia has a very low profile in most developing countries. Families often view it as a normal part of aging, and few seek help despite experiencing significant strain (Patel and Prince, 2001).Thus visibly it is accorded a low priority by policymakers in the developing countries and there is little sign of attention being given to the development of more responsive health care or social welfare services. Population-based research, well disseminated, can play a crucial role in increasing awareness at all levels of society.

Due to the great shortage of health care resources and the low levels of awareness about dementia, limited professionals available, interventions addressing the needs of the people should be home based and directed at improving quality of life of the person with dementia and their caregivers. In view of the lack of specialists to deal with dementia,

a group in Goa developed an alternate model of care which involved training lay health workers to provide home-based care for people with dementia under the supervision of a psychiatrist. This was successfully implemented and evaluated in a randomized controlled trial which showed clear benefits (Dias & Patel, 2009).

Illiteracy remains yet another risk factor for dementia. Recognition of memory problems by family members, often fail to seek medical attention. Education of the lay public on the early signs and symptoms of dementia must be a key first step in improving recognition of dementia in the community. Achieving progress with dementia care depends on creating the climate for change. Lack of awareness, which is widespread among policy-makers, clinicians and the general public, is a key public health problem with important consequences. National Alzheimer's associations (e.g. the Alzheimer's Society India) help to raise awareness and create a framework for positive engagement between clinicians, researchers, caregivers and people with dementia.

Despite a few limitations being a retrospective review, this study adds to the growing literature of the epidemiology of dementia in developing countries and would be helpful for healthcare planners for adequate resource allocation for preventive and curative services. The findings suggest that policymakers in low-income and middle-income countries may need to re-examine the burden and impact that dementia places on their health services.

References

Carlen P.L., McAndrews MP, Weiss, RT *et al. (*1994). Alcohol-related dementia in the institutionalized elderly. *Alcoholism: Clinical and Experimental Research* 18(6) : 1330-1334.

Dias A, Samuel R, Patel V, Prince M, Parameshwaran R and Krishnamoorthy, ES.(2004) The impact associated with caring for a person with dementia: a report from the 10/66 Dementia Research Group's Indian network. *Int J Geriatr Psychiatry* 19: 182-4.

Dias A, Patel V. (2009) Closing the treatment gap for dementia in India. *Indian J Psychiatry* [serial online] 2009 [cited 2009 May 11];51:93-7. http://www.indianjpsychiatry.org/text.asp?2009/51/5/93/44868

Finkel SI, Costa e Silva J, Cohen G, Miller S, Sartorius N. (1996)Behavioral and psychological signs and symptoms of dementia: a consensus statement on current knowledge and implications for research and treatment [review]. *Int Psychogeriatr* 8(suppl 3):497 –500.

Kisely S, Goldberg DP.(1996) Physical and psychiatric comorbidity in general practice. *Br J Psychiatry* 169:236 –242

Kunik M. E., Benton C. L., Snow-Turek A. L., Molinari V., Orengo C. A., Workman R., (1998). The contribution of cognitive impairment, medical burden, and psychopathology to the functional status of geriatric psychiatric inpatients. *Genl Hosp Psychiatry*. 20:183-188.

Kunik M. E., Snow-Turek A. L., Iqbal N., Molinari V. A., Orengo C. A., Workman R. H., et al (1999). Contribution of psychosis and depression to behavioral disturbances in geropsychiatric inpatients with dementia. *J Gerontology: Medical Sciences*. 54A:M157-M161.

Lyketsos CG, Galik E, Steele C, Steinberg M, Rosenblatt A, Warren A, et al.(1999) The General Medical Health Rating: a bedside global rating of medical comorbidity in patients with dementia. *J Am Geriatr Soc*. 47:487 –491.

Lyketsos CG, Steinberg M, Tschanz JT, et al(2000). Mental and behavioral disturbances in dementia: findings from the Cache County Study on Memory in Aging. *Am J Psychiatry*. 157:708-714.

Lyketsos CG, Olin J.(2002) Depression in Alzheimer's disease: overview and treatment. *Biol Psychiatry.* 52:243-252

Patel, V. *and* Prince, M. *(*2001*)* Ageing and Mental Health in Developing Countries: Who. Cares? Qualitative Studies from Goa. *Psychological Medicine*, 31, 29-38.

Plassman BL, Langa KM, Fisher GG, et al.(2007) Prevalence of dementia in the United States: the aging, demographics, and memory study. *Neuroepidemiology.* 29:125-132.

Prince, M (2000). Dementia in Developing Countries – A consensus statement from 10/66 Dementia Research Group *Int J Geriatr Psychiatry* 15,14-20

Rabins PV, Blacker D, Rovner BW(2007)APA Work Group on Alzheimer's Disease and Other Dementias. American Psychiatric Association practice guideline for the treatment of patients with Alzheimer's disease and other dementias. Second edition. *Am J Psychiatry*. 164(suppl 12):5-56.

Sachdeva, DR Vidhya (2000) Family in India: *An Introduction to Sociology* 32nd Edition Kitab Mahal, Allahabad

Saunders, P. (1993) Epidemiology of mental disorder in old age: GMS-AGECAT studies. *Advances in Old Age Psychiatry*, 4 : 1-2.

Smith, D.M. & Atkinson, R.M. (1995). Alcoholism and Dementia. *Int J Addictions*, 30(13-14) : 1843-1869

Steinberg M, Tschanz JT, Corcoran C, Steffens DC, Norton MC, Lyketsos CG, et al.(2004) The persistence of neuropsychiatric symptoms in dementia: the Cache County Study. *Int J Geriatr Psychiatry* 19 : 19–26.

Thomas, V.S. & Rockwood, K.J. (2001). Alcohol abuse, cognitive impairment, and mortality among older people. *Amer Geriatrics Society* 49 (4) : 415-20.

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Socio-economic Condition of the Rural Aged in Bangladesh : A Logistic Regression Analysis

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ABSTRACT

Although all mostly respects the aged people in Bangladesh, they are facing many problems, especially like loneliness, economic insecurity etc. So, the main purpose of this article is to search some explanatory variables, which are affecting the economic condition of the rural aged in Bangladesh. To do so, logistic regression model has been applied in data, which were collected from 300 aged people living in the rural areas of Gala union in Shahjadpur Thana of Sirajganj district, Bangladesh, using purposive sampling technique. The results indicate that education of the aged; type of family and type of toilets, and getting old age allowance (OAA) have statistically significant effect on the economic well being of the aged. In checking model validation, it seems from the statistics that the fit of the given model is well. Finally, this article provides some suggestive policy measures that the planners and implementers may consider for ensuring the economic security of the aged people in Bangladesh.

Key words : Rural aged, Socio-economic condition, Logistic regression model, Model validation.

Bangladesh is a small country of 147,570 square kilometers and over 149 million people, making it the seventh most populous country in the world (PRB, 2007). Except for some island states, it has the highest population density in the world. It emerged as a sovereign state on December 16, 1971 following a bloody war of liberation for a period of

nine months with the army of Pakistan. It is almost entirely surrounded on the North and the West by India, on the East by India and Myanmar and on the South by the Bay of Bengal. It is located in the Northern Eastern part of South Asia between $20^0 34'$ and $26^0 38'$ North latitudes, and $88^0 01'$ and $92^0 41'$ East longitudes (BBS, 2006).

Population aging is viewed as a natural outcome of demographic transition. It is a product of history, individual experiences and social forces (Morgan and Kunkel, 2001). Old age can be characterized by some symptoms such as degenerative process advancing with chronological age, functional deterioration and vulnerability and ultimately culminating in extinction of life. It is a biological reality, which has its own dynamic, and is largely beyond human control. The advancement of medical science and increased awareness among the people has brought about a sharp decline in mortality and a steady decline in fertility. This has resulted in a worldwide shift in the demographic profile and has lead to a significant increase in the aged population. According to UN (1999), "there were 200 million elderly people in the world and this has increased to 350 million in 1975. The UN projection suggests that elderly number has reached to 600 million in 2000. If this trend continues, the elderly population by 2025 will be 1.2 billion. After that the growth of elderly population will be even higher and by 2025 it will be about 2 billion". The elderly people (aged 60 years and above) in Bangladesh in 1911, 1951, 1981, 1991 and 2001 were 1.37, 1.86, 4.90, 6.05 and 6.13 millions respectively and the projected figures for 2015 and 2025 are 12.05 and 17.62 millions (BBS, 1977; BBS, 1994; BBS, 2003). This change in population characteristics will be serious consequences on society as well as on the overall socio-economic development of the country.

Like most developing countries, in Bangladesh ageing is often viewed as welfare rather than a developmental issue and as such the design of welfare policies and programs for older persons are categorized together with groups of poor, disabled and victims of disasters (UN, 1994). Due to rapid industrialization and urbanization, the problems faced by the aged people are getting more complicated. The elderly in Bangladesh face many problems such as insolvency, loss of authority, social insecurity, insufficient recreation facilities, lack of overall physical and mental care, problems associated with living

arrangements etc. Abedin (1994) have studied on the socio-economic and psychophysical conditions of the elderly and showed most of the rural elders belong to a low incoming group. None of them possesses excellent health condition. Children of the elders now take less care of their parents.

The aged people are fully dependent on their land property or sons in rural Bangladesh and their number is more than that of in urban area. Traditional joint family pattern has been changing but social security system has not developed yet. Though some security systems are available like pension scheme, retirement benefits for service holder people is very few in rural areas. In the past years, land property was enough of rural people but now most of the rural people are landless. The overall situation of aged population in Bangladesh considering the basic characteristics of elderly population especially in rural areas of the country represents a critical and gloomy picture. By the above circumstances the aged people especially the rural aged people of Bangladesh are suffering from mental depression for their economic problem that is poverty. This article tries to analyze the present economic status of rural aged and its future relevance and stresses on the need for an immediate change in the attitude of the government as well as the general community.

2. Data and Methods

The data for this study were collected from the rural areas of Gala union in Shahjadpur Thana of Sirajganj district, Bangladesh. Three hundred people aged 60+ years were selected using purposive sampling technique and were successfully interviewed through personal interview method. Economic status, coded as 1 if the aged are satisfied with their present economic status or 0 if otherwise, has been taken as the dependent variable in logistic regression analysis. There are mainly three categories of explanatory variables considered in this study. These are:

Demographic variables –Sex of the respondents, their marital status and types of family.

Socio-cultural and economic variables - Respondent's education (whether she is able to read and write), sources of family income and getting old age allowance (OAA).

Health care seeking variables –Type of latrine (considering sanitary and pucca toilet as hygienic and kancha, hanging, open and others as unhygienic).

2.1 Model Validation Technique

2.1.1 Cross Validity Prediction Power (CVPP)

To test the stability of the model, the cross validity prediction power (CVPP), ρ^2_{cv} is applied here. The method for CVPP is given by

$$\rho^2_{cv} = 1 - \frac{(n-1)(n-2)(n+1)}{n(n-k-1)(n-k-2)}(1-R^2)$$

Where, n is the number of cases, k is the number of predictors in the model and the cross-validated R is the correlation between observed and predicted values of the dependent variable. The shrinkage of the model is the absolute value of the difference of ρ^2_{cv} and R^2. Moreover, the stability of R^2 of the model is equal to (1- shrinkage) (Stevens, 1996).

2.1.2 F-test

The F-test is applied to the model to verify the measure of the overall significance level of the model as well as the significance of R^2. The formula for F-test is affirmed as

$$F = \frac{\frac{R^2}{(k-1)}}{\frac{(1-R^2)}{(n-k)}}$$ with (k-1, n-k) degrees of freedom (d.f.);

where k = the number of parameters is to be estimated, n is the number of classes and

R^2 = the coefficient of determination of the model (Gujarati, 1998).

3. Magnitude of the Problem for the Elderly in Bangladesh

Magnitude of the problem on social, health and economic issues for the elderly in Bangladesh are summarized as follows (Hossain, 2007):

- Poor socio-economical condition.
- Lack of nutrition- micro or macro-nutrition in diet.
- Abuse by family, society-psychologically or financially.
- Environmental pollution- arsenic, water, air pollution.
- Natural calamities- repeated flood, cyclone and erosion of river.
- Lack of awareness and knowledge about health, diseases, exercise, maintaining weight and personal hygiene.
- Lack of health care, specially designed for elderly people.

4. National Elderly Policy in Bangladesh

The Ministry of Social Welfare of the Peoples Republic of Bangladesh has finalized the National Policy for the Elderly people 2006. This Policy is a safe guard for the protection of the elderly people from all hazard and hassles. Following points have been emphasized in the said policy (Hossain, 2007):

- Recognition of the contribution of older persons.
- Co-ordination between older persons and new generation.
- Social facilities for older persons.
- Security in life and property of older persons.
- Poverty reduction.
- Financial security.
- Health care and nutrition for older persons.
- Older persons and HIV/AIDS.
- Older persons in emergency like natural clematises, cyclone, earthquake etc.
- Education and training.
- Special welfare activities.
- Integration of voluntary agencies along with government institution.
- Formation of committees at various levels.

5. Present Strategies and Programs to Help the Rural Aged

Present strategies and programs to help the rural aged people may be classified into two major phases. One is government presided by the direct supervision of government and another is non-government which is presided by various national and international organizations. These are:

5.1 Government Strategies and Programs

- Formal Pension Scheme
- Annual Development Program
- Pro-Poor Project
- National Committee on Ageing
- Gratuity
- Welfare Fund and Joint Insurance
- Old Age Allowance (OAA)

5.2 Non-government Programs

- Bangladesh Association for the Aged and Institute of Geriatric Medicine (BAAIGM)
- Boishko Nibash (Old Home)
- Resource Integration Center (RIC)
- Service Center for Elderly People (SCEP)
- Elderly Development Initiatives (EDI)
- Bangladesh Retired Government Employs Welfare Association, Dhaka (BRGEWAD)
- Bangladesh Retired Police Officers Welfare Association, Dhaka (BRPOWAD)
- Defense Personal Welfare Trust, Dhaka

6. Results and Discussion

6.1 Univariate Analysis

Ageing is a normal biological process. None can avoid it if there occurs no premature deaths. The number of aged people is gradually increasing in Bangladesh (BBS, 2001). Table 1 represents the studied aged people by their background characteristics. The results indicate that more than 60% of the aged do not know how to read and write. The male-female differential is almost equal. More than 60% of the aged live with joint family. About 75% of the aged use hygienic toilets facilities. About 45% of the respondents are living either as widow or widower or divorced. Although the government introduced a new social security program named ***'bayaska bhata'*** (allowance for the aged), it has not reached to all rural poor elderly. The results show that only 3% of the aged get OAA from the government.

Table 1: Distribution of the Respondents by Background Characteristics

Background characteristics	No. of respondents	Percentage (%)
Educational level		
Illiterate	183	61.0
Literate	117	39.0
Sex		
Female	147	49.0
Male	153	51.0
Types of family		
Nuclear	113	37.7
Joint	187	62.3
Source of family income		
Non- agriculture	190	63.3
Agriculture	110	36.7
Type of toilets		
Unhygienic	76	25.3
Hygienic	224	74.7
Marital status		
Married	169	56.3
Widow/widower/divorced	131	43.7
Getting OAA		
Yes	9	3.0
No	291	97.0
N	**300**	**100**

4.2 Economic Condition of the Rural Aged: A Logistic Regression Analysis

Logistic regression analysis shows that respondent's education, their family and using latrine types and getting OAA are significantly associated with the present economic status of the rural aged. Table 2 presents the estimate of logistic coefficients, standard error of estimates, significant probability and the relative odds calculated for each category of the categorical variables.

From Table 2, it is found that education is the most important factor affecting the economic well being of the rural aged. The logistic regression coefficients corresponding to the educational level of the aged people are calculated and the result shows the highly significant effect on the economic well being of the aged people. Considering the illiterate as the reference category, the odds ratio corresponding to literate person is 25.880. It clearly indicates that the economic conditions of literate aged are 25.880 times better than that of the illiterate aged.

Bangladesh has a long cultural and religious tradition of looking after the elderly and it is expected that families and communities will care for their own elderly members. But rapid socio-economic and demographic transformations, mass poverty, changing social and religious values, influence of western culture, and other factors, have broken down the traditional extended family and community care system. In this study, the logistic regression coefficient corresponding to the type of family is calculated and the result describes that the type of family has the highly significant effect on the economic well being of the aged persons. The results show that the economic condition of aged people who live in joint family is 4.440 times well than those who live in nuclear family.

Hygienic toilets facility is not available in the rural areas of Bangladesh and it also involves some extent of costs. Having unhygienic toilets facility considered as reference category, the logistic regression coefficient of the aged having hygienic toilets facility is calculated. The results show the highly significant effect and indicate that the economic conditions of aged who has hygienic toilet are 3.927 times well off than those who has unhygienic toilets.

Old age allowance (OAA) is another important significant factor affecting the economic well being of the rural aged. The government of Bangladesh introduced in 1997 a new social security program named **'Bayaska Bhata'** (allowance for the aged) for the rural aged. From Table 2, it is apparent that the relative odds ratio for those aged, who are getting OAA is 0.025. This indicates that the likelihood of economic condition of those aged, who are getting OAA is 0.025 times lower than that of aged who are not getting (reference category). This may because the OAA is so scanty and insufficient in the context of

Bangladesh. A beggar in Bangladesh earns more than 200 Tk. per day whereas at the beginning, OAA was only 100 Tk per month and now it is 220 Tk. per month. But at the same time, it is to say that OAA program is a very good step for the elderly and it should be enhanced. Thus, it is concluded that the amount of OAA would be increased and this program should be extended in a large scale, as the aged feel economic security.

Gender, source of family income and marital status of the aged have an effect on the economic condition of the rural aged, but these effects are not statistically significant.

4.3 Checking Model Validation

The information on model fitting shows that the fitted model is highly cross-validated and its shrinkage is only 0.0248. Furthermore, the fitted model will be stable more than 49% and the stability of R^2 of this model is more than 97%.

The calculated value of F-test of the model is 54.794 with (6, 293) d.f.; whereas the corresponding tabulated value is only 2.80 at 1% level of significance. Therefore, it seems from the statistics that the overall measure of the fitted model and the R^2 are highly statistically significant. Hence, the fit of the given model is well.

Table 2 : Logistic Regression Estimates of Regression Coefficients and Relative Odds Associated with the Economic Condition of the Aged Population

Explanatory variables	Coefficient (β)	P value	Odds ratio [*Exp.*(β)]
Educational level			
Illiterate®	-	-	1.000
Literate	3.253	0.000	25.880
Sex			
Female®	-	-	1.000
Male	-0.530	0.139	0.589
Types of family			
Nuclear®	-	-	1.000
Joint	1.491	0.000	4.440

Source of family income			
Non- agriculture®	-	-	1.000
Agriculture	-0.370	0.314	0.691
Type of toilets			
Unhygienic®	-	-	1.000
Hygienic	1.368	0.000	3.927
Marital status			
Married®	-	-	1.000
Widow/widower/divorced	-0.113	0.757	0.893
Getting OAA			
No ®	-	-	1.000
Yes	3.708	0.006	0.025
Information on modeling fittings			
n	300		
k	7		
R^2	0.524		
	0.499		
Shrinkage	0.0248		
Stability of R^2 of the model	0.975		

Note: ® indicates reference category.

5. Conclusions and Policy Recommendation

In this study, a limited attempt has been made to investigate some socio-economic factors, which greatly affects the life of the aged people. The results indicate that more than 60% of the aged populations are illiterate. About 60% of the aged live with joint family and 75% of the aged use hygienic toilets facilities. The results also show that only 3% of the aged get OAA given by the government of Bangladesh. The results of logistic regression analysis show that economic conditions of literate aged are better than that of the illiterate aged. The aged who live in joint family, their economic security is 4.440 times well than those who live in nuclear family. The study also indicates that education of the aged; type of family and type of ~~toilets and~~ getting OAA have statistically significant effect on the economic well being of the aged population.

Therefore, the following policies are to be suggested for the welfare of the aged population:

- Proper initiatives should be taken to avoid the broken down of the traditional extended family and community care system.
- Social security programs such as OAA program should be extended as sufficient as possible and reasonable amount of money for all most all elderly population.

References

Abedin, S. (1994). *The Demographic Aspects of Aging in South Asia with Special Reference to Bangladesh Trends and Implications*. Paper presented at the Conference of CMIG, Calcutta.

Bangladesh Bureau of Statistics (BBS) (2006). *Statistical Year Book of Bangladesh*, Dhaka.

Bangladesh Bureau of Statistics (BBS) (2003). *Statistical Year Book of Bangladesh, Dhaka*.

Bangladesh Bureau of Statistics (BBS) (2003). *Bangladesh Population Census*, 2001, National Series, Government of the People's Republic of Bangladesh, Dhaka.

Bangladesh Bureau of Statistics (BBS)(1994). *Bangladesh Population Census*, 1991, National Series, Government of the People's Republic of Bangladesh, Dhaka, 1994.

Bangladesh Bureau of Statistics (BBS) (1977). *Bangladesh Population Census*, 1974, National Series, Government of the People's Republic of Bangladesh, Dhaka.

Gujarati, D.N. (1998). *Basic Econometrics*, Third Edition, McGraw Hill, Inc., New York.

Hossain, A. (2007). Country Statement, Bangladesh, Paper Presented in Seminar on the Social, Health and Economic Consequences of Population Ageing in the Context of Changing Families, Bangkok, Thailand.

Kabir, M. H. (2003). Demographic Profile of the Aged in Bangladesh: The Elderly Contemporary Issues. *Bangladesh Association of Gerontology*.

Morgan, L. and Kunkel, S.: Ageing the Social Context, Pine Forge press, California, USA, 2001.

Population Reference Bureau (PRB): World Population Data Sheet, Washington DC, 2007.

Stevens, J.: Applied Multivariate Statistics for the Social Sciences, Third Edition, Lawrence Erlbaum Associates, Inc., Publishers, New Jersey, 1996.

UN: ESCAP Data Sheet, Bangkok, 1999.

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Active Ageing : A Study of Factors for Reemployment of Elderly

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ABSTRACT

Older people faced biological limitations more than the economic, political and social which inhibit and prevent people from remaining active more so after retirement. They need to work regardless of whether they live separately or with their sons as they sometimes need to contribute to the household in productive ways. In order to ascertain the reasons for taking up reemployment and to analyse the spending pattern of the income of reemployed, 100 subjects, who were doing jobs under an employer after their superannuation, were interviewed and information was gathered through a structured schedule using purposive sampling method. A majority of the respondents was in between 60 and 65 years though a few were found working even after 70. A majority of the respondent's spouses (80%) were alive. A majority of them were reemployed in the same type of jobs (57%), in new organizations (68%), and immediately after their superannuation (77%). The reasons for reemployment were interest to do job, necessity to maintain family, attend to the health needs and to clear the debts incurred while in service on their children education. A sizeable number of them were willing to work for 4 to 5 years.

Key words: Active ageing, Successful ageing, Age management and Reemployment

Ageing is a continuous process that begins right at birth. The elderly as a group have always been an important part of every society. Families earlier were usually headed by the elderly. Communities for their local self governance always had the older members as the office bearers. Population ageing is helped for better understanding the future society and investigating the appropriate strategies for sustained development [Zeng yi, 2008]. Today, with sustained efforts towards building a healthy society, life expectancy is on a high like never before. Hence, population ageing has emerged as an important issue challenging several countries in the Asia Pacific region [Satyendra Prakash, 2007]. People living longer are a reason to celebrate [Himanshu Rath, 2007]. However, this celebration comes with a price. World over, life is becoming more competitive and India is no exception.

India is the second largest population of elderly (60+) in the world [Govt. of India, 2008]. As per the 2001census, the number of older persons was 70.6 million (6.91%) and projected to grow to 94.8 million (8.3%) in 2011, 118 million (9.3%) in 2016 and in 2026 it is expected to touch 173 (12.4%) million [Registrar General, 2001]. Earlier elderly were regarded as key players in the main stream: be it family or community. Shift in the joint to the nuclear family ties, emerging demands on life style and changing values have encoded the role of elderly. Inadequate social security system, complex geriatric aspects and inaccessibility to essential commodities due to inflation and high prices are some of the key issues the elderly face in India.

Active Ageing

"Successful ageing" (Pfeiffer, 1974; Rowe and Kahn, 1987) was the maintenance in old age of the activity patterns and values typical of middle-age. Successful ageing was to be achieved by denying the onset of old age and by replacing those relationships, activities, and roles of middle-age that are lost with new ones in order to maintain activities and life satisfaction. This theory of ageing was seen partly as response to the then influential theory of "disengagement" which viewed old age as an inevitable period of withdrawal from roles and relationships (Cumming and Henry, 1961).

It placed an unrealistic expectation on ageing individuals themselves to maintain the levels of activity associated with middle-age through an

advanced old age. It was pointed out that in trying to do so, many older people faced biological limitations and perhaps more importantly, that the economic, political and social structures of society sometimes inhibit and prevent people from remaining active – the obvious example being retirement (Walker, 1980).

The essence of emerging modern concept of active ageing is a combination of the core element of productive ageing with a strong emphasis on quality of life and mental and physical well-being (European Commission, 1999; Cabinet Office, 2000). WHO (2001), for example, sees active ageing in terms of health, independence and productivity of older people.

At the organizational level, in both the public and private sectors, a new age management perspective is required, ideally as part of a general diversity strategy. The term "age management" may refer specifically to the various dimensions by which human resources are managed within organizations with an explicit focus on ageing but also, more generally, to the overall management of workforce ageing via public policy or collective bargaining (Walker, 1997). Within organization there are five main dimensions of age management: job recruitment (and exit); training, development and promotion; flexible working practices, ergonomic and job design and changing attitudes towards ageing workers (Casey, Metcalf and Lakey, 1993).

Reasons to take up re-employment

Old people need to work regardless of whether they live separately or with their sons; they still need to contribute to the household in productive ways [Harsh Mander, 2008]. Access to medical care, thereby, maintaining good health, necessity to maintain or supplement family income, preference to experienced people in the job market, employer's inability to pay higher wage etc are some of the contributing factors for the senior citizens to take up re-employment. In addition to that substantial contributions were made by older people in 'unpaid work' including agriculture, the informed sector in voluntary roles, domestic work, child care, health care, etc. Even though many economics worldwide depend to a large extent on these activities few of them

were included in the assessment of national economic activities [Satyandra Prakash, 2007].

To combat the predominant sense of redundancy and isolation amongst older persons, gainful engagement has been found to be the key for an attitude shift from negative to positive. Now-a-days so many people are resuming some form of employment after official retirement. Following can be some of the reasons why people need or want to go back to work.

- As healthcare and other costs of living continue to rise during retirement, it is highly impossible to maintain day-to-day basic needs without going back to work at least part time to supplement retirement income.
- Several others did not save enough to keep pace with the lifestyle they were accustomed hitherto and wish to continue the same life style.
- Money is not the only reason people choose to go back to work. Some considered that they might miss the professional camaraderie they enjoyed in the workplace and want to return there to reconnect with their professional network.

In the light of the above, it is contemplated to take up a study to find out the socio-economic characteristics of the sampled population, identify the reasons for taking up reemployment, and to analyse the spending pattern of the income of reemployed.

Method and Sample

The information was gathered from 100 respondents who were doing jobs under an employer after their superannuation. For the purpose of the study those reemployed, who were 60 years and above, were considered. As it is a purposive sampling these respondents were identified in the beaches, walking grounds and organizations in which they were working.

A structured schedule was devised and administered on the sampled population. It may be noted that the findings of the study cannot be generalized in view of its limited size, though some findings might have relevance to the targeted population.

Findings :

I. Social Characteristics

A majority of the respondents (92%) were male and the rest were female. A majority of the respondents was in between 60 and 65 years. A few were found working even after 70 years. A significant number of them were Hindus and the caste details indicate that 46 per cent of the respondents belong to backward classes, 27 per cent were from scheduled caste and 23 per cent were from other castes and the rest belong to Scheduled Tribe community. A majority of the respondent's spouses (81%) were alive and in the case of eight female respondents, the spouses of seven respondents were not alive.

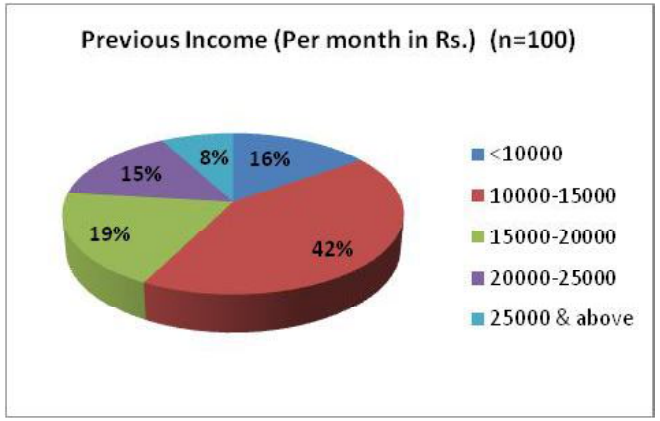
II. Details of Residence

A majority of the respondents (96%) were residing with their family members. Out of these, a sizeable number of respondents (47%) stay with their spouses and un-married children. Some were found staying either with married daughters (27%) or with married sons (23%) and the remaining were staying with others. As regards their domicile, a majority of them were staying in the roofed structures (77%) and the rest were staying in tiled houses. A majority of them have their own houses (77%) and others were staying in rented buildings. It can be noted that those who stayed in their own houses could construct roofed structures.

III. Income and Expenditure details

A majority of the respondents get monthly pension (62%) after their superannuation. Some respondents also have other sources of income either in the form of rents (31%) or other means (8%).

As regards the previous income earned by the respondents reveal that most of them received Rs.10000/- to 20,000/- a month and the details of present income indicate that most were earning between Rs.5, 000 and 10,000/- a month. The mean income of previous earning was Rs.15,000 and the present mean income was Rs.8050/-, almost half to their earlier earnings.



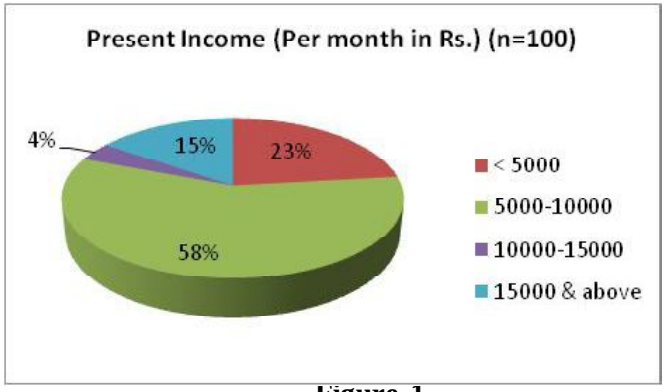


Figure 1

Table 1 : Spending Pattern of Retirement Benefits

Retirement Benefits	Per cent (n=100)
Yes	77
No	23
Spending of retirement benefits (n=77)*	
House Construction	42
Children education	58
Children Marriage	54
Health needs	56
Repayments of loans	50
Savings	35

* Multiple Responses

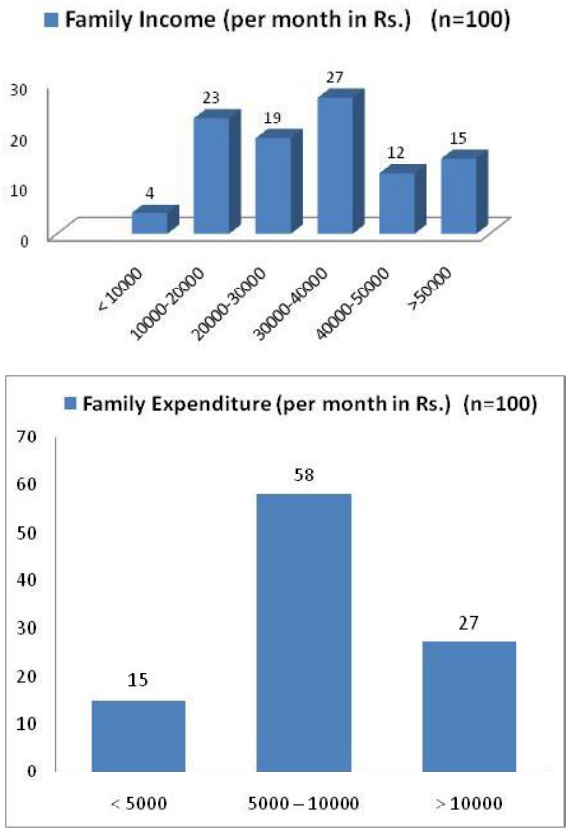


Figure 2

Besides the respondent's present income, other sources of income such as pension, rents, and dependants' earnings were cumulated to arrive at monthly family income. Most of the respondents had the family income of Rs.10, 000 to Rs.30, 000/- a month. Whereas the family expenditure seem to be much less as compared to the family income. More than half of them (58%) were spending Rs.5000 to Rs.10, 000 and another one-fourth (27%) spend more than Rs.10,000/- a month. The mean family income was Rs.31,500/- and the mean family expenditure was Rs.8100/-, which indicates that these families spend almost to that of their present earnings (Respondent's present mean income i.e., Rs.8050/-.

A majority of the respondents received retirement benefits. The data reveal that the retirement benefits were utilized for the children education, children marriages, health needs, repayment of loans and construction of houses in that order. Some could also save their benefits for future needs.

IV. Details of reemployment

More than half of the respondents (58%) were reemployed in the same type of jobs. Others were found doing other type of jobs with which they were not familiar with. Interestingly, a majority of the respondent's joined in new organizations (68%) and the rest were reemployed in the same organizations. A majority of them (77%) stated that they had to be reemployed immediately after their superannuation and the rest took reemployment subsequent to their retirement.

Table 2 : Details of Reemployment

Reemployment	Percentage (n=100)
Same job	58
New Job	42
Same Organization	32
New Organization	68
Immediately after retirement	77
Later	23

The reasons for reemployment reveal that they sought reemployment out of interest. Economic reasons were found to be the next priority for reemployment as they had to clear debts. Some respondents stated that their physical and mental health is good and as such they were doing work. Some were found working for additional income. In some cases the employers made requests for continuation of their jobs in the same organization, as they possessed experiential knowledge and were also cheaply available, as the reemployed need not be paid full salary after retirement.

Further data revealed that a majority of the spouses and all the family members supported the respondents for taking up reemployment. Similarly, these were respected in their respective offices and also in their homes.

Table 3 : Reasons for Reemployment

Reasons	Weighted mean (n=100)	Rank
Interest	39	I
Economic	28	II
Good Physical & Mental Health	15	IV
Additional Income	16	III
Request by employer	2	V

V. Spending Pattern of present earnings

These respondents had to be reemployed to maintain the family, to attend to the health needs and to clear the debts incurred while in service. Some were found spending their income on children education.

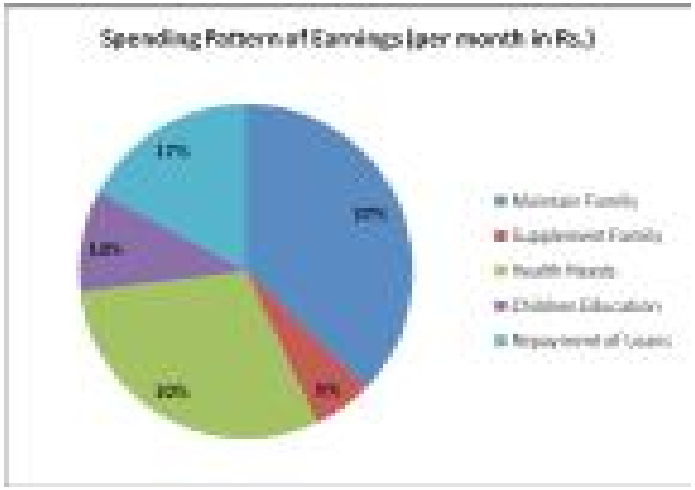


Figure 3

VI. Work related aspects

A sizeable number of them were willing to work for 4 to 5 years (31%). Interestingly 27 per cent of the respondents stated that they would like to work till their life. Some have expressed that they would like to work for more than five years, provided their health permits.

The information on mode of transport from house to office and back reveals that the respondents have used different modes of transport. A sizeable number of them went to office on foot and by two-wheelers. Some used public transport bus and service autos. Very few went to office in car.

A majority had to follow regular office timings and as such they were not exempted from the regular schedule of hours of work. Around 23% of the respondents could go at their convenient timings mostly in the morning or in the evening.

More than half of the respondents stated that they could find leisure, and the rest had no leisure, what so ever. They get leisure either in late evenings or nights after their work. During their leisure they spend time in watching TV, reading news papers / books and playing with their grand children.

Discussion:

Necessity to maintain family, interest to do job and good health were the three prominent factors for the elderly population to take up reemployment. Undoubtedly, this population was above middle class having different sources of income. Further, presence of unmarried children in the family, debts and expenditure on health are the other reasons for this population to be reemployed.

The expenditure levels of this category of families were much less than their earning levels. A large share of their earnings goes to repayment of loans, children education and health needs. Part of their earnings was saved for future needs. The respondents evinced interest to take up reemployment in the same type of job irrespective of the nature and type of the organization. A majority sought reemployment in other organizations though some were given opportunity in their erstwhile organizations.

The employers' preference and non-availability of such qualified persons were the precipitating factors to be reemployed in the same organizations. The employer prefers the retired employees as they can be paid relatively less remuneration. In this case both the parties have vested interest, as it is an economic necessity for the aged and an economic saving for employers.

Seeking reemployment immediately after their superannuation has a revealing finding for which reemployment had become a necessity rather than a privilege. Having taken up this assignment they would like to continue for a considerable period of four to five years provided their health permits. More than one third of the respondents stated that they would like to work till life. This has serious implications to be probed for such a decision by the respondents.

Sustainability, employability, health, skills etc., are the indicators for the elderly to be reemployed. This may be detrimental to the qualified youth who would like to enter into careers, thereby, perpetuating unemployment. This nexus may lead to unhealthy practices among the employers and unrest among the unemployed. Enhancement of the age of superannuation is also a policy to be decided by the government, more so when the quality of health of the elderly is sound. National Policy of Older Persons (NPOP) recognizes the active healthy and productive ageing. As contemplated in the NPOP, a National Council for Older Persons (reconstituted in 2005) has been set up to advise and aid the government on policies and programmes for older persons and to provide a feedback to the government on the implementation of NPOP. Most of the government welfare policies for the aged were meant for those, who are in below poverty line. As such this category of population was excluded due to their social class. Hence, the NPOP should cover all the aged population irrespective of their social class and status.

References

Cabinet Office. (2000). Winning *the Generation Game*. London: The Stationery Office.

Casey, B., Metcalf, H. and Lakey, J. (1993). 'Human Resource Strategies and the Third Age: Policies and Practices in the U.K.'. In P.Taylor et. al. *Age and Employment*, London: IPM.

Cumming, E. and Henry, W. (1961). *Growing Old; the Process of Disengagement*, New York: Basic Books.

European Commission. (1999). *Towards a Europe of All Ages*. Brussels: European Commission.

Government of India (2008). Eleventh Five year Plan Document 2007-2012, New Delhi: Ministry of Planning. .

Harsh Mander (2008). "Living with hunger: Deprivation among the Aged Single Women and People with Disability," *Economic and Political Weekly,* April 26.

Himanshu Rath (2007). "Reinventing Retirement Asia", *Age Well Foundation India*, March (Internet) Tokyo.

Pfeiffer, E. (ed.) (1974). *Successful Aging: A Conference Report*. Durham, NC: Duke University.

Registrar General (2001), *Census of India -2001*, New Delhi: Government of India.

Rowe, J. and Kahn, R. (1987). "Human Aging: Usual and Successful." *Science*, 237:*143-149*.

Satyendra Prakesh (2007). "Living in an Ageing world", *Social Initiatives*, (10), October, NISD, New Delhi. Ministry of Social Justice and Empowerment, Government of India.

Walker, A. (1980). "The Social Creation of Poverty and Dependency in old age" *Journal of Social Policy, 9(1)*:49-75.

Walker, A. (1997). *Combating Age Barriers in Employment*. Luxembourg: Office for the Official Publications of the European Communities.

WHO (2001). *Health and Ageing: A Discussion Paper.* Geneva: The author.

Zeng YI, (2008), "Future trend of Family Households and elderly living arrangement in China", GENUS, LXIV, (1-2), January-June, Rome.

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