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Body Size and Age Structure of Tropical Skink, *Mabuya carinata* (Schneider), by Skeletochronology

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ABSTRACT

The paper aims to find out the relationships between body size and age of Indian skink, Mabuya carinata collected from Sangli District, Southern India. Age was determined by counting the number of growth rings in histological sections of phalanges of each individual. There was a positive correlation between body size and age. One to five growth rings consisting of growth zones and lines of arrested growth (LAGs) were noticed in the different body sized individuals. The results suggest that this species may live for a maximum of 6 years in nature.

Key words: Body size, Age, *Mabuya carinata*, Skeletochronology

Determination of age of individual animal is extremely important in the life history and population dynamics studies of amphibians and reptiles (Peabody, 1961; Castanet and Smirina, 1990; Castanet *et al.*, 1993). The methods generally employed for the determination of age and longevity of reptiles are : body size analysis, mark-release recapture and skeletochronology. Among these methods, the first one has considerable overlapping to the same age in different classes. Hence estimation by body size frequency analysis are considered unreliable (Halliday and Verrell, 1988; Castanet and Smirina, 1990). Mark-release-recapture and skeletochronology are regarded as the reliable and accurate method for estimating the age and longevity in amphibians and reptiles, but it requires long time to yield results. Skeletochronology

has emerged as the best and valid method (Castanet, 1994). Phalangeal skeletochronology is a non-destructive method (that does not necessitate sacrificing of the animal), therefore, it is ideal for live samples. Many temperate zone reptilian species have been estimated for age accurately on the basis of information provides by annual cyclical growth pattern (Castanet *et al.*, 1993; Tucker, 1997; Coles *et al.*, 2001; Zug *et al.*, 2006). Studies on reptilian species inhabiting tropical and sub-tropical areas are scanty (Patnaik, 1994). Indian skink *M. carinata* is a moderate sized reptile and widely distributed in the Indian peninsula region. In spite of its wide distribution and generally high densities, no information exists concerning age and longevity of this species (Daniels, 1983). In the present study, the skeletochronological technique was employed to investigate the relationship between body size and age of tropical skink *M. carinata*.

Materials and Methods

Twenty different body sized individuals of *M. carinata* were collected from Sangli District in the month of April, 2008. The Sangli district is situated (16°45'N lat and 73°42' E long) in the Western part of Maharashtra, Southern India. The study area lies about 500 m. A.S.L. with high mountain peaks at 900 m. A.S.L. The natural vegetation is Southern dry mixed deciduous and thorn forest. The area has a mean annual temperature range between 15° to 41°C and receive approximately mean annual rainfall from 300 - 600mm.

Animals collected were brought to the laboratory where each animal was measured snout-vent-length (SVL) with thread to the nearest 0.1 mm. The fourth toe of the right hind limb of each individual was clipped under light ether anesthesia and fixed in 10 % formalin solution. Long tubular bone (femur) of two large sized (SVL: 48 and 53mm) animals were used for skeletochronology. Clipped toes and femur were cleaned and washed in water for 1-2 hours. The cleaned bones were demineralized in 5% nitric acid. They were washed overnight to remove all traces of formalin and nitric acid and processed for paraffin embedding. Sections of 10µm thickness of the second phalanx of the 4th toe and femur were cut on a rotary microtome; stained with Delafield's haematoxylin and mounted in glycerin. Mid-diaphyseal sections were chosen for observation under a compound microscope.

Correlation coefficients (Pearson ‘r’) were used to show the relationship between body size and number of growth marks.

Results

Haematoxylin stained cross sections of phalanges/femurs showed a central bone marrow cavity, surrounded by an inner thin endosteal and outer relatively broader periosteal bone tissue (Fig. 1a-c). The periosteal bone margin (Pbm) showed series of thin darkly stained chromophilic lines separated by wider light purple rings with sparsely distributed osteocytes. The former were interpreted as lines of arrested growth (LAGs) and latter as growth rings (Fig. 1). One to four LAGs were observed in the cross sections of phalanges of different body sized individuals (Figs. 1a-c). The LAGs were clear, distinct and found distributed equidistantly in the periosteal bone (Fig. 1). Four individuals with a mean SVL 20mm showed no LAGs in periosteal bone (Fig 1a). Two animals with SVL 23mm exhibited 1 LAG each (Fig. 1b) and six individuals with SVL 32mm showed 2 LAGs, five lizards with SVL 42

mm possessed 3 LAGs and three skinks with SVL 50mm exhibited 4 LAGs in the histological sections of femur (Table 1, Fig. 1c). Karl Pearson’s correlation coefficient (*r*) indicated high correlation (*r* = 0.88) between the number of LAGs and the body size (Fig. 2).



Fig. 1. Hematoxylin stained cross-sections of the second phalanx of 4th toe of *M. carinata*. a) showing the absence of LAG, b), 1 LAG and c), 4 LAGs (arrows) in the periosteal bone of femur. (Mc, Marrow Cavity; Pbm, Periosteal Bone Margin; Arrow indicates: Lines of Arrested Growth; LAGs).

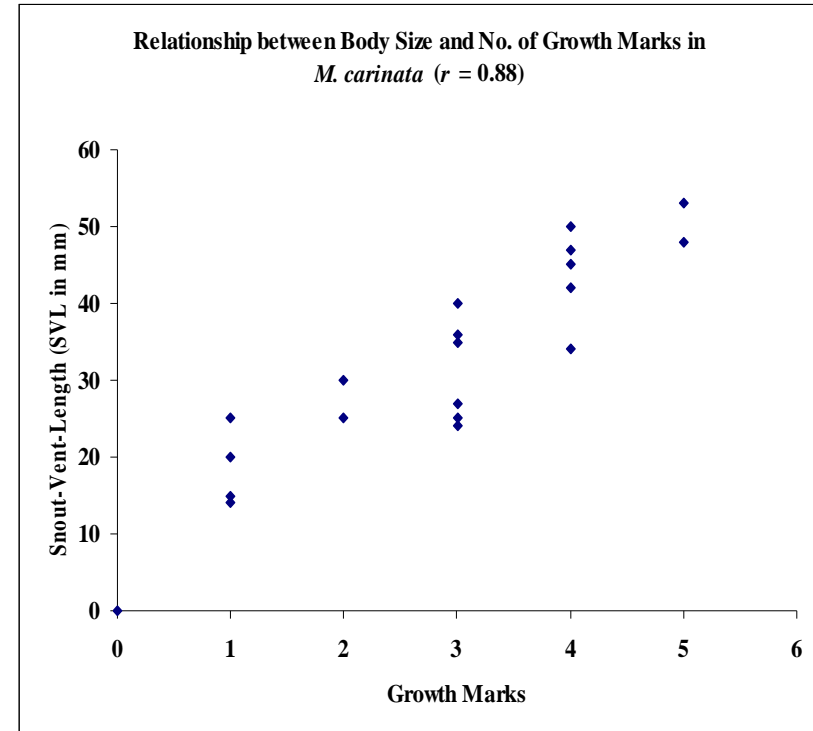


Fig. 2. Relationships between Body Size (SVL) and Number of growth marks in *M. carinata*.

Table 1. Relationship between SVL and number of LAGs observed in the Cross-sections of second phalanx in *M. carinata*.

Snout-Vent-Length (SVL in mm)	No. of Individuals	No. of LAGs
15 – 25	4	No LAG
25 – 30	2	1 LAG
24 – 40	6	2 LAG
34 – 50	5	3 LAG
48 - 53	3	4 LAG

Discussion

A lot of information has been accumulated in the field of age and longevity in the reptilian species (Castanet, 1994; Patnaik, 1994). Most of these studies have been carried out using reptilian species inhabiting the cold temperate areas where reptilian species express bone growth marks distinctly. Body size analysis, mark-release-recapture and skeletochronology are widely used methods to determine the age of lizards, crocodiles, snakes and chelonians (Smirina, 1974; Ortega-Rubio *et al.*, 1993; Smirina and Tselariou, 1996; Tucker, 1997; El Mouden *et al.*, 1999; Buffrenil and Castanet, 2000; Blomberg and Shine, 2001; Snover and Hohn, 2004; Zug, *et al.*, 2006).

The results of the present study demonstrate that growth marks reported in temperate reptilian species are comparable to those detectable in the cross sections of the phalanges on Indian skink *M. carinata*. Similar skeletochronological studies were reported of growth marks in the tropical lizards, *Calotes versicolor* (Patnaik and Behera, 1981); *Psammophilus dorsalis* (Mahapatro *et al.*, 1989), Gecko *Hemidactylus brooki* (Pancharatna and Kumbar, 2005), and *Sitana ponticeriana* (Rath and Pal, 2007; Pal *et al.*, 2009). Animals of different body size exhibit one to five growth rings in phalanges/femurs. Some studies reported that tropical reptilian species may live for a maximum of 5-6 year in the natural population (Patnaik and Behera, 1981; Mahapatro *et al.*, 1989; Pancharatna and Kumbar, 2005 and Rath and Pal, 2007). Further, the positive correlation between the number of growth marks and body size ($r = 0.88$) indicates that larger individuals have greater number of growth cycles and therefore, older in age. The fact that many of the Indian reptilian species exhibit marked seasonality in the reproductive activity, abdominal fat body weight and rate of metabolism (slow metabolism in winter and rapid metabolism in summer (Sarkar and Shivanadappa, 1989; Patnaik, 1994), suggests that bone growth is a cyclical phenomenon in these animals.

In conclusion, the results of the present study reveal growth rings are expressed as growth marks and LAGs in *M. carinata*. Animals of different body size exhibit one to five growth marks in phalanges.

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Age-Suicide Nexus : Neurobiological Perspective

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ABSTRACT

The present study was undertaken with the prime objective to assess the possible relationship between age and suicide. Further, it was intended to elucidate the nexus, if any, with respect to the neurobiological perspective. Parameters included sex, education, profession, socioeconomic group and age apart from mode and apparent cause of suicide. In all, forty three known cases of attempted suicides randomly chosen from the cross section of the society were reviewed. Percentages of failed and attempted suicide were also determined. Fascinating correlations among the covariates were observed. Suicide incidence in middle age order was found maximal in comparison to other age groups. The paper lays emphasis on the need of identifying suicide-prone, feeble-minded subjects and curbing suicidal deaths at all cost through effective stress management.

Keyword : Age, Suicide, Depression, Stress Management, Emotional Setback

Suicide, the act of self-destruction in a state of mental depression is seemingly the most unpleasant event of human life. Neurobiologists, psychiatrists and social scientists world over have made sincere studies to unravel the enigma of suicide in order to get some definitive clue about the genesis of death orientation among the auto-annihilators to contain suicides. It is frustrating to note that suicide is on the rise day by day and an answer to this menace, unquestionably, a slur on the face of human civilization is yet to be found. It is indeed intriguing what compels an individual to muster courage and determination for the agonizing step. Self-killing is thought to occur for a number of reasons.

It is alarming to note that suicide is growing fast and demographers regard it as one of the leading causes of death. In all probabilities, emotional setback upon failure in concerted efforts to achieve cherished goal in life may be thought liable for the feeling of irrelevance and insecurity. Persistent stress and tension are believably strong motives of suicide. Sentimental guys seem to succumb to drastic mood swings of low note possibly due to poor endurance. Human brain possessing inherent competence to cope with anxieties and perturbations of day-to-day life fails abruptly on being exposed to fatal jolts any time between childhood and senility.

In the given backdrop, the present study is aimed at assessing possible co-relation between age and suicide besides focusing on pertinent related issues was carried out. The paper also lays emphasis on the need of identifying suicide-prone, feeble-minded subjects and curbing suicidal deaths through effective stress management.

Demographic Indications

Published data suggest that more than 1,00,000 people commit suicide in India annually and every five minutes, someone somewhere in India attempts suicide (Sneha, 2007). Surprisingly enough, this scenario prevails when families of suicide victims have a general tendency to conceal incidence obviously to avoid embarrassment. Of late, it has been reported that China, India and Japan may account for 40% of all world suicides (WHO, 2008). NCRB survey reports are indicative of the fact that more than 10% of suicides in the world occur in India alone (NCRB, 1999).

Suicide : Myths and Facts

Fatalists nurture the feeling that if a person is destined to die by committing suicide at pre-determined date and time, circumstances in life will automatically turn conducive for self-killing. Suicidal urge is often linked with lunar positions and/or climatic conditions. However, scientific authentication and explanation could alone approve of such claims and come out with a plausible generalization.

In the eyes of social scientists, suicide is a social construction, essentially the fallout of the lapses on the part of the government in providing optimal living conditions for one and all irrespective of caste, creed, gender and age.

Neurobiologists view suicide as a major mental health concern associated with varied psychic impulses. More appropriately, it is a cry for help and attention and the wish to escape rather than a genuine intent to die (WHO, 2008). Recent studies suggest a high incidence of mental disorders in suicide victims at the time of their death (Arsenault-Lappierre *et al.*, 2004; Bertolote *et al.*, 2004). A pertinent question invariably troubles our mind whether humans are born with suicide instinct or suicide is used as the last resort in extreme helplessness. It is also believed that suicidal act begins in the imical, perturbed and constricted person once the idea of cessation comes into the consciousness (Nadkarni, 1986).

Some of the startling facts about suicide are noteworthy:

- Suicide defeats gerontological mission to add life to years by snatching away years full of life.
- Suicides are committed in individual capacity, connivance or pressure.
- Suicides are communicative.
- Fear of traumatic death hardly deters a firm mind.
- Adamant auto-annihilators are seldom scared of section 309 of IPC.
- Demand for assisted suicide is growing day by day.

Materials and Method

Forty three known cases of attempted suicides among human subjects randomly sampled from the cross section of the society were reviewed in relation to certain psychobiological parameters of interest viz. sex, education, profession, socioeconomic (SE) status and age of suicide, apart from mode and apparent cause of suicide. Data were raised from families of suicide victims/failed suicide through direct/indirect contact in respect of chosen parameters and their subcategories. Tabulation of the recorded data was done on per cent basis. In order to assess suicide success rate in the study group, percentages of the population of failed and successful suicides were also determined.

Results and Discussion

Table 1-2 and Figure 1-4 depict the results of the present study. Notable findings suggest definite trends of negligible or conspicuous impact of concerning parameters on suicide incidence as evident by the size of the population displaying visible impact.

Table 1 : Population of human subjects attempting suicide under various categories (in %)

Parameter	Subcategory	% Population
Sex	Male	60.47
	Female	39.53
Education	School level (Under VIII)	10.14
	Below Matric	13.16
	Matric	20.94
	Intermediate	23.26
	Graduate	31.96
Occupation	Student	58.12
	Service	20.94
	House-wife	06.98
	Businessman	04.65
	Farmer	02.33
	Children	06.98
SE group	Low	30.23
	Middle	67.44
	High	02.33
Suicide mode	Poisoning	37.21
	Hanging	23.26
	Drowning	18.60
	Shooting	09.30
	Jumping before Running Train	04.65
	Burning	02.33
	Cutting Veins	02.33
	Jumping from Height	02.33

Table 2 : Population of human subjects depicting success rate, suicide cause and age (in %)

Parameter	Subcategory	% Population
Success rate	Failed	16.28
	Successful	83.72
Suicide cause	Poverty	25.53
	Examination failure	16.28
	Love affair	18.60
	Insanity	06.98
	Family dispute	13.98
	Inferiority complex	04.66
	Deep frustration	04.66
	Humiliation	06.98
	Familial neglect	02.33
Age at suicide	<15 years	32.88
	15-49 years	60.44
	>49 years	06.68

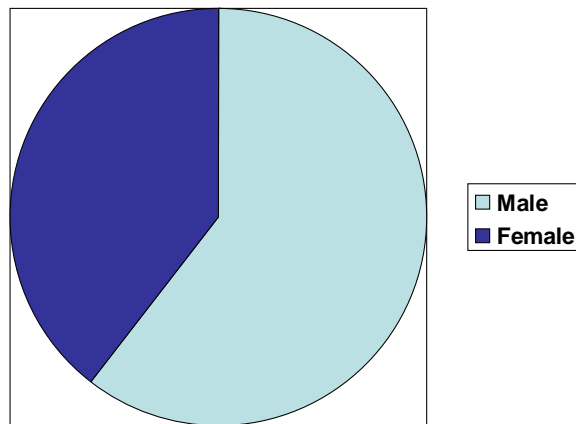


Fig.1 Sex ratio in suicide

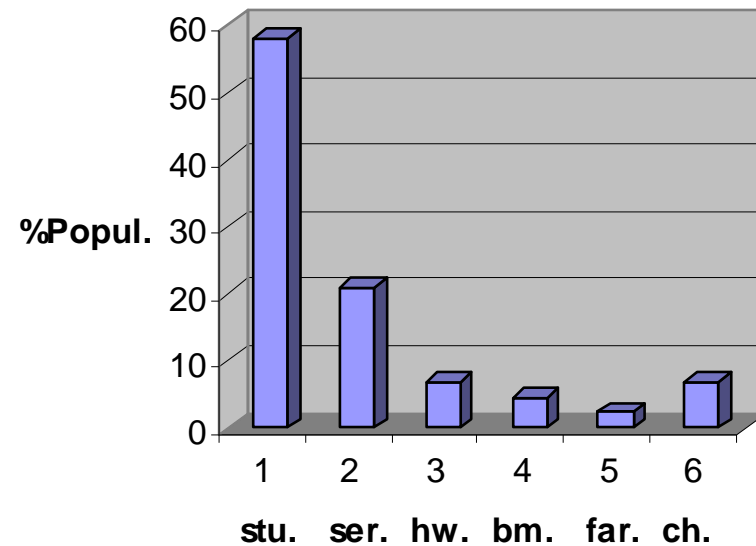


Fig. 2 : Impact of occupation on suicide

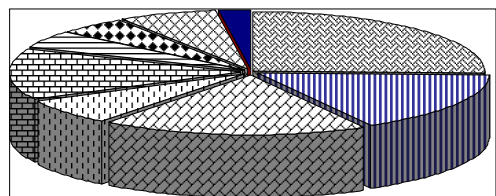
Higher suicidal cases in males in contrast to females may be considered indicative of greater proneness of masculine gender to suicide and relatively higher endurance to sustain devastating shocks being more feminine(Sridhar,2001). Education seemingly played no constraint in matters of suicide. People with higher academic qualification were found equally suicide-susceptible. Highest reported number of suicides in Kerela, country’s first literacy state (rediffmail.com News,2004) possibly support the view that suicidal behaviour is illogical and irrational.

Maximal percentage of self-killing was observed in the student category. Recent time shows an increasing trend in youth population (as high as 37.6%) who are falling in suicide trap. This shows the vulnerability of this section striving hard for self-identity, stability and security in the society. Highest suicide incidence in the middle order of socioeconomic group nourishing high aspirations and faced with resource crunch could be the manifestations of active stress factors

and family problems (rediffmail News, 2004). Prasad et al. (2006) also regard chronic stress and precipitating life events as major suicide risk factors.

Mode of Suicide: Suicidal deaths by poisoning and hanging were visualized in the study group in order of preference and the same order was also noticed by Nair (1986) earlier. Other methods of intentional self-destruction appeared less common. Individual mindset and depth of despair could be thought instrumental in deciding suicidal mode. Very low percentage of failed suicide might have been the fall out of chance failure, half-hearted gestures and contact seeking tendencies (Nadkarni, 1986). Bertolote and Fleischmann (2002) have also indicated that merely an estimated 10 to 20 million non-fatal attempted suicides occur annually worldwide.

Cause of Suicide: Among the various probable causes of suicide, poverty seemed to be the most potential ingredient with aggravating other conditions. Rawat (2007) holds the view that suicide might be the sequel of operation of multiple causes singularly or in unified manner. Highest suicide incidence in the middle age group might be attributed to acute mental stress in subjects struggling hard for acquiring a respectable position in life and meeting familial liabilities gracefully. Sridhar (2001) has reported occurrence of nearly 3/4th of all suicides in India among socially and economically productive subjects in identical age group.



- | | |
|-----------------------|-------------------|
| ⊠ A(Poverty) | ▨ B(Exam Failure) |
| ⊞ C(Love Affair) | ⊞ D(Insanity) |
| ⊞ E(Family dispute) | ⊞ F(Inf. Complex) |
| ⊞ G(Deep Frustration) | ⊞ H(Humiliation) |
| ■ I(Familial Neglet) | |

Fig.3 : Probable causes of suicide

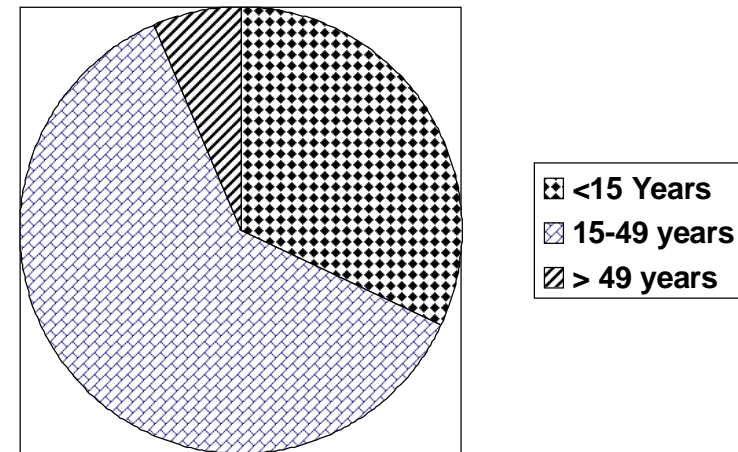


Fig. 4 : Age-suicide relationship

Suicide Prevention

An early adoption of fool-proof suicide prevention strategies and their subsequent honest execution might yield encouraging results. All of us take suicide in bad taste and sincerely desire its eradication. Recognition of suicide as a national priority (Manoranjithan et al., 2005) and taking up of a broad-based approach for suicide prevention and research (Manorajithan et al., 2006) are valid suggestions. Raising of awareness among the masses about the suicidal risk factors (Venkateshan, 2006) may prove of great help in identifying suicide-prone, feeble-minded and depression-susceptible subjects. Effective stress management is perhaps the only way out to tame suicidal impulses. Considering the positive role of EQ in managing emotions (Jain, 2006), the vulnerable subjects ought to be trained to empathize with their own and other's emotions. A social order with ample opportunities and minimal conflicts may be regarded conducive for a suicide-free society.

Conclusion

There is every reason to believe that neurobiologists will succeed in transforming *suicidophilics* into *suicidophobics* through modulation of complex brain functions in near future. It would be hopefully rewarding to introduce teaching of “Suicidomics” in schools and colleges. It may help young learners understand neurobiology of suicide, psychosocial implications of self-killing and idiocy of auto-annihilation. Suicide prevention mission truly requires active involvement of sensible and well-trained adolescents and youths.

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A Study of W/H Ratio as a Better Indicator of Obesity over BMI among Urban Obese Elderly

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ABSTRACT

A total of 270 subjects in the age group 60 & above residing in an urban area of Pratap Nagar, Jaipur were selected by convenience sampling method for a community based cross sectional study to assess which of the two, i.e., BMI or W/H Ratio is a better indicator of obesity for prevalence of hypertension. The sex ratio was 51.8% females & 48.2% males. Maximum population belonged to the age group 60 – 70 yr (45.18%), followed by 70 – 80 yr (38.14%). According to BMI 17.04 % were obese, while according to W/H ratio 47.41% were obese which is statistically significant, with higher prevalence among females. The overall prevalence of hypertension among the subjects was 12.96%, with males having 14.6% and females 11.43%. According to BMI 6.52% obese population had hypertension while according to W/H ratio it was 16.4% which is statistically significant. Hence, we can conclude that W/H ratio is a more sensitive indicator of obesity for development of hypertension.

Key words : Elderly, Obesity, Body Mass Index (BMI), Waist Hip Ratio (W/H ratio), Hypertension.

Why we are talking about old age and older people so much these days? The world has taken notice of growing phenomenon of population aging due to increasing contribution of elderly population to demographic figures day by day. We all aspire to “age successfully” with minimum physical disability and few age associated diseases.

In the past, obesity was considered as a ‘secondary’ pathology of no medical importance in old age; but nowadays, obesity is increasingly

being studied in Geriatrics too. There is a high prevalence of obesity in older adults. While women generally gain body weight during the menopausal transition, men tend to accumulate an excess of fat mass earlier in life for as yet unknown reasons.

According to the World Health Organization, obesity is one of the 10 most preventable health risks. Obesity, especially abdominal obesity is a very important risk factor of cardiovascular diseases. Present study is an attempt to evaluate W/H ratio as a better indicator of obesity over BMI for prevalence of hypertension in elderly population.

Material and Methods

A cross sectional study was conducted in Pratap Nagar, a north urban area of Jaipur, the field practice area of Department Of Community Medicine, Mahatma Gandhi Medical College, Sitapura, Jaipur, in January 2009. The elderly were defined as persons aged 60 or older. Convenient sampling procedure was adopted. House to house visits were made to recruit the eligible study subjects. Houses that were locked were not revisited. The study objective was explained to the eligible subjects and their informed verbal consent was sought. Subjects who agreed to participate in the study were interviewed on a pretested, preformed Performa. A total sample of 270 elderly was evaluated in terms of age, sex, blood pressure, anthropometric measurements as weight (kg), height (m), waist circumference (cm), and hip circumference (cm).

During the course of the interview we obtained two measurements of blood pressure in right arm sitting position with rest of at least 5 minutes on each study participant with a Sphygmomanometer. The average of two readings of the systolic and diastolic blood pressure was used as the blood pressure of the participant. The first measurement was recorded after obtaining demographic information from the subject while the second measurement was recorded after anthropometric measurements.

The hypertension status of the study participants was assessed by using standard criteria formulated by the World Health Organization (WHO). Hypertension was defined as either systolic blood pressure >

140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg and/or treatment with antihypertensive medication. This definition excludes hypertensives who have reduced the blood pressure to a normotensive range by non pharmacological means.

BMI was calculated by dividing the subject's mass by the square of his or her height, typically expressed in metric units:

$$BMI = \text{kilograms} / \text{meters}^2$$

The most commonly used definitions, established by the World Health Organization (WHO) in 1997 and published in 2000, provided the values BMI 25.0–29.9 – overweight or preobese, 30.0–34.9 - class I obesity, 35.0–39.9 - class II obesity, > 40.0 - class III obesity.

The Waist–Hip Ratio (the circumference of the waist divided by that of the hips of >1.0 for men and > 0.85 for women indicates abdominal fat accumulation).

The weight was measured by a weighing machine to the nearest 500 grams. Height, waist and hip circumference were measured by a measuring tape. Height was measured in metres from highest point on head to heel. Waist was measured in cms. at the midpoint between the lower border of the rib cage and the iliac crest. Hip measurement was done in cms. At the level of maximum convexity of gluteal region.

Observations

A randomly selected sample of 270 geriatric individuals with 48.2 % males and 51.8 % females comprised the study. Majority (45.18%) of them were in the age group 60-70 yrs, 38.14 % were between 70-80 years and 16.66 % belonged to over 80 year of age.

The body mass index of individuals was assessed and it was noted that 17.04% of the population was obese out of which 14.61% were males and 19.28 % were females. The W/H Ratio was assessed and according to it 47.41% were obese and 52.59 % were non obese. Out of the obese 30.0 % were male (W/H Ratio > 1.0) while 63.5% were females (W/H Ratio > 0.85). It was found that the occurrence of obesity according to BMI & W/H Ratio was statistically highly significant ($\chi^2 = 57.01, p < 0.05$)

It was found that 12.96% of the elderly were suffering from hypertension.of which 14.6% were males and 11.43% females.

Table 1. Age and sex wise distribution of study population

Age	Male	Female	Total
60-70 Yr	47	75	122 (45.19%)
70-80Yr	58	45	103 (38.15%)
>80Yr	25	20	45 (16.66%)
Total	130 (48.2%)	140 (51.8%)	270 (100%)

Table 2. Prevalence of obesity according to BMI & W/H Ratio

Sex	BMI				W/H Ratio				Total No.
	≥ 30		< 30		Obese		Non obese		
	No.	%	No.	%	No.	%	No.	%	
Male	19	14.61	111	85.38	39	30.0	91	70.0	130
Female	27	19.28	113	80.71	89	63.5	51	36.5	140
Total	46	17.04	224	82.96	128	47.41	142	52.59	270

Difference between prevalence of obesity due to BMI & W/H Ratio was found to be statistically significant. $\chi^2 = 57.01, p < 0.05$

Table 3. Prevalence of Hypertension according to sex

Hypertension	Male		Female		Total	
	No.	%	No.	%	No.	%
Present	19	14.6	16	11.43	35	12.96
Absent	111	85.38	124	88.57	235	87.0
Total	130	100	140	100	270	100

Table 4. Prevalence of hypertension among obese according to BMI and W/H Ratio

Hypertension	Obese					
	BMI			W/H Ratio		
	Male	Female	Total	Male	Female	Total
Present	2 (10.52%)	1 (3.7%)	3 (6.52%)	7 (17.19%)	14 (15.7%)	21 (16.4%)
Absent	17 (89.48%)	26 (96.3%)	43 (93.48%)	32 (82.81%)	75 (84.27%)	107 (83.6%)
Total	19 (100%)	27 (100%)	46 (100%)	39 (100%)	89 (100%)	128 (100%)

Difference between prevalence of hypertension among obese according to BMI & W/H Ratio was found to be statistically significant. $\chi^2 = 2.78$, $p < 0.1$

On comparison with BMI, 6.52% of obese elderly suffered from hypertension of which. It was 10.52% for obese males while 3.7% of obese females were suffering from hypertension. On comparison with W/H ratio, 16.4% obese elderly were having hypertension, 17.9% males having W/H Ratio > 1.0 (obese) were found to have the disease, whereas 15.7% of the females with W/H Ratio > 0.85 (obese) had the disease. Difference between prevalence of hypertension among obese according to BMI and W/H ratio was found to be statistically significant. ($\chi^2 = 2.78$, $p < 0.1$)

Discussion

Obesity's association with chronic diseases such as hypertension is widely recognized. This study addresses the actual prevalence and definition of obesity in older adults, and the known consequences of obesity.

In our study, age group 60-70 yrs (45.18%) constituted the major fraction of population followed by 70 -80 years (38.14%) and above 80 years of age (16.66%) in comparison to 51.6% (65-69 yrs), 37.4% (70-79yrs), more than 80 yrs (10.8%) in a urban population of North West Rajasthan (Singh et al.,2005) and 47.2%, 37.8% and 15% in age groups 60-69, 70 -79, 80 yrs and above respectively in rural population of Meerut (Goel and Garg, 2003)

The sex distribution showed that females (51.8%) were slightly more than males (48.2%). As compared to 47.56% females and 52.4% males in North West Rajasthan (Singh *et al.*, 2005)

According to the body mass index 17.04% were obese , (out of which 19.28% were female and 14.61% were male) and the rest were non obese (82.96%), while according to W/H ratio 47.41% were obese out of which (63.5% were female and 30.0% were male) and 52.59% were non obese. This significant difference in measurement of obesity due to these two criteria shows that those considered non-obese by BMI are included under obese according to W/H ratio. In a study at Brahmampur town (Satapathy *et al.*, 2005) in 50+ yr urban male adults only 1.8% were obese according to body mass index . In another study at Chandigarh (Sharma *et al.*, 2005) 33.5% of geriatric population were obese (BMI >25). In a study at Rohtak (Vashist, 1999), it was observed that 42.55% females and 30.76% males were obese (BMI >30 for males, > 28.6 for females). The low prevalence of obesity in our study may be because of change of definition of BMI i.e., BMI 25-30 are now considered as pre obese.

It was noted in our study that 12.96% subjects were hypertensive; prevalence was higher (14.6%) among males compared to 11.43% among females. In another study at Rohtak (Vashist, 1999), prevalence of hypertension was 12.45% which is almost similar to our data. But prevalence of hypertension in our study was comparatively lower as compared to other studies as that conducted in North West Rajasthan (Singh *et al.*, 2005) in 65 yrs and above about 51.2% of subjects had elevated blood pressure level. The prevalence was 50.7% in men and 51.8% in women. Another study done at Jaipur (Gupta *et al.*, 1995) showed the prevalence of hypertension in elderly aged 70 years and above to be 49.2%. The prevalence in men was 47.2% and that in women was 52.8%.

Among the obese population, having BMI >30 , 3 out of 46 (6.52%) developed hypertension. This was 10.52% (2 out of 19) for males & 3.7% (1 out of 27) for females. Among the obese population, based on Waist Hip Ratio (> 1.0 for males, > 0.85 for females) 16.4% (21 out of 128) developed hypertension. A percentage of 17.9 (7 out of 39) for males and 15.7% (14 out of 89) for females was observed. This shows

central or abdominal obesity (W/H Ratio) is more associated with development of hypertension as compared to peripheral obesity (BMI). In a study in Desert Region of Rajasthan (Agrawal et al., 2005) 58.8% obese (BMI > 25) (114 out of 194) developed hypertension in the urban area. In another study (Sengupta et al., 2007) 51.5% of obese elders (BMI > 25) developed hypertension. This discrepancy in prevalence of hypertension among obese could be due to change in definition of obesity.

A study in Tehran (Esmailzadeh et al, 2004) revealed that W/H ratio was found to have highest association to cardio vascular risk factors among all anthropometric indicators of obesity (BMI, WC, W/H ratio). Similarly, an Australian study (Dalton et al., 2003) also concluded that WHR is the most useful measure of obesity to identify individuals with CVD risk factors. In large study conducted in 52 countries (Sally Murray, 2006) and published in Canadian Medical Association Journal, 2006, increasing waist-to-hip ratio was found to be associated with increasing risk of myocardial infarction.

Conclusion

In this study of elderly persons, prevalence of obesity according to BMI was 17.04% while it was 47.41% according to W/H ratio. This shows that subjects, who were categorized as non obese according to BMI, are actually obese according to W/H ratio,

Further more the prevalence of hypertension was 6.52 % in obese population according to BMI while the same population when defined in terms of W/H ratio had a higher prevalence (16.4%). Thus we can conclude that W/H ratio is a more sensitive indicator of obesity for development of hypertension.

This means, if your belly has bulged out enough to catch up to the size of your hips, you should start worrying about your heart. Storing fat in your abdomen, apparently, is much more dangerous than piling it on your hips and butt.

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Telephone Follow-up of Patients Suffering from Chronic Pulmonary Diseases after Discharge from Hospital: An Observational Study

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ABSTRACT

Lack of information about the diseases, prevention of complications, appropriate nutrition leading to health improvement, keeping body healthy and the correct methods of using drugs has led to many problems for patients after discharge from hospital. Therefore, most of the patients especially who are suffering from chronic diseases, encounter physical and mental complications. So, a discharge planning unit was established since 1995 in order to train the patients to remember the recommendations after discharge, regular use of drug, follow an appropriate nutritional program for enhancement of their quality of life. Medical records of the patients hospitalized in Masih Daneshvari hospital between March 2007 and March 2008 were reviewed. The patients were called within 48 hours to 1 week after discharge. The questionnaire was filled from information through telephone and the data was analyzed by SPSS version 16. A total of 1974 patients were included and reviewed. Mean age of patients was 56.28 ± 17.94 years. Of the total number of patients, 1286 (64.2%) were satisfied with physicians, nurses and other health care services, while 94 (4.8%) were not satisfied

with any of them. The mean length of stay in hospital was 11.36 ± 8.81 days. The telephone follow up have decreased patients' readmission to 13.8% in the hospital. It appears that telephone follow up is a quick, available, efficient and cost effective method, which on average takes 3.5 min to decrease frequent readmission and treatment cost in the hospital.

Keywords : Chronic Disease. Lung Diseases, Obstructive, Questionnaires, Telephone, Patient Care Planning, Patient satisfaction.

According to multiple studies, patients particularly elders are faced with dilemmas after discharge from the hospital, such as lack of sufficient knowledge about their condition, correct and timely taking medicines, drug reactions and flare up of illness (Wong *et al.*, 2001). These problems are particularly more pronounced in individuals with chronic and special conditions. Because of the mentioned reasons, patients have become more prone to flare ups of their condition with decreased psychological and physical performance (Mistiaen, P. and Port, E. 2007; Beaucage *et al.*, 2006 and Blog, I. 2003).

As a result, there is need for a unit where people who are discharged from the hospital can obtain adequate information about their illness, proper drug intake, appropriate nutrition and overall improvement in their quality of life. Furthermore, outcomes should be evaluated as has been done in other countries (Wong *et al.*, 2007; Poncia *et al.*, 2000; Pal B, 1998 and Mistiaen, P. Poot, E. 2007). According to a study form Hong Kong, it has been suggested that in accidents and following recurrent emergency visits by patients, their follow up after discharge by nurses has decreased number of returns and health expenditures. In another study in England, phone follow up has been considered effective and practical. The researchers note that using this method to keep in touch with patients after discharge from the hospital can address many unforeseen issues and resolve them easily. It can diminish emergency visits, recurrent rehospitalization and need for long term health care services (Poncia *et al.*, 2000). Another study also supports desirable outcome by patient follow ups in terms of decreased office visits and flare ups (Pal, B., 1998). As a result, a follow up unit was initiated for the first time in 1995 at the Masih Daneshvari Hospital and starting October of the same year began

functioning to increase patient interest in correct following of physician recommendations and suggestions upon discharge from the hospital and improve their health status and recurrence of illness and emergency visits, health care costs and eventually improve their quality of life and it's activities have been under constant evaluation and fully reported.

Material and Method

The project was an observational study. Of all patients admitted to Wards 3, 8 and 9 (General Medicine Wards at Masih Daneshvari Hospital), 1974 were randomly selected who met inclusion criteria and were requested to fill questionnaire prepared by multi-specialty team of health care workers at the center which included questions about their satisfaction with health care services during hospitalization and the outcome of their medical condition per the patient and hospital records were also referred to.

Initially patients were selected if they had a chronic respiratory condition including chronic bronchitis, asthma and bronchiectasis who had appropriate mental status and were able to cooperate. They were required to have good understanding of terms and instructions, their illness and self-care. Literacy was required.

Inclusion criteria included all patients hospitalized in the medicine wards at the Masih Daneshvari Hospital who agreed to participate in the study and did not meet the exclusion criteria of:

- 1) Those who had a wrong phone number, their line was disconnected or did not have a stable phone and contact was not possible
- 2) Those who did not agree to follow up by the unit
- 3) Those who had attended the hospital for special health services such as endoscopy, radiography and others
- 4) Those who needed special medical care after discharge such as dialysis, chemotherapy or radiation therapy

Phone follow-up of the patient regarding their particular questions, medications and physician recommendations and arranging follow-up appointments were done within a week after discharge. After three months post discharge, patients were contacted and hospital records used to assess number of hospital readmissions and emergency visits

during this period as end points of the study to compare the patients who received phone follow-up care with the patients who did not (result of preliminary 6 month follow-up by phone interview of 810 general patients).

After patient consent was acquired and instructions were given about phone follow up and phone numbers were recorded, individuals were contacted 48 hours up to a week after discharge and this was repeated in 3 months. The phone conversation included greetings followed by questioning based on a questionnaire (Montazeri *et al.*, 2004) which pertained to the patient's general well being and satisfaction with the health care received during hospitalization. To evaluate patient happiness, type of questionnaires were used which had been evaluated via qualitative research and involved partially formal interviewing and had been revised based on patient encounters from other studies (Williams B. 1994; Farid, A., Mohsen, T. 1994 and Behzad *et al.*, 1997). The main inclusions of the questionnaire were quality of health services such as the admission process, emergency care, quality of medical appliances and services, and hospital food. The two areas of encounter with the physician and doctor availability and quality of nursing care were evaluated by a 5 response rating scale from very satisfied to very unsatisfied. The remaining questions were open ended and focused on quality of care by other hospital encounters such as readmission, time interval until next rehospitalization or possibility of patient passing away. At the conclusion, patients were requested to present their questions and if needed to contact their physician. The information collected was recorded and was analyzed using the SPSS 16 statistical software and interpreted.

Results

In the present study, 1974 patients were selected that 739 (37.4%) were men and 1233 (62.5%) were women. Mean age was 56.55 ± 17.94 years (age was recorded in 626 individuals). Considering their diagnosis, 1711 (86.7%) had one of either tuberculosis, COPD, asthma, bronchiectasis or other illnesses.

From this group, 140 people (7.1%) had tuberculosis, 320 (16.2%) COPD, 134 (6.8%) asthma, 116 (5.9%) bronchiectasis and 1001 (50.7%) had other conditions such as cancer, bronchitis, emphysema and others.

At the time of admission, 205 patients (10.4%) had two diagnoses and 4 (0.2%) had three.

Duration of hospital stay was also recorded and from 1974 patients, 29 had unknown duration of hospital stay. The remaining 1945 had an average hospital stay of 11.35 days with a range of 1-106 days.

During the evaluation, rate of patient satisfaction with the physicians, nurses and other hospital services was determined. In 612 of the total 1974 patients due to various reasons such as incorrect phone number, lack of response and eventually inability to reach them were not included.

Among 1362 remaining patients, 1268 (64.2%) had completely been satisfied with the physician, nurses and other hospital care and 94 (4.8%) had been unsatisfied.

From 1420 patients (554 were missed), 81 (4.1%) passed away, 140 cases (7.1%) had no change in their condition, 1090 (55.2%) improved and 109 (5.5%) had been worse.

Table 1. Patient Distribution of Medical Outcome

Patient Outcome	No	%	Valid %
Death	81	4.1	5.7
No change	140	7.1	9.9
Improvement	1090	55.2	76.8
Worsening	109	5.5	7.7
Total	1420	71.9	100

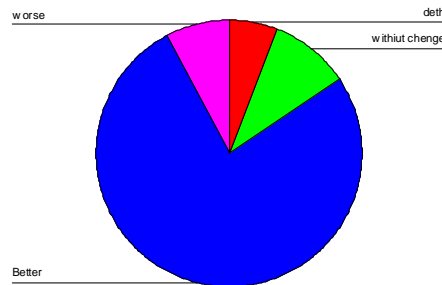


Figure 1. Patient Distribution of Medical Outcome

Table 2. Table Demonstrating Patient Level of Satisfaction with Follow-up Care

Patient Satisfaction	No	%	Valid %
Satisfied	1224	62	89.9
Unsatisfied	94	4.8	6.9
Unsatisfied with Physician or Nurse	44	2.2	3.2
Total	1362	69	100
Missed Patients	612	31	

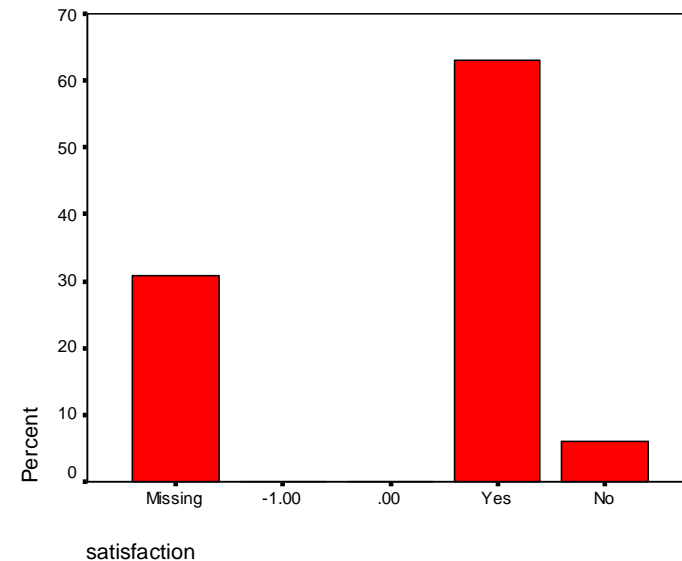


Figure 2. Patient Satisfaction

In this study, patient revisits were recorded although no information was available in 1059 cases. Among the remaining 915, 273 (13.8%) had attended the center outpatient clinic.

Another 457 (23.2%) had visited private offices and 185 (9.4%) had attended both. A total of 915 (46.4%) had reattendance.

Discussion

Many of the patients are faced with various dilemmas in the first few weeks after discharge from the hospital (Mistiaen P. and Poot E. 2007). Particularly, elderly patients due to decreased mental status and physical ability might withdraw from society and their issues can be neglected by physicians and nurses (Poncia *et al.*, 2000).

Considering the fact that chronic respiratory disease such as COPD occur more often in older ages, above situations pertain to them as well. As a result, issues such as physical and psychological deficiencies, lack of awareness of correct use of medications and appropriate nutrition, symptoms of their illness and handling them are encountered by COPD patients.

In recent years, several projects have addressed patient follow up after discharge with the hope to decrease difficulties that may arise and have been under evaluation.

General plans after discharge provides continuity of care and improves outcome. Care is initiated before date of discharge, continued during hospitalization and after the patients leave the hospital (Beaucage *et al.*, 2006).

Programs to follow up patients after discharge have successfully been administered by organizations and centers with the goal of improving quality of care, individual health and patient and employee satisfaction (Blog I. 2003).

Comprehensive evaluation of patients particularly the elderly includes health issues, activities and psycho-social aspects of life (Styborn K. 1994).

For rehabilitation of older patients, long term goals include maintaining health and independence with activities of daily living (Ibid.). To achieve these purposes, phone follow up to keep in touch by the caring nurse is desired and is also a useful tool for delivering health education and recommendations, addressing symptoms and recognizing them on time, encouraging the patient and eventually providing preferred guidance after discharge (Mistiaen P and Poon E., 2007). Many studies have supported phone follow ups as a useful and effective method for keeping in touch with patients (Poncia *et al.*, 2000 and Yael Waknine, 2004).

Insignificant and common problems of patients while hospitalized can be neglected and after discharge lead to revisits, rehospitalization and unforeseen circumstances. Phone follow up within 1-3 days after leaving the hospital can diminish these issues by becoming aware of them, home visits and early interventions (Poncia *et al.*, 2000).

As a result, phone follow up requires trained nurses in medicine, pharmacology and other health care specialties and their experience (Poncia *et al.*, 2000; Mistiaen P. and Poot E. 2007).

By this method, nurses can teach patients to come along with their issues. They can monitor worsening and unknown symptoms of the patients and evaluate patients' understanding of physician recommendations and consequently guide them as to how they should continue their medical care. As a result, information is transferred in better way and difficulties are limited or even handled before they arise (Poncia *et al.*, 2000).

Telephone contact with patients is a practical means of controlling and overlooking patient issues and finding individuals in distress (Poncia *et al.*, 2000 and Yael Waknine, 2004). In our study, 1974 patients were followed up by phone after discharge. Contact was made between 48 hours and one week and questionnaires were completed and the procedure was repeated in three months. Recurrent visits, exacerbations of illness and days of hospitalization and eventual satisfaction were evaluated.

In a study in Hong Kong, decreased recurrent visits and medical costs were shown by following patients up after discharge. Interviews with patients have shown that therapeutic recommendations on phone were not influential. To change this condition, improving counseling abilities and training regarding handling of illness flare ups and making recommendations have been proposed (Wong *et al.*, 2001).

In another study in England including outpatient rheumatologic patients, timely phone contact between the counselor and the patient had been made and course of illness, change in general medical condition and treatments were supervised and results of work up done at the last visit were provided on the phone. The contact time was about 3.5 minutes (1-15 minutes) for each individual (Pal, B. 1998).

Patient satisfaction with phone follow up showed that in general this is a desirable method and time and costs are saved and involves low stress and can resolve issues without unnecessary visits and long waits (Poncia *et al.*, 2000).

Phone survey has revealed dissatisfaction due to the impersonal nature of the method, lack of sympathy and long distance counseling and lack of complete understanding, not hearing well on the phone and language difficulties and dislike to converse on the phone. Careful selection of patients for this method can improve results. In this study, 90% of patients were satisfied with this method (Pal B. 1998).

Another study regarding telephone follow up of elderly patients attending the emergency room and after accidents in England has shown extensive satisfaction by the admitted patients and improved physician and nursing awareness of the course of the patients' condition after discharge (Poncia *et al.*, 2000).

In other studies, benefits of this method and its desirable outcome have been observed (Beaucage *et al.*, 2006; Blog I. 2003; Styborn, K. 1994; Bowman *et al.*, 1994; Patrica L. and Saph Brown Spath, 2003; Yale Waknine, 2004). In our study also, desired outcome and high satisfaction of patients with this method of follow up has shown its effectiveness and usefulness at our center and it is hoped that other medical centers in the country adopt this methodology and trained personnel with medical knowledge and counseling expertise be selected for this position. With the correct application of this plan, health care costs, emergency visits, illness exacerbations can be decreased and eventually quality of life after hospital discharge can be improved. Limitations of our study includes many missing data, lack of appropriate selection of patients for compatibility and interest in completing questionnaires, insufficiently trained personnel, lack of complete medical recommendations and early recognition of illness symptoms via phone. Lack of information on rehospitalization and time interval to next readmission in the three months after discharge are also limitations of our study which should be included in further studies.

Conclusions

Phone follow up is a low cost method, saves physician and patients time and can be performed by one nurse or trained individual within 3.5

minutes (1-15 minutes) and less patients express dissatisfaction with their hospital care. It has been considered as a desirable and effective method in many studies. Successful outcome of patient care has been reported.

This method has a useful place in following patients up particularly in cases of chronic disease. It can diminish recurrent visits, increase the time interval between visits and lower health care costs.

In conclusion, more comprehensive studies with bigger sample size, better selection of patients and better utilization will be required.

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Predicting Sensitivity and Specificity of the Berg Balance Scale and the Timed Up and Go Test of Residents in Old Age Home : A Prospective Study

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ABSTRACT

The purpose of this study was to determine whether Berg balance scale (BBS) and timed up and go test (TUG) tests could predict falls in older adults and find out the sensitivity and specificity of each scale in Indian old age population. Forty nine subjects were tested one time for the study with both Berg Balance Scale and Timed Up and Go Test. The cohort was followed for 6 months to track falls. Each subject was given a booklet at the end of the balance test session. Subjects were asked to record daily whether a fall occurred. At the end of the study period of 6 months, the frequency of the falls were recorded. The Sensitivity of BBS and TUG when compared with the fall frequency was 66.66 per cent, whereas the specificity of 67.64 and 55.88 per cent were recorded. Relative simplicity of the tools (BBS and TUG) makes it an ideal tool in clinical and community setting. But measurement of BBS or TUG alone to screen for old age people for balance problem should be viewed with caution. A better way to screen for fall might be to use the score of these tests along with examination of the environment.

Key Words: Fall, Berg Balance Scale, Timed Up and Go Test

One of the major problems associated with aging is an increased susceptibility to falling. Falls in elderly is a major health concern in terms of mortality, morbidity and cost to health services. Falls is common in elderly above the age of 65 years of age. Falls lead to serious injury in nearly 5 per cent of people who had a fall but the psychological effects can decrease the quality of life. The other consequence of falling besides from physical

injury is reduced mobility. Individual's risk for falling is associated with a variety of sensory, motor, cognitive, and environmental variables. It ultimately depends on their frequency of loss of balance episodes and their ability to recover balance by stepping, grasping, or swaying. One of the important steps in prevention of falls is a fair test which can be used to detect people who are at the risk of fall and non-fallers. Many researchers have attempted to identify risk factors for falls and to develop strategies for prevention (Tahir Masud *et al.*, 2001; Mary, 2003).

Physical therapists routinely perform diagnostic tests on their patients to identify people at risk to fall. There are numerous tests which have been used for identifying people with risk of fall. Several researchers have used external perturbation and a force platform to study balance. Studies have been also conducted on the sensory organization balance test and Modified Clinical Test for Sensory Interaction on Balance (SOT). The SOT and the Modified CTSIB examine postural sway during different sensory challenging conditions. But examinations of balance through expensive and sophisticated instrument do not necessarily improve the efficiency of fall assessment (Boulgarides *et al.*, 2003).

A reliable and a valid test should increase the ability of the therapist to predict who are in the risk of fall (Riddle and Stratford, 1989) and at the same time should be easily available, simple and less expensive. In this study, I have chosen two simple, reliable and easy to use tests. For example Berg Balance scale (BBS) takes approximately 20 minutes to administer and requires no sophisticated instrument. Likewise TUG Timed up and Go Test also takes few minutes to administer with no instrumentation. Hence these tests make it ideal to use in a clinical setting as well in a home based setting. The tests which used to predict fallers are varied in range from clinical test which are gait based, computer aided platform etc. Among the plethora of test used to identify fallers the commonly used are Berg Balance Scale (BBS). The test was developed by Berg *et al.*, (1989). Content validity of the BBS was established in a 3-phase development process involving 32 health care professionals who were experts working in geriatric settings. The BBS was reported to have an inter rater reliability of 0.98 (ICC) (Berg *et al.* 1992). Construct validity has been assessed using a variety of approaches. The Pearson *r* correlation between the Berg Balance scale and the balance subscale of the Tinetti Performance-Oriented Mobility Assessment (POMA) was .91. The Pearson *r*

correlation between the BBT and the Barthel Index mobility subscale was 0.67. BBS score showed significant correlations with indicators of motor functioning, stage of disease, and daily living capacity in a prospective, study of 38 men with Parkinson's disease (Qutubuddin *et al.*, 2005). The BBS and TUG were also shown to correlate with balance confidence. In a study of 50 subjects who were community-dwelling elderly people, aged 65 to 95 years, Berg Balance Scale and Functional mobility was measured using the Timed Up & Go Test strongly correlated with balance confidence as measured using Activities-specific Balance Scale (ABC) by Hatch J *et al.* (2003).

BBS was used to monitor the status of patient's balance and to assess disease course and response to treatment (Lord *et al.*, 2003). Harris *et al.* (2005) found poor correlation between falls and BBS score in a group of institutionalised chronic stroke patient. Chiu and his co-workers (2003) did a comparison of four functional tests of the Berg Balance Scale (BBS), Tinetti Mobility Score (TMS), Elderly Mobility Scale (EMS) and Timed Up and Go test (TUG) discriminating fallers from non-fallers in older people and concluded that BBS was the most powerful functional test of the four in discriminating fallers from non-faller. Lajoie and Gallagher (2004) studied 125 subjects within the elderly community and compared their postural sway, reaction time, the Berg balance scale and the Activities-specific Balance Confidence (ABC) scale score and concluded that the reaction time, the total Berg score and the total ABC score contributed significantly to the prediction of falls with 89% sensitivity and 96% specificity.

The other test which was selected for this study was the Timed Up & Go Test (TUG) which was a test originally developed by Mathias (1986). Unlike BBS which is a ordinal scale with 14 item scale, the TUG measures the time it takes a subject to stand up from an armchair, walk a distance of 3 m, turn, walk back to the chair, and sit down. It was developed originally as a clinical measure of balance in elderly people and was scored on an ordinal scale of 1 to 5 based on an observer's perception of the performer's risk of falling during the test. Podsiadlo and Richardson (1991) modified the original test by timing the task (rather than scoring it qualitatively) and proposed its use as a short test of basic mobility skills for frail community-dwelling elderly. TUG is shown to have a good correlation with functional mobility. The TUG scores also were highly correlated with balance confidence scores (ABC Scale scores), demonstrating that a

relationship exists between balance confidence and functional mobility as demonstrated by Hatch *et al.*, (2003). Lundin-Olsson and colleagues (1997) investigated the effect of performing multiple tasks on balance, mobility, and falls in frail older adults who lived in an institutional setting. They modified the TUG to add a manual task (TUG manual) (ie, carrying a glass of water) and found that frail older adults who had a time difference of greater than 4.5 seconds between the TUG manual and the TUG were more prone to falls during the following 6 months. But in another study Shumway-cook concluded that the TUG scores with or without an additional task (cognitive or manual) were equivalent with respect to identifying fallers and nonfallers.

Few studies have been conducted on Indian setting to assess the ability of balance test to predict fallers in old age subjects. Due to the unique balance requirement of Indian people and customs the data from the studies which are not in Indian context may lead to different conclusion. The purpose of this study was to determine whether Berg balance scale (BBS) and timed up and go test (TUG) tests could predict falls in older adults and find out the sensitivity and specificity of each scale in Indian old age population.

Methodology

Subjects : A sample of convenience was used. Forty nine adults living in the old age residential home were selected in the study after seeking informed consent. The mean age of the cohort was 74.3, S.D= 7.62, range 65-88, male 27, female 22. Each home provided the residents with basic care and medical support. The residents even though were in what could be conventionally called as instiutionised, they where expected to do all there daily activities independently. Also the subjects were not confined to the institution alone.

Criteria

Inclusion criteria:

- * Able to stand for at least for 5 min without assistance
- * To walk for a minimum of 3 meters with or without assistance
- * Subjects are able to follow direction and give appropriate respons.

Exclusion criteria

- * Severe cognitive and cardiac problems

The Berg Balance Scale

The equipments used for Berg Balance Scale was a step stool, a chair with arms, a tape measure, a stop clock, a pen and a table. Patients are asked to complete 14 tasks, and each task is rated by an examiner on a 5-point scale ranging from 0 (cannot perform) to 4 (normal performance). Elements of the test are supposed to be representative of daily activities that require balance, including tasks such as sitting, standing, leaning over, and stepping. Some tasks are rated according to the quality of the performance of the task, whereas the time taken to complete the task is measured for other tasks. The developers of the BBT provided operational definitions for each task and the criteria for grading each task. Overall scores can range from 0 (severely impaired balance) to 56 (excellent balance).

The items on the Berg Balance Score are shown below.

Balance Feature	Score (0-4)
1. Sitting unsupported	----
2. Change of position: sitting to standing	----
3. Change of position” standing to sitting	----
4. Transfers	----
5. Standing unsupported	----
6. Standing with eyes closed	----
7. Standing with feet together	----
8. Tandem standing	----
9. Standing on one leg	----
10. Turning trunk (feet fixed)	----
11. Retrieving objects from floor	----
12. Turning 360 degrees	----
13. Stool stepping	----
14. Reaching forward while standing	----
Total Score (0-56):

The Timed Up & Go Test (TUG)

The TUG measures the time it takes a subject to stand up from an armchair, walk a distance of 3 m, turn, walk back to the chair, and sit down. Podsiadlo and Richardson (1991) modified scoring was used

wherein the time taken to complete the task is noted. The subject is given a practice trial followed by 2 timed trials. The 2 timed trials are averaged for each subject's score. The requirements for the TUG were a timer, and stationery. Shumway-Cook et al have suggest that older adults who take longer than 14 seconds to complete the TUG have a high risk for falls. In this study 14 sec is used as cutoff to classify the subject's as fallers as suggested by Shumway Cook *et al.* (2000). A rater was used.

Procedure

Subjects were tested one time for the study with both Berg Balance Test and Timed Up and Go Test. Testing was performed at the respective old age home itself. Since there is no gold standard test to diagnose those who will fall, fall outcome was used as the reference against which the predictor variables and tests were compared. Then the cohort was followed for 6 months to track falls. Each subject was given a booklet at the end of the balance test session. The booklet contained a calendar for recording falls and instructions for use of the calendar. In addition, the physiotherapist who worked as a consultant in the respectively old age home were requested to monitor for falls on the subjects. At the end of the study period of 6 months, the frequency of the falls were recorded.

Data Analysis

To find the relationship between each subjects balance score and his or her reported fall was analysed by chi- square test. The results from diagnostic accuracy studies are summarized like in the table 1.

Table 1. Diagnostic Test

Gold standard test

Result	Condition present	Condition absent	
Positive	True positive (a)	False positive (b)	a + b
Negative	False negative (c)	True negative (d)	c + d
Total	a + c	b + d	

In this table, the terms "condition present" and "condition absent" are used to identify people who truly have or do not have the condition of interest (the gold standard test is either positive or negative). (In this study fall incidence) The cell values and marginal values are combined to calculate validity indexes. Definitions of terms related to diagnostic testing

and formulas for the validity indexes of sensitivity and specificity and the formula for calculation are given below.

Sensitivity: Those people correctly identified by the test as having the condition of interest as a percentage of all those who truly have the condition of interest:

$$[100\% \times (a / [a + c])].$$

$$100\% \times \text{True positive} / (\text{True positive} + \text{False Negative})$$

Specificity: Those people correctly identified by the test as not having the condition of interest as a percentage of all those who truly do not have the condition of interest:

$$[100\% \times (d/ [b + d])].$$

$$100\% \times \text{True negative} / (\text{True Negative} + \text{False Positive})$$

Results

As the subjects were all intuition based they were available until the completion of the study period. At the end of the six months of study period, 15 people have reported one or more falls (30.6%) out of 49. As hundred percent follow up was achieved, the initial scores of the TUG and BBS were compared with the incidence of fall. The information was compressed into a 2x2 chi-square table (Table 2 and 3) a relationship between the actual values and expected frequencies.

Table 2. Chi-square test results for comparison of number of falls reported and BBS scores

	Fall	No Fall	Total
BBS			
Identified as faller	10(a)	11(b)	21
Identified as non faller	5(c)	23(d)	28
Total	15(a+b)	34(c+d)	49

Table 3. Chi-square test results for comparison of number of falls reported and TUG scores

	Fall	No Falls	Total
TUG			
Identified as faller	10	15	25
Identified as non faller	5	19	24
Total	15	34	49

The table 2 is the test result for comparison of number of falls and BBS. The Sensitivity of BBS when compared with the fall frequency was (10/15) 66.66 per cent, whereas the Specificity (23/34) 67.64 per cent.

The table 3 is the test result for comparison of number of falls and TUG. The Sensitivity of TUG when compared with the fall frequency was (10/15) 66.66 percent, whereas the specificity (19/34) 55.88 per cent.

Discussion

Using the test developers' cutoff score of 45 (out of 56) as a guideline, the Berg balance test is designed to identify those individuals who are classified as "fallers" (45 and below) and those who are classified as nonfallers (those with score of above 45). Ideally, a sensitivity and specificity of 100% indicating that the test always identifies correctly, detects the condition of interest. But in case of BBS a sensitivity of 66.66 per cent indicates that 66.66 per cent of subjects who were true fallers had a positive BBT (a score of less than 45). That is, approximately a third of the subjects who were fallers were missed by the BBT. This value of 66.66 is nearer to 64 per cent reported by Riddle and Stratford (1989) when they combined values from 2 studies of BBS on fall. The same is also true for TUG which also showed a sensitivity of 66.66 per cent (Tab 3) when a 14 second as used cut-off. This value of low sensitivity is in contrast with other researchers (Shumway-Cook *et al.*, 2000).

Although there are no agreed standards for judging sensitivity and specificity, sensitivity of 66.66 per cent should generally be considered quite low because more than a third of the subjects were misclassified..

Specificity

A specificity of 67.64 per cent for BBS indicates that 68 per cent of subjects who were non fallers had a negative BBT (a score of above 45). That is, nearly 30 per cent of the non fallers who were diagnosed as non faller had a fall. But at the same time the specificity of only 55.88 per cent for TUG is very low than the BBS. The specificity of 55.88 per cent means that nearly half of the subjects classified as "Non fallers" are people with no balance disorder. Specificity of BBS and TUG always has been reported as moderate to high ranging from 78 to 96 per cent for BBS (Harada *et al.*, 1995) and TUG as high as 87 per cent (Shumway Cook *et al.*, 2000). But in this study the specificity of BBS is low in contrast with

other studies. Also the specificity of TUG was lower than BBS using the same cut-off value. The low sensitivity of 66.66 per cent of both the test indicate that the difference between physical impairment and fall which are not yet clear. Also few subjects who are severely impaired adapt different strategy like reduced mobility, increasing attention while doing challenging task, etc to reduce the risk of fall.

The low specificity also may be due to the environmental constraints which lead to fall. Even subjects who are classified as balanced and have a better walking speed that do not negotiating difficult constraints put by the environment. For example stairs without railing, wet or uneven surface, high stair height all form challenging constraints for the relatively more balanced. This is truer as in the case of TUG where a good walking speed did not necessarily lead to low risk to fall. Falls are known to be multifactorial, and a complex interaction among different factors determines whether person is at risk for falls as indicated by numerous studies. The low sensitivity and specificity leads to the increasing evidence of multifactorial nature of falls (Tahir Masud *et al.*, 2001).

Clinicians should be cautious when using the BBS or gait speed to determine fall risk in residential old age subjects. Falls occurred frequently during walking; it may be necessary to focus on reactive balance and environmental interaction when assessing individuals for risk of falls and devising fall prevention programs for individuals. Any balance screening should take into account the multifactorial aspect of balance and should be incorporated in the assessment. Especially a complete environment in which the person interacts may along with screening tools like the one used may lead to increased sensitivity and specificity. Modification of environmental hazards may also lead to decreased frequency of falls.

Limitation

As all the subjects lived in a residential home and hence had less mobility than community based old age people along with a relatively smaller sample size, leads to inability to generalize to the whole of geriatric population.

Conclusion

Relative simplicity of the tools (BBS and TUG) makes them ideal in clinical and community setting. But measurement of BBS or TUG alone

to screen for old age people for balance problem should be viewed with caution. A better way to screen for fall might be to use the score of these tests along with examination of the environment.

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A Study on Nutrition and Health Profile of Depressed Adult and Elderly Men of Baroda City: Impact of Herbal Intervention with Brahmi (*Bacopa monneira*)

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ABSTRACT

One hundred and fifty male subjects having moderate depression were screened as per Beck's Depression Inventory Score and were equally grouped into three different age groups (50-59 yrs, 60-69 yrs and 70+ yrs). Data on socio-demographic profile was collected by questionnaire, nutritional status by anthropometry and clinical parameters, dietary profile by 24-hr diet recall, disease profile by checklist method and mental health status by Beck's Depression Inventory (BDI), Mini- Mental State Examination (MMSE) and Cognitive Impairment Test (CIT). The result on socio-demographic profile reported that there were more number of widower in 70+ yrs age group (30%). Mean nutrient intake of all the elderly subjects was lower compared to RDA for energy, protein, choline, tryptophan, methionine, vitamin B6, vitamin B12 and vitamin C. Bone related problems were most prevalent in majority of subjects of all the age groups. Minor health complaints like lethargy, lack of appetite, low mood and sleep disturbances were most common in all the age groups. The study on brahmi with respect to mental health status over a period of 6 weeks on 15 elderly subjects showed a significant improvement ($p > 0.05$) in BDI, MMSE and CIT scores. A significant increase was found in the intake of nutrients like energy, protein, choline, tryptophan and methionine ($p > 0.05$). Minor health complaints like low mood, lethargy, lack of appetite, fluctuation in mood, sleep

disturbance, indigestion, acidity and constipation showed a decrease in prevalence after intervention.

Key words: Brahmi, Depression, Adult and Older men.

Aging refers to irreversible biological changes that occur in all living beings with the passage of time, eventually resulting in death. Aging process involves a slow decline in physiological vigour and an increasing susceptibility to age-related disease. Elderly individuals face a higher risk of developing mental as well as physical morbidity. Their vulnerability to mental problems is due to aging of the brain, physical problems, socio-economic factors, cerebral pathology, emotional attitude and family structure. In most of the cases, mental illnesses co-exist alongside physical problems in the elderly person. Mental illnesses that predominantly affect older people include memory loss, depression, dementia, etc. Upto 10 percent of the elderly have memory problem significant enough to interfere with their ability to function independently. National prevalence rate for all mental disorders was found to be 73/1000 (Ganguli, 2000).

Depression is one of the most frequent psychological problems encountered. It is a serious medical condition that affects the body, mood and thoughts. Many studies have been reported on aging women and depression. Men are different from women in terms of lifestyle, social aspects and health profile. Therefore, it is possible that they may have a different disease profile. Men must cope with several kinds of stress as they age. The loss of self-esteem, loss of friends and family members and the onset of other health problems can trigger depression. According to Weerasak *et al.* (2008), every elderly screened for depression should be asked one question for their feeling of emptiness in life. If the answer is positive, elderly should be administered to Cornell Scale for Depression in Dementia (CSDD) for more accuracy in screening depression. Authors enrolled 209 elderly in their study and found that out of 15% subjects having >24 MMSE score, 23.3% were found depressed. Therefore, the present study was planned with a view to study men above 50 years of age having depression with respect to lifestyle, social and nutritional aspects.

If a depressive illness is diagnosed, treatment with appropriate medication and brief psycho therapy can help older adults manage the

diseases, thus enhancing survival and quality of life. Therefore, an early treatment for depression is very necessary for the geriatric group. Most of the available antidepressants are believed to be equally effective in elderly adults but the risk of side effects is high. In the past few years, much interest has risen in the use of herbs in the treatment of both depression and anxiety. Some of the herbs used for the treatment of depression are Brahmi (*Bacopa monniera*), Ginseng (*Panax quinquefolium*), Ginkgo biloba, Ashwagandha (*Withania somnifera*).

Brahmi has been used since time immemorial as a tonic for improving memory. It is known as an effective “brain food” as it nourishes the brain and improves intelligence and memory. Brahmi is a small creeping herb found ideally in moist damp places and marshy lands. Brahmi plant contains 2 active molecules - bacoside A and bacoside B. Bacoside A assists the release of nitric oxide and thus allows relaxation of aorta and veins and blood flows more smoothly through the body and this also aids in circulation. Bacoside B is a protein that nourishes nerve cells in the brain. These chemical molecules improve the transmission of impulses between nerve cells in the brain. Thus Brahmi promotes a calm, clear mind and improves mental function.

Stough *et al.* (2001) conducted a double blind, placebo controlled trial on 85 volunteers using a dose of 300 mg *Bacopa monniera* (Brahmi) standardized to 55 per cent bacosides. They found a significant improvement in the speed of visual information processing, learning rate and memory consolidation, with maximal effects evident after 12 weeks. A significant reduction in anxiety was also observed. A large number of studies have been reported on women related to depression and anxiety as well as its treatment. In a study on elderly women belonging to 60 yrs and above and middle income group residing in Baroda. It was reported that subjects having moderate depression reduced from 100 per cent to 93 per cent in mild and 73 per cent in normal category, when 750 mg of Brahmi (60% bacoside) was given for 6 weeks. Brahmi intervention seemed to have beneficial effect in reducing level of depression, cognitive impairment and minor health complaints among elderly women (WSRC, 2005),

There is scanty literature available in this regard on elderly men. Thus, the present study was aimed at assessing the prevalence of

depression and cognitive functioning in elderly men aged 50 years and above. Nutritional status, health profile, mental health status, lifestyle and psychosocial factors of depressed men in the community were also assessed. Study further evaluated the effect of Brahmi supplementation on the mental health status of older men.

Materials and Methods

A total of 150 subjects having screened for moderate depression were selected from free living population of Baroda city and grouped into three categories based on age (50-59 yrs, 60-69 yrs and 70+ yrs). Each category included 50 subjects. Out of the total 150 subjects, 15 subjects belonging to 60 years of age and above were selected for intervention with Brahmi. Socio-demographic profile was studied using a questionnaire and nutritional status was assessed in terms of anthropometry including height, weight and BMI, clinical parameters (blood pressure, hemoglobin and blood sugar), lifestyle pattern included 24-hr activity recall and addiction pattern. Mental health status was assessed using Beck's Depression Inventory (BDI), Mini-Mental State Examination (MMSE) and Cognitive Impairment Test (CIT). Nutrient intake was obtained using 24-hr dietary recall method. Disease profile was assessed by using an exhaustive checklist of major and minor health problems faced by the elderly subjects.

Brahmi was given in the form of soft gel capsules to a group of 15 elderly male subjects with depression along with impaired cognitive function. Three such capsules (750 mg) per day were given to the subjects for 6 weeks. The effect of Brahmi was then studied on mental health and nutritional status.

Results and Discussions

The data on socio-demographic profile showed that in case of marital status the number of widowers were higher (30%) in the age group of 70+ yrs as compared to others. In the age group of 50-59 yrs more percentage of married subjects were found. Majority of the subjects lived with their family. However, in older population more number of subjects were found to be living alone (12%). The data is presented in table 1.

Table 1: Socio- demographic characteristics of the subjects belonging to three different age groups.

Characteristics	Age groups			Total N=150
	50-59 yrs n=50	60-69 yrs n=50	70+ yrs n=50	
Age (mean ± SD)	55.67 ± 2.77	64.16 ± 2.62	75.22 ± 3.71	64.98 ± 3.09
Marital status (%)				
Unmarried	2 (1)	2 (1)	0 (0)	1.3 (2)
Married	86 (43)	78 (39)	70 (35)	78 (117)
Widowed	8 (4)	20 (10)	30 (15)	19.3 (29)
Separated	0 (0)	0 (0)	0 (0)	0 (0)
Divorced	4 (2)	0 (0)	0 (0)	1.3 (2)
Education (%)				
Illiterate	0 (0)	0 (0)	2 (1)	0.7 (1)
School	40 (20)	72 (36)	98 (49)	70 (105)
College	60 (30)	28 (14)	0 (0)	29.3 (44)
Occupation (%)				
Working	98 (49)	30 (15)	20 (10)	66 (99)
Non-working	2 (1)	70 (35)	80 (40)	34 (51)
Religion (%)				
Hindu	96 (48)	94 (47)	100 (50)	96.7 (145)
Muslim	4 (2)	4 (2)	0 (0)	2.7 (4)
Others	0 (0)	2 (1)	0 (0)	0.7 (1)
Per capita income (Rs.) (%)				
500-2000	30 (15)	36 (18)	24 (12)	30 (45)
2001-3500	40 (20)	44 (22)	64 (32)	49.33 (74)
3501-5000	30 (15)	20 (10)	12 (6)	20.66 (31)
Living arrangement (%)				
Alone	6 (3)	6 (3)	12 (6)	8 (12)
With spouse	22 (11)	34 (17)	38 (19)	31.3 (47)
With family	72 (36)	60 (30)	50 (25)	60.7 (91)

Figures in the parenthesis denote number of subjects

The data on activity pattern showed that more number of subjects in the age group 60-69 yrs and 70+ yrs spend time in religious activities as compared to 50-59 yrs of age group. Sleep, rest and idle time was also greater for subjects belonging to older age groups i.e. 60-69 yrs and 70+ yrs. Study conducted by Mehta and Shringarpure (2003) showed that more than 80% of the elderly men and women aged e"60 yrs, out of total 137 elderly from the free living population had sedentary life style as >75% of total elderly spent 5-8 hours daily in sleep, >90% spent more than 8 hours in leisure activities and two-third of subjects spent less than 5 hours in work related activities.

As per BDI scores, all the selected subjects from all the three age groups were moderately depressed. Majority of the men with moderate depression had lower MMSE score. Out of 150 subjects, 34 % were in moderate category, of which more number of the subjects were from the age group 70+ years. Results from MMSE scale suggested that as the age increases, the level of mental health status decreases. The data in the above table shows that majority (68 %) of the total subjects were falling under the abnormal category. In this category the percentage of the subjects in the age group of 70+ years was higher (98%). These results showed that abnormality increased with increase in age, showing an association between increasing age and cognitive function. The mean values of the BMI suggest that all the subjects were falling under the normal category, which reflected the healthy status of the subjects.

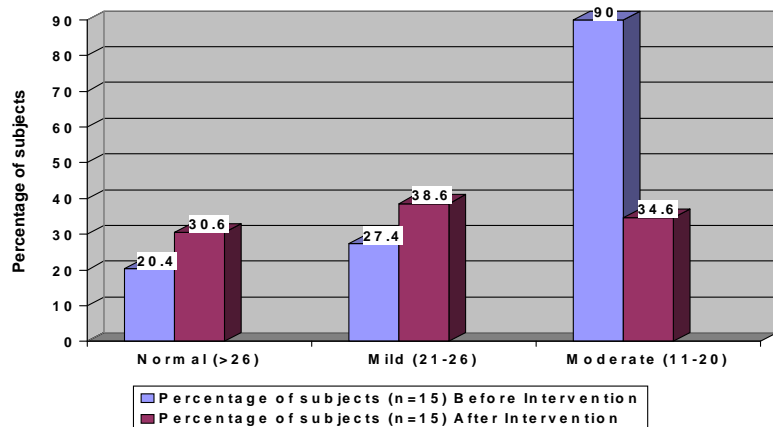
The data on hemoglobin values, when classified according to degree of anemia revealed that most of the total subjects (60%) were in the normal category. From the remaining subjects, 38.67 per cent were in the mild category and 2 per cent showed moderate degree of anemia. Mild anemia was noted mostly in the age group of 70+ years (50%). The mean nutrient intake of all the subjects was low according to the ICMR classification in terms of energy, protein, folic acid, tryptophan, methionine, vitamin B6, vitamin B12 and vitamin C. Ortega et al. (1997) found association between inadequate or lower intake of total food, fruits, cholesterol, carbohydrates, thiamin, folate and vitamin C with cognitive function in elderly aged 65-90 yrs.

Our data on disease profile revealed that bone related problem was most prevalent and was found 36, 42 and 56 per cent in 50-59 yrs, 60-69 yrs and 70+ yrs of age group, respectively. This was followed by cardiovascular and dental problems. In the age group of 50-59 yrs, the most common minor illnesses were lethargy (96%), lack of appetite (88%), low mood (72%), gas/flatulence (90%), body aches (78%) and indigestion (78%). In the age group of 60-69 yrs, lethargy (100), pain in joints (90%), lack of appetite (92%) and low mood (88%) were more common. In the age group of 70+ yrs, lethargy (98%), pain in joints (94%), lack of appetite (94%) and gas/flatulence (88%) were more prevalent. Sleep disturbance was highly prevalent in all the three age groups.

Table 2: Mean scores of various tests for mental status of depressed elderly subjects before and after intervention.

Scales	(n=15)		
	Before intervention	After intervention	t-value
BDI	23.2±3.02	14±3.33	13.75*
MMSE	15±1.09	19.06±1.76	12.26*
CIT	11.26±3.03	7.86±2.19	5.14*

Figure 1: Percentage of depressed elderly subjects showing MMSE scores before and after intervention with Brahmi for 6 weeks



Results from interventional study revealed a significant improvement in the scores of BDI and CIT (decreased levels) and MMSE (increased levels) of the subjects studied.

Data on the mean scores of BDI, MMSE and CIT of depressed subjects before and after intervention (table 2 and figure 1) shows improvement in the MMSE scores of depressed elderly subjects after 6 weeks of supplementation with Brahmi.

Nathan *et al.* (2001) conducted a neuropsychological testing before and two hours after the administration of 300 mg of Brahmi, resulting in no significant changes to cognitive functioning. These results suggest that Brahmi does not exert cognitive activity after a single dose and that treatment of 2-3 months may be required for effects to become established. Intervention with Brahmi for a period of 6 weeks did not show any significant impact on the BMI of the elderly subjects, although a slight weight gain was observed, suggesting the need to explore the effect of long term intervention.

The nutrient intake of the subjects before and after brahmi supplementation is shown in table -3.

Table 3: Mean nutrient intakes of depressed subjects before and after intervention (n=15, Mean ± SD)

Nutrient	RDA (ICMR)	Before intervention	After intervention	t-value
Energy (kcal)	1750	866.93±265.7	1092.73±254.47	5.92*
	(Natarajan)			
Protein (gms)	60	30.46±9.89	36.30±8.42	3.64*
Fat (gms)	20	29.74±7.35	38.25±8.22	2.22*
Choline (µg)	30	27.33±25.82	85.62±90.01	2.48*
Folic acid(µg)	100	35.36±19.83	41.81±21.59	0.8
Tryptophan(mg)	200	185.96±58.33	277.74±91.15	4.43*
Methionine(mg)	650	303.8±111.0	421.33±123.9	3.68*
Vitamin B6(mg)	2	0.02±0.052	0.03±0.07	0.12
VitaminB12(µg)	1	0.26±0.2	0.29±0.15	0.37
Vitamin C (mg)	40	18.84±23.66	36.96±31.74	1.6

*Significant at p > 0.05.

The results obtained from the table above revealed that a significant increase was evident in the intake of energy, protein, choline, tryptophan and methionine of the subjects after intervention. This was due to overall increase in food intake which included pulses, milk and milk products and green leafy vegetables.

Zekrey *et al.* (2008) studied 349 elderly, out of which 43.3 per cent were demented and had a poorer functional and nutritional status as compared to non-demented subjects.

No change was noted in the prevalence of major illnesses in depressed subjects after intervention with Brahmi for 6 weeks. With regard to minor health complaints, there was a reduction in these problems after intervention. Some of the minor health complaints like low mood, lethargy, lack of appetite, fluctuation in mood, sleep disturbance, indigestion, acidity and constipation showed a decrease in prevalence after intervention. These results showed a positive impact of Brahmi on minor health problems of the depressed elderly subjects.

Conclusions

Taking an overall view, the study indicates positive effect of brahmi intervention on overall health and nutritional status and shows clear benefits of Brahmi supplementation for 6 weeks in reducing the levels of depression in depressed elderly males.

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A Tryst with Psychological Adversity in Old Age

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ABSTRACT

The purpose of this study was to explore the prevalence of psychological adversity in terms of loneliness and depression in elderly. The main focus of study was to find out how far the variables such as gender, marital status and place of living effects the degree of loneliness and depression in elderly. A random sample of 320 elderly above the age of 60 years was taken from 5 districts of Punjab. The prevalence of loneliness was measured using a questionnaire (UCLA) and depression was measured using the Geriatric Depression Scale. The qualitative data was also collected by having a focus group discussion with a group of six respondents each from amongst rural men, rural women, urban men and urban women. The purpose of the focus group discussion was to understand their experience of loneliness and depression if any and the reasons for the same. The results show that both loneliness and depression showed a significant spurt with an increase in age. The marital status also had a significant role to play in the feelings of loneliness and depression in the elderly, with the widowed feeling more sad and lonelier as compared to those living with their spouse. Women were found to be more likely to harbour feelings of depression and loneliness as compared to men. Also people living in rural areas expressed significantly more of depression and loneliness as compared to those living in urban areas.

Key words : Depression, Loneliness, Urban, Rural, Men, Women, Married, Widowed.

Old age is a very special time of life. While childhood and youth take an individual on the upswing of life, adulthood and old age take one on the reverse journey in terms of health, energy and physical agility. Physical degeneration of the body with an increase in age is an accepted fact but old age has also been found to be afflicted with feelings of loneliness and depression since long (Sheldon, 1948; Halmos, 1952). Loneliness in old age has become such a prevalent and disturbing concern today that the absence of this feeling is seen as a must for good quality of life (Sinclair *et al.*, 1990). What is intriguing is that often loneliness and depression cohabit in the lives of elderly with very acute effects on their physical as well as psychological well being. The reasons for this may be health, family, social, financial or personal but the result is always the same - a severe compromise in the psychological and physical well being as well as functioning of the elderly. It is important here to understand these two problems individually and then try to look for the reasons and the correlation between the two. Our present study tries to accomplish this objective.

Loneliness refers to the subjective state of negative feelings associated with perceived social isolation, a lower level of contact than that desired or the absence of a specific desired companion. Loneliness does not mean the complete absence of other people. On the contrary, loneliness is, or derives from an awareness of the existence somewhere, of human community and other people; and it is this awareness that makes loneliness such a painful experience (Bennet, 1980; Mullins *et al.*, 1988; Christ and Muller, 1991). It is the unpleasant experience that occurs when a person's network of social relationships is deficient in some important way either quantitatively or qualitatively (Peplau, 1985; Perlman and Peplau, 1981).

Loneliness has been found to be more common for women than for men (Qureshi and Walker 1989), but this is largely due to the fact that women are more likely to be widowed and living alone, both factors being important correlates for men and women. However a study in the US (Mullins and Mushel 1992) found that men were lonelier than women.

Loneliness is not directly associated with living alone. Many who live alone live fully integrated socially active lives (Larsen *et al.*, 1985),

however, loneliness is more common amongst those living alone (Havighurst 1978; Hunt 1978; Wenger 1983). The evidence indicates that intimate relationships outside the family may be more important than family relationships (Abrams 1974; Bengsten and Kuypers 1985).

The relationship between widowhood and loneliness is reported in nearly all studies, some of which have noted that it is most intense in early widowhood (Sheldon 1948; Berardo 1967; Shanas *et al.*, 1968; Townsend and Tunstall 1973; Whittington 1977; Kivett 1979; Power 1980; Wenger 1983), when the loss of an intimate companion is most painful.

It has been claimed that loneliness amongst widows may be ameliorated by visits from children. However, it has been found that such visits make little impact on loneliness (Hadley *et al.*, 1975; Arling, 1980) and very old widows living with children are frequently amongst the most lonely (Townsend and Tunstall, 1973; Wenger, 1983). Absence of children has been identified as being associated with loneliness (Shanas *et al.*, 1968), but Weeks and Cuellar (1981) found that while elderly people may turn to the family for instrumental help, they are least likely to do so in times of loneliness. In contrast, a study in Sweden found that loneliness is related inversely to frequency of contact with children and friends but not neighbors (Berg *et al.*, 1981). Mullins and Musshel (1992) found that loneliness was unrelated to the availability of spouse and children but that the existence of friends was significant. The importance of friends has also been identified by other authors (Wenger, 1983; Jerome, 1991). The loneliness is also closely associated with the experience of loss or death of members of the close social network.

Loneliness may result from restricted contacts with others due to ill health (Jerome 1991). The main link between loneliness and mental illness appears to be the likelihood of lonely people becoming depressed (Thompson 1973). Loneliness has also been highly associated with low morale.

The most common mental disorder among the aged is depression. Although for centuries, depression has been associated with the aged, it is still often overlooked by clinical psychologists, physicians or others working with the aged because many of them believe that the symptoms

of depression are 'normal' for the aged. For example, apathy, withdrawal, or 'cantankerousness' may not be perceived and treated as symptoms of depression but rather as normal expressions of old age.

Depression can manifest itself in both physical and psychological ways. Socially and psychologically, depressed individuals may appear sad, lonely, guilt-ridden, withdrawn, hostile or compulsive. They may frequently burst into tears. Sometimes they commit suicide. Physically, they may experience insomnia and losses in appetite and weight. These physical disorders in turn often trigger a more severe form of depression.

In a study by Fry (1982), the cognitive model of depression was tested in different cultural settings involving personally relevant events that affect the lives of the elderly of two different cultures. The data revealed a difference in cognition of these two cultural groups. A strong relationship was revealed between depression and variables of control, uncertainty, fear of recurrence and self-blaming cognitions.

Sharma *et al.* (1985) in a study entitled 'Psychological Determinants of Depression in Old Age', investigated the role of recent life events and other psychological factors relating to alienation, hopelessness, personality dimensions and religiosity in subjects above 50 years of age. The major finding that emerged in their study was the relationship between recent life events and depression where it was found that of the 51 life events, financial loss was reported by 40% of the depressed subjects. It has been discussed in view of the existing financial conditions in Indian Culture. The life events related to bereavement like death of a spouse or death of a close family member and marital and family conflicts were found more frequently occurring in depressed patients as compared to the control group. Further, it was observed that the average number of life events expressed by a depressive one year prior to the onset of depression (2.3) was about two and a half times more than that experienced by a normal control subject in the same period (1.0).

Norris and Murrel (1990) report, that life events (death of a spouse/parent/child) and resources (higher financial pressures, few new interests and low social support) have strong depressive effects in widowed elderly than in non-bereaved elderly.

Hussaini (1991) reports that poor ego and chronic medical problems are common predictors of depression among both elderly males and females. Females become more depressed as the number of events increased and as levels of contact with relatives and friends decreased. Females living alone and with lower levels of social attachments, guidance and reliability were more depressed. Johnson and Bursk (1977) report that psychological distress was significantly associated with poor health and fewer social and economic resources.

Depression is greatest among those with more financial difficulties and more stressful life events lower self perceptions, receiving less support from friends and less instrumental support. Beekman *et al.* (1995) found that physical health and depression are closely related in the elderly. Physical health and aspects of the social environment such as marital status have independent effects on mood.

Girling *et al.* (1995) interviewed 1,173 elderly people and asked them questions related to emotional and physical health and social circumstances. High scores for depression were associated with the female sex and poorer subjective physical health and loneliness. Also, depressive symptoms were significantly correlated with the existence of health problems and lack of social support.

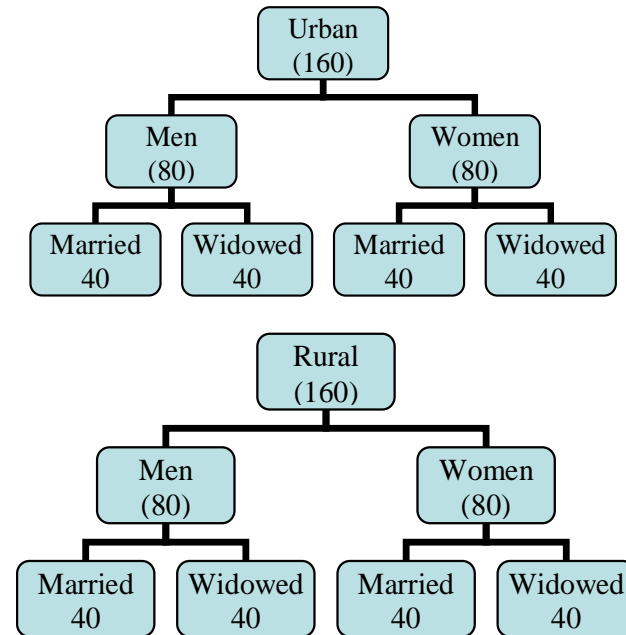
Pahkala *et al.* (1995) found that the occurrence of depression was not associated with sex, but was related to older age, widowhood and lower educational levels in men. In both sexes, a high risk of depression was associated with being in long term institutional care and receiving home nursing and/or a home help.

Blake (1995) states, that depression is common in elderly women. Belle (1987) found that depressive symptoms were independently associated with age, widowhood, limited education, general health, sleeping problems, social support problems and stressful life events.

Method

Sample -

Data were collected from 5 districts in Punjab namely: Patiala, Ludhiana, Faridkot, Nawanshahar and Amritsar. The sample consisted of 320 elderly individuals above 60 years of age. The spread of the sample is shown below:



Instruments -

Quantitative Data Collection :

Loneliness - The feelings of loneliness were assessed using the Revised UCLA Loneliness Scale. The scale consists of 20 items, half of which are descriptive of feeling of loneliness and the remaining 10 items are descriptive of non-loneliness feeling or satisfaction with relationship. Respondents indicated how often each statement applied to them. There were four choices of replies: Never, Rarely, Sometimes and Often.

Depression – Depression was assessed using The Geriatric Depression Scale (GDS) developed in 1982 by J. A. Yesavitch and colleagues is a 30-item self-report assessment designed specifically to identify depression in the elderly.

Qualitative Data Collection :

Subjective data was collected through the use of focus group interview where a detailed discussion was carried out with a group of six participants for each of the sample segments to discuss the feeling

of loneliness and depression and the reasons for the experience of the same.

Statistical Analysis of Data

The data was analyzed using descriptive and inferential statistics. Mean and standard deviations for the criterion group were calculated. T test was employed to find out significant differences if any between the various subgroups.

Correlations were calculated to understand relationship between age, educational level, marital status with loneliness and depression.

The qualitative method of focus group interview was used to understand loneliness and depression from a different angle and to get information on those parts of the elderly life, which are objectively immeasurable. This method was chosen to carry out a small in-depth study to understand how elderly people perceive their experiences about loneliness, depression and life processes and what sense do they make out of them.

Results

Correlation between age, marital status, loneliness and depression as depicted in Table 1 shows that there is a significant positive correlation between age and loneliness and depression, indicating that both loneliness and depression increase with age. Relationship between marital status, loneliness and depression was also found to be positive indicating that widowed individuals are more likely to harbour feelings of loneliness and depression as compared to Married individuals. Educational level seems to have no significant relationship with either loneliness or depression.

Table 1. Correlation between Age, Marital Status and Loneliness

	Loneliness	Depression
Age	.400**	.369**
Marital status	.636**	.384**
Educational Status	.020	.129

*p<.05. **p<.01.

Table 2 depicts the comparison with respect to Loneliness and Depression between Male and Female elderly. The results indicate that there is a significant difference between the two with women experiencing both loneliness and depression more than men.

Table 2. Comparison between Male and Female elderly with respect to Loneliness and Depression using t test.

	Males		Females		t-value
	Mean	SD	Mean	SD	
Loneliness	41.44	9.27	48.51	10.46	6.40**
Depression	10.19	7.02	12.44	7.52	2.77**

*p<.05. **p<.01.

Table 3 represents the comparison between Urban and Rural elderly in terms of feelings of loneliness and depression between the two. The results show a significantly higher number of rural elderly experiencing loneliness and depression as compared to the urban elderly.

Table 3. Comparison between Urban and Rural elderly with respect to Loneliness and Depression using t test.

	Urban		Rural		t-value
	Mean	SD	Mean	SD	
Loneliness	43.01	12.11	46.94	8.12	3.41**
Depression	10.22	7.50	12.41	7.05	2.70**

*p<.05. **p<.01.

Table 4 shows a significant difference in the married and widowed elderly feelings of loneliness and depression. As one would expect, widowed are significantly higher on loneliness and depression as compared to the married.

Table 4. Comparison between Married and Widowed elderly with respect to Loneliness and Depression using t test.

	Married		Widowed		t-value
	Mean	SD	Mean	SD	
Loneliness	40.73	8.89	49.21	10.26	6.40**
Depression	9.12	6.84	13.51	7.21	2.77**

*p<.05. **p<.01.

Discussion

This study represents a step towards understanding the prevalence of loneliness and depression among the elderly population of Punjab. Results show that feelings of loneliness and depression do increase with age.

As people grow in age, their life space shrinks. From an active work life along with a family life, their life space now gets confined mainly to the family. Indian society does not encourage pleasure seeking at this age. So one may not find many elderly people involving themselves in watching cinema, plays or any other such activity. The society hardly provides any source of involvement where the elderly could get involved and find a meaningful outlet to their energy, emotions and intentions. Those who manage to find a meaningful goal to which they can apply themselves do not feel lonely. For example during the focus group interview with urban men, a participant said, *“Earlier when we were young with small children, we were too busy to even think about our own happiness. We were all the time caught up in responsibilities. But now that we have free time, we feel more pleasure than before”*. This was a person who after retirement got himself involved in the managing committee activities of his housing society. This kept him occupied and gave a meaning to his life. The most common occupation people of Punjab find at this age is religion. But that too is a singular activity and does not offer enough diversion of mind.

Rural Men

Rural men, when they are young, have a very busy and free life. If they are involved in agriculture, they remain busy in the fields outside and have to make several trips to the town to buy seeds, fertilizers, to fetch money for their needs, to buy provisions for the family and later to sell their produce. If the rural men are engaged in business, they have to travel to other areas for their daily transactions like one of our rural participants who said that *“I’ve done a lot...visited a lot of big cities, Delhi, Mumbai, Pune, Hyderabad but now because of old age I am sitting at home. Earlier I had a very good life. Now also it is alright (sighs).”* So, the transition from youth to old age is that from complete independence to increasing dependence. The rural set up of Punjab, even today, does not provide individuals with as many facilities as an urban set up. The houses are large and may have all the comforts but facilities like convenient modes of transportation like in the metros are not available. As a result, increasing age results in confinement to the house and increasing dependence on others. That is the reason why rural men feel trapped, as they grow older. In other words, trapped in their own homes with nothing else to do but ruminate about the bygone years. The stereotype related to old age encourages them to withdraw and live a solitary life. The wife may be busy and involved in household activities. She may have other women of the village as her companions — those with whom she built bonds in the absence of her husband. With aches and pains to endure and a failing health to contend with, the rural elderly male may pass his time trying to escape the harsh reality. He may find an escape in alcohol.

There is hardly any culture of leisure in rural Punjab. The old days of elderly men sitting under a banyan tree and spending hot afternoons in gay abandon is a thing of the past. There is no other mode of recreation either. In old age, everything seems to begin and end at physical strength and prowess — whether it is carrying out with agricultural work by oneself or employing others to get the work done, life in rural Punjab demands a good amount of physical activity. That is the reason, as people become old; they are also unable to do much for themselves. The increasing dependence often makes them adopt a fatalistic attitude where they leave everything to God.

“Whatever God has decided for us is acceptable. Even if we push hard, things are not going to change. Whatever God wishes, only that will happen. Whatever is ordained for us will happen.”

As the age advances, so does dependence—their locus of control becomes more and more external. The children or other members of the community decide their future. With the absence of means whereby they can conduct their lives by themselves, even daily mundane activities like cooking and shopping become a struggle. Of course, secure savings may ease the situation, but money is something the rural male may not manage too efficiently. Due to lack education and awareness of the various schemes available, few rural men are farsighted enough to invest money in pension schemes so that they get fixed returns in their name. As a result, when they stop living an active life where they can control the family business or agriculture, they may get sidelined in the scheme of things. If children are good, and they live together, the life of a rural elderly in Punjab may still be good. Their basic needs can be taken care of. But there are hardly any houses in the village where one finds educated young men living with the family. The reason being limited employment opportunities in the village set up. With the land becoming too small as a result of familial divisions, there is very little to sustain a family and take care of its needs. So, children who get educated and want to accomplish certain goals rush abroad or to the towns often leaving the old parents behind. The rural elderly who possess acres of agricultural property may find it even more difficult to manage by themselves. Unable to manage labor, they may fear being cheated and may live under constant stress and fear. In either case, feelings of loneliness increase with age. The loneliness may not be due to a lack of interaction with the contemporaries. Instead, it may be due to the absence of children who have moved away to distant lands in search of better lives and future prospects. The loneliness may also stem from an inability to do anything for their children who did not pursue their studies and were unsuccessful in building a career. Agriculture is not a very interesting occupation for many of the youngsters. In the absence of good education, which they may not have obtained because they did not work hard, these youngsters may find themselves lacking in skills to get employment in the cities as well. Hence, youngsters in villages

who have very limited openings are often found waiting for suitable opportunities to immigrate. But the parents of these children may feel lonely due to the fact that instead of supporting their elderly parents, these children may actually be forcing them to spend their savings and arrange to send them abroad. The feelings of loneliness often plague rich landowners who feel that all their agricultural property built over years of hard work is of no use to their children who are interested in leaving their old parents back in the village. Those with small land holdings may feel sad and lonely because they may be forced to sell off their land to arrange the money for their son's immigration. For instance, an elderly farmer, when asked about his future remarked :

“I feel that earlier I worked hard all by myself and now once again I am alone. I have no hope of good time in future.”

There is a severe dearth of jobs in Punjab. Younger generations who should be working and taking care of their parents in their old age are unemployed and in many cases, instead of supporting their parents, are actually dependent on them. One can very well understand the pain and hopelessness of the old parents who are in such situations where being poor themselves, they care for the family of their sons' who do not do anything.

“We gave birth to a son, brought him up, but he does not work. So we keep worrying about when he will start working. Will he give us food and take care of us or not. He keeps sitting at home. We've got him married and settled but he does not do anything.”

“I feel that my life is going to be even worse in future. When I am not getting anything now, who will take care of us when we become even more weak and dependent?”

Lack of employment opportunities make life very difficult in the rural set up. In cities, there is a possibility of procuring some kind of employment whatever may be the individual's level of education. At least, he can sustain himself. But in rural areas, educational opportunities are limited. Moreover, the importance given to education is much less as compared to the urban areas. And even if one gets somewhat educated, he may still remain unemployed. Such disgruntled youth who

are educated enough not to take up menial jobs but not educated enough to get white-collar jobs in the cities, are caught in a catch 22 situation. They are disturbed, unhappy and in no position to ensure a content life to their aged parents.

“If a person gets cooperation from children, life is easy, otherwise life is full of problems and sadness. Then one feels really lonely.”

Often, such situations may prevail in urban settings as well, but it is much more pronounced in rural areas. As a result, elderly men get frustrated, depressed and begin feeling hopeless. The rural women, on the other hand, have much more patience. Having stronger bonds with their children, they may be more optimistic and forgiving in such situations. This is what a rural elderly female had to say about life in old age.

“Yes, it was OK. Like earlier, now also it will be only good. That’s what one has to think. Some mistakes do happen. It becomes all right. Sometimes parents make some mistakes, children also make some mistakes. They become alright later.”

Interpreting the circumstances in this manner may be positive reappraisal. But it is definitely not seeped in anger and hopelessness with children and their life situation. In the same situation a rural father said:

“When children do not listen to parents, it increases their problems. Those who have worked hard in life but their children do not cooperate at this stage, cannot be happy. My children are not good.”

As evident, the woman may still be in a position to ease her husband’s life by making sure that he gets his daily requirements fulfilled. She may even help him look at the situation with a little more clarity and patience. For the widowed rural elderly, the circumstances may become even more difficult because he may find it very difficult to communicate his everyday requirements. He may withdraw even more and feel all the more depressed and lonely.

Hence, life for the rural elderly men is riddled with failing health, dependence on children who may not be around to support him, unavailability of money and no leisure activities. Inadequate medical facilities and poor transportation facilities leave them feeling trapped and helpless. This leads to an escalation of feelings of depression and loneliness. They may develop a fatalistic attitude by leaving everything in the hands of God and accepting defeat in the game of life. They develop an outward locus of control because they have found out for themselves that they do not have much control over their own lives.

Rural Women

Rural women are trained in various aspects in their youth that help them in old age—for instance, restraint, patience, friendship with other women, the ability to share pain and sorrows, to keep themselves immersed in household activities and to live a life of curtailed freedom and high dependence.

Old age can be difficult for them. They keep themselves busy with household work all their lives. The work demands a high level of physical labor. As age advances, they find themselves short of energy to undertake the duties. But their situation is better than that of the rural men because they acquire a position in old age which they never attained when they were young, for instance, the companionship of a husband. In rural Punjab, as in other areas of our country, customs and traditions do not encourage young men and women to interact much. The focus on work also keeps them busy. The husband is outside the house most of the time, but as age advances, it becomes, socially acceptable to sit down together with the household and discuss issues that concern them. The husband, now old and not capable of physical labor, also has more time to spend at home. The companionship is good for the woman who can now share her feelings more freely with her husband. Interestingly, she also has more control over her husband now than she ever had before because being old and weak, with nothing much to do, he is more dependent on her for the fulfillment of his needs. The woman may now become busier than her husband with the household work to attend to, the grandchildren to interact with and many times to negotiate between the children and their father.

With the coming of a daughter-in-law, many of her labor-intensive responsibilities may be passed on to her and the matriarch of the house may experience more freedom. She is the one who is required to attend family events like marriage or death. This is a new and very interesting role for her. Her life, thus far, has taught her to maintain an outward locus of control, which helps her adjust better to life in old age. She may take refuge in religion and enjoy more leisure activities than before. She can go to a Gurudwara with her friends or grandchildren. When sad, she can go and discuss it with women of her own age. There is no taboo on discussing one's private life in rural areas. On the contrary, this is actually encouraged and hence is a huge advantage. Discussions on issues that weigh heavily on her mind and the supportive response from her companions help her in the catharsis of her feelings.

Yet, life for these old rural women is not easy. With very few comforts and poor medical facilities, these women who have led a life of drudgery appear to be quiet depressed with their conditions at this stage. In the course of interviewing them to fill up the questionnaires, it was felt that they never seemed to have thought about their life as deeply as the questions of the inventories were enquiring from them. It was repeatedly felt that they had, perhaps, developed a passive acceptance of the situation rather than an adaptation to it.

Having learnt to accept the situation and work within her means, she has had an excellent training for old age. Therefore, in the final analysis, amid discomforts, hardships and lack of facilities, the rural women are still adapted better to old age as compared to rural men.

Urban Men

Our results show the urban men to be better educated than those living in rural areas. Educated men have a better chance of exposure to knowledge about their health, better source of income, better social position in the society and many other positive situations in life.

The urban elderly men lead an organized life. Owing to education, they are more concerned about financial security and, therefore are able to plan their finances in an organized manner and ensure that they have enough savings for their retirement. If they are in a salaried position,

they may even get pension upon retirement and if in a business, they put aside some money in the bank or buy one of the many financial management schemes. There is a greater awareness about all these issues in urban areas as there is a general emphasis among the urban population to invest for their future.

The priorities in the urban areas are different from the rural. Being educated and by virtue of living in an urban setting, there is greater importance attached to children's education. There is a wide range of educational and career options in urban areas. So the urban men ensure that they provide educational facilities to their children to the best of their capabilities. Children also live in an environment where education is of prime importance and, its necessity is drilled into them from an early age. Therefore, as they grow older, most of the children find jobs and settle down to a stable and a financially secure life like their parents.

During their youth, urban men remain busy in fulfilling their responsibilities towards their family. Life in towns is comparatively more comfortable. There is greater availability of money in urban areas as compared to rural areas. Even leisure activities are aplenty. There are adequate medical facilities as well. Urban men are conscious about their health. So when they get old, they have a reasonably good health condition. Of course, the stress and tension of living and working in a high pressure environment can have a detrimental effect on their body, but that is diluted by the good medical facilities and the general understanding about common medical problems. Urban men also tend to have a good circle of friend so they generally have a satisfied social life. Leading a comfortable predictable life, these men are likely to have an internal locus of control and an optimistic mindset.

As they grow older, they retire from their responsibilities and come home to a life of freedom and relaxation. Their wife plays an important role in their life. She herself may be educated or at least due to living in an urban set up, she is also more likely to have an organized life. She is capable of taking care of a lot of responsibilities related to the house and family. Upon retirement, or as they get old, the elderly men live a free life with no major responsibilities. If they are financially not too well settled, they may seek employment. Financial independence plays an important role in the subjective well being of the urban elderly men.

However, life may not be hunky dori for all men. Health is a big concern and so is the career of children. If the children are well settled and the elderly man is healthy, old age may be relatively comfortable for him. There is a greater likelihood of the children being settled in an urban set up because there are greater job opportunities and being educated, they can seek employment in areas outside Punjab. Immigrating abroad is a very popular career option in the state. A good education facilitates this. Many consider this a necessity because Punjab being an agricultural society does not offer too many career opportunities to the youth.

Even if the children decide to go abroad to build their career, the urban elderly are in a comfortable situation because living in urban settings does not require too much of physical labor and with the availability of cheap domestic labor in towns, the household work can be managed quiet easily.

The experience of growing old - of seeing ones capabilities and physical energy decline, is stressful and that is the reason the urban elderly also feel sad and lonely. The comparison with life spent in yesteryears does make them feel sad but they are in a comparatively comfortable situation as compared to the rural elderly. As per our research findings, the urban elderly men have the best deal amongst all the subcategories.

Urban Women

The urban woman in Punjab spends her youth away from the bindings and hardships of the rural setting. If she lives in a nuclear family, the freedom experienced by her is greater and so are the responsibilities. The responsibility of bringing up children, although tiresome, does give her a feeling of independence and authority. She gets an opportunity to spend her life in a set up of high awareness and independence. Even if she lives in a joint family, she still stays away from the rigid customs and traditions to a large extent. The urban life is more comfortable and less labor-intensive. Her world remains largely her home, therefore, she concentrates her energies on household work and children. This enables her to cultivate deep bonds with her children. The urban woman may have some education, she takes care of most of the household work and children, she is more aware, has better communication with her husband, has a greater say in family matters

and, therefore, more power in the family set up as compared to a rural woman. Being educated and capable, she does not feel the need to build a social support system in the form of friends for herself. Busy and satisfied in her own life, she seeks her own sense of achievement and satisfaction from her husband and children.

As she becomes old, her world slowly begins to change. Children grow up, daughters are married off and sons may leave home in search of employment. She experiences a distancing from them and feels lonely in the empty nest situation. If the son stays with the parents, he gets married and brings home a daughter-in-law. The mother now has a new role—that of a mother-in-law. The role brings with it a lot of complexities and responsibilities. Now she has to take a backseat and let the new daughter-in-law take over. She has to partially give up her right over her son and make space for the new member of the family. She has to train herself not to interfere in the lives of her children, yet accept her own loss of independence and control. She has to create a very fine balance in her relationship with her children. This is often a very difficult situation for her and can become a cause for stress and anxiety. This is the reason, among our sample, the urban elderly woman is found to have the highest amount of loneliness & sadness, second only to widowed women.

The urban elderly male has, over the years, learnt to depend on his wife to take care of household matters. He leaves this maneuvering and balancing to his wife. In any case, he has little role to play in the daily routine of life at home. He has his own friends and his leisure activities to immerse himself into. He has full social acceptance for enjoying his life after having earned for his family for such a long time. Meanwhile, the wife feels lonelier and more depressed. There are very few leisure activities available to her. Society also does not allow her to give up her responsibilities completely. In fact, her household responsibilities may actually increase if her daughter-in-law is employed. She is required to help her daughter-in-law with household chores. The coming of grandchildren binds her all the more because now she is supposed to take care of them as well. So the transition from youth to old age is a major factor and in a way, negative development for an urban woman. This perhaps explains why urban women in our study were found to have one of the highest rates of loneliness and depression.

Conclusion: So in Punjab as in India and in all other cultures, old age is a time of decline in health, energy and opportunities of interaction. It is a time of shrinking life spaces and increasing feelings of loneliness and depression. It is important that the elderly think of their old age while they are in the prime of their youth and find ways and means to ensure that they remain independent financially, emotionally and psychologically to avoid feelings of sadness and loneliness in their silver years.

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Determinants of Social Intelligence Among Elderly

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ABSTRACT

Social intelligence plays a crucial role in the lives of individuals including elderly. It is relatively new concept in social psychology but quite pertinent one. In the study, social intelligence was measured among elderly and its various domains were analyzed across age-groups of elderly. The study was conducted in a residential colony of Ghaziabad (NCR of Delhi) with sample size of 150 (75 males and 75 females). Social Intelligence Scale by Chadha and Ganesan (1986) was used as the main tool for data collection. Results have shown that with increasing age, social intelligence tends to diminish. This trend of lower scores of old-old respondents compared to young-old ones continued in all the domains of social intelligence (Patience, Cooperativeness, Confidence, Recognition of Social Environment, Tactfulness, Sense of Humour and Memory) except in the case of Sensitivity. Findings were analyzed in the light of theoretical frameworks. Gender differentiation was also looked into with respect to social intelligence. Results show that elderly women scored low on all the dimensions of social intelligence except Sensitivity. Patriarchal social structure that has influenced the upbringing of females in the society characterized by lack of opportunities for independence, development and skill upgradation may be contributing to lower social intelligence among aged women. Suggestive measures were delineated in the light of the results.

Key words : Social Intelligence, Elderly, Gender differences, Joint Family system, Interpersonal relationships.

Old age is a natural and universal stage of human life cycle. Elderly people traditionally have enjoyed reverence and respect. They have played pivotal role in the functioning of the family and certain community affairs. They would head the family and control the property. They have been the decision-makers in the family and community. Factors like joint family system, agrarian economy have ensued well-being and status of elderly in myriad of ways.

However, in contemporary times, elderly are standing at the cross-roads for various socio-cultural and demographic reasons. Some of the salient factors may well be described here. Firstly, there is a substantial increase in the number and proportion of elderly to the general population as compared to ancient and medieval period. In modern times, population aging is often taken to be a landmark in the history of human civilization. It represents a confluence of lowered fertility, improved nutrition, and effective health care. These have contributed to longevity, resulting in growing number and proportion of older population, almost throughout the world. In most nations, there have been major reductions in the prevalence of infectious and parasitic diseases, declines in infant and maternal mortality, and improved nutrition. With all these socio-economic changes, more and more people tend to live long to mature old age. After the year 2010, the number and proportion of elderly, especially the oldest old, is projected to rise rapidly in most developed and in many developing countries. Demographically, most developed nations are among the oldest in the world today. In fact some of them may have more grandparents than children by the middle of the twenty-first century.

Secondly, joint family system, that is considered to be the safe haven for elderly, is giving way to nuclear family systems and alternate family patterns. As a consequence, many of the important roles of elderly are gradually vanishing and that is affecting their status in the family and community. Thirdly, urbanization and industrialization have resulted in migration of youth to cities and towns, leaving behind older parents alone to fend for themselves. Fourth, economically, technological specializations need young and traditional know-how of the elderly has, more or less, become redundant. There is compulsory retirement around the age of 60 years and a person, in general, no more remains an economic being. In a society characterized by values of consumerism,

retirement tends to devalue a person. Next, value system is changing — interdependence and cooperation are sidelined and personal achievements and independence becoming norms of the day. These factors, among others, have challenged the unconditional authority and ascribed status of older persons making them prone to marginalization.

Having said this, it would be wrong to assume that the elderly as a population group is marginalized. Many older persons have adapted themselves to the changed situations and have secured their well-being. Psychologists have considered adaptability as one of the crucial dimensions of intelligence. At present, intelligence is viewed as a multi-dimensional concept with social intelligence being an important facet of it. A brief review of social intelligence as a vital psychological concept would be beneficial.

Social Intelligence

People have different connotations of the term intelligence. To a layperson, it conveys the meaning inherent capacity, something that the child inherits from his/her ancestors, which determines the mental growth, which he/she is capable of. Intelligence is a universal faculty, a trait, which develops differently in different physical and cultural environments. Wechsler (1958) has defined intelligence as the global capacity of an individual to think rationally, to act purposefully and deal effectively with the environment. Intelligence is often required to act wisely in human relations and get along with others. Therefore, Moss and Hunt (1927), have termed this dimension of intelligence as social intelligence. Likewise, Cantor and Kihlstrom (1987) have defined social intelligence to refer to the individual's fund of knowledge about the social world. So, how intelligently, or effectively a person responds to his/her social environment is taken as social intelligence.

Further, Vernon, P.E (1933) has provided a comprehensive definition of social intelligence as “the person's ability to get along with people in general, social technique or case in society, knowledge of social matters of a group, as well as insight into the temporary moods or underlying personality traits of strangers”.

O'Sullivan *et al.* (1965) have maintained that the category of social cognition is representing the 'ability to judge people' with respect to

feelings, motives, thoughts, intentions, attitudes, or other psychological dispositions which might affect an individual's social behaviour.

In the discussion, social intelligence is indicative of the human capacity to comprehend what is happening in the world and responding to the understanding, in a personally and socially effective manner. It is the tradition of wisdom, not the more current idea of 'smartness'. A major element in social intelligence is the ability of persons to see through the social myths dominant during their lifetime. And at any given time achieve the necessary understanding of their social conditioning to break through the delusions, myths, and fantasies peddled by the people controlling social ideology and behavior. Albrecht (2005) defines social intelligence as the ability to get along well with others while winning their cooperation. Social Intelligence is a combination of sensitivity to the needs and interests of others, sometimes called the 'social radar', an attitude of generosity and consideration, and a set of practical skills for interacting successfully with people in any setting. It provides a highly accessible and comprehensive model for describing, assessing, and developing social intelligence at a personal level.

Thus, social intelligence includes the ability to initiate, develop and maintain congruent mutually satisfying whole range of inter-personal relationships. It is much broader than political awareness or psychological savvy or enlightened act vision. Looking at its components, socially intelligent persons have patience, cooperativeness and confidence. They are sensitive and can recognize the social environment. Further they have tactfulness, sense of humor and a sharp memory (see: Chadha and Ganesan, 1986). All these aspects of social intelligence play a major role in the life of human beings, including elderly.

Social intelligence apparently, is a vital element of social support and social acceptance. Evidences have displayed an edge of emotional intelligence and social intelligence over intelligence governing academic or financial success. Thus, inter-personal success is equally crucial for well-being and satisfying life. In the case of elderly, it becomes all the more important.

In old age, a person's physical strength, stamina and energy start diminishing. In the body, at the physiochemical level, catabolic (breaking down) reactions supersede anabolic (building up) reactions. Sensory capacities begin deteriorating, functioning of body systems like digestive system, respiratory system is also reduced. With advancing age, persons lose their independence in activities of daily living. Socially too, superannuation from work and diminishing roles in the family life tend to make people lonely and alienated. These situations make it necessary that elderly have a good social support. At this stage, assurance that significant others are around to care acts as an antidote against old age blues. This shows the relevance of social intelligence among elderly. Let us first look into the existing literature on social intelligence vis-à-vis elderly.

Review of Literature

Intelligence is the capacity of an individual to think rationally, to act purposefully and deal effectively with the environment. Few studies have shown the effect and relationship of age on intelligence. Boone, *et al.* (1993) have found, after administering Wisconsin Card Sorting Test (WCST), that women scored better than men on six components. Further, subjects with more than 16 years of education outscored those limited to high school education on four measures. Also, individuals older than 70 years of age scored less well than younger subjects. This brings out that education, age and gender tend to be important variables of social intelligence.

Further, Stuart-Hamilton (2003), has argued that several key intellectual beliefs are significantly altered in later life, assuming a form last seen in childhood. However, Stuart-Hamilton, *et al.* (2006), in their study, using a sample of 73 older participants aged 60–84 years, failed to find any relationship between age, intelligence, probability knowledge, and belief in the paranormal.

Intelligence has been redefined as social intelligence to refer to the individual's fund of knowledge about the social world. Social intelligence and social support is important in daily activities of the elderly. According to Bassuk *et al.* (1999) there is an association between social support and cognitive function among the elderly. A longitudinal study done by them, has found that elderly persons who had no social

ties were at increased risk for cognitive decline, compared with those who had five or six social ties. Fratiglioni *et al.* (2000) note that social network reduces the incidence of dementia. Similarly, Yeh and Liu, (2003) also bring out that higher cognitive function in community-living elderly was associated with increased social support. Likewise, study by Ertel *et al.* (2008) provides evidence that social integration delays *memory loss among elderly*. All these studies have shown the relevance of social intelligence among elderly.

Further, there also exists an inter-relationship between home environment, social intelligence and socio-economic status across various age levels and two sexes. Socioeconomic status has an effect on social intelligence and home environment also showed positive impact on social intelligence. (Kaur and Kalaramna, 2004). In the same way, Hooda (2009) displays a positive correlation between social intelligence and psychological health.

Added to this, Arjun and Laxmi (1997) highlight that different components of social intelligence were highly relevant to adjustment process. Thus many researchers have observed a positive correlation between general mental ability and social intelligence. So, individuals with high level of social intelligence possess positive psychological health. Studies also reflect that social intelligence among elderly improves their social functioning. However, there is a need to find out whether and how the social intelligence varies within the broad age category of 'old-age'.

In this context, the present study aims to measure the social intelligence of elderly. It intends to look into the variability of social intelligence in young-old, middle-old and old-old elderly.

Objectives

The study delineates itself to the following objectives:

1. To understand the relevance of social intelligence for older people.
2. To measure various domains of social intelligence of elderly respondents.
3. To analyze the scores of social intelligence in the light of three age categories of elderly.

4. To appraise gender-difference in domains of social intelligence.
5. To provide implications of the findings and suggestive measures.

Methodology

The present study is descriptive in nature. Universe of the study is Delhi-National Capital Region. The unit of data collection is a person at and above the age of 60 years. The sample size is 150, with 75 males and 75 females. The age range is 60 years to 94 years. Added to this, the study limits itself to elderly staying with their families only (staying with at least one family member) and aged people living in old age homes were not included. Sample area is a group housing society of Ghaziabad. It is, more or less, a homogeneous community where people, mostly professionals, in middle and upper middle class live. For selection of units of data collection, purposive sampling was used. A closed and structured questionnaire was used as tool for data collection.

In order to measure social intelligence of elderly respondents, Social Intelligence Scale (SIS) developed and standardized by N. K. Chadha and Ms Usha Ganesan (1986) was adopted. The Scale covers the eight dimensions of social intelligence as follows — Patience, Cooperativeness, Confidence level, Sensitivity, Recognition of Social Environment, Tactfulness, Sense of Humour and Memory. There are 66 items in the Scale covering the eight dimensions. The distributions of items per dimension of the Scale are as follows:-

Table 1 : Item-wise list of Dimensions of Social Intelligence Scale

Dimensions	Number of items retained
1. Patience	8
2. Cooperativeness	11
3. Confidence	8
4. Sensitivity	9
5. Recognition of Social Environment	3
6. Tactfulness	7
7. Sense of Humour	8
8. Memory	12
Total	66

Scoring of the test

Each aspect of the scale was scored based on the alternative selected by the respondent and weightage given for each statement ranges from 0 to 3 (0, 1, 2, and 3). The total score of each dimension is then graded and in the same way total score was also calculated.

Reliability

In the present test, retest and split half techniques were employed to find the reliability coefficients. For finding the split half reliability a sample of 150 (75 males and 75 females) was taken. Reliability values are as follows:

Table 2 : Reliability of Dimensions of Social Intelligence Scale

Dimensions	Split-Half Reliability coefficients	Test-Retest Reliability Coefficients
A. Patience	0.93	0.94
B. Cooperativeness	0.91	0.91
C. Confidence	0.89	0.90
D. Sensitivity	0.90	0.93
E. Recognition of Social Environment	0.95	0.95
F. Tactfulness	0.91	0.84
G. Sense of Humour	0.90	0.95
H. Memory	0.96	0.97

Validity: The Social Intelligence Scale has validity co-efficient of 0.70

Results and Discussion

It may be reiterated that the Scale used in the present study has eight dimensions. Hypotheses were delineated on the basis of these dimensions and results are described as follows:

Patience: The range of scores in this dimension is from 0 to 24. Findings have shown that with advancing age, patience is reduced among the elderly. Young-old scored better on patience dimension than old-old

(See Table 1). Further, among females patience is a little less than their male counterparts (Table 2). The lessening of patience with increasing age may be attributed to following reasons — one, in old age brain weight is reduced slightly making a person more rigid and introvert. This may affect their patience too. Two, diminishing body strength and increased dependence on others for care and support make elderly insecure, thereby making them more impatient. Study results have shown that elderly females scored lesser on patience than males. This is against the popular belief as females, since childhood, have generally been taught to be docile and submissive. They are made to learn to delay their gratification of needs and desires for male relatives – brothers, husband and sons. This automatically makes them more patient and tolerant. The reason for their low score on patience could be powerlessness — men are more capable of handling their vulnerability due to old age because of their have skills and control over assets while women, more or less, lack on these aspects and hence become more anxious to their susceptibility.

Cooperativeness: In the SIS, cooperativeness is measured through 11 statements. The range of scores on this dimension is from 0 to 33. Findings show that young old scored more on cooperativeness than old-old respondents (Table 1). This may be explained through Disengagement theory given by Cumming and Henry (1961) that says ageing involves mutual withdrawal or disengagement between the society and elderly. Since this disengagement is not abrupt as the person enters the old age, gradually elderly take secondary position and hence cooperativeness also gets reduced.

Data further bring out that elderly males are more cooperative than elderly females. No active social engagements in their prime time may be the reason why elderly women have lagged behind ‘learning’ this social skill named cooperativeness.

Confidence: There are 8 statements in the Scale to measure this important dimension of social intelligence. The range of scores is from

0 to 24. Table 1 brings out that young old respondents again have scored better than middle old and old-old elderly on this dimension. It seems that with age confidence also reduces. Retirement is taken as an event that affects the self concept of persons, especially males, who are considered ‘economic beings’. However, with advancing age, their body strength weakens and they become more and more dependent for their activities of daily living (ADL). This negatively influences their confidence too. As assumed, aged women have scored lower on confidence dimension than their male counterparts. Lack of opportunities for independence, active social engagements in a patriarchal social structure seems to be responsible for this difference. Elderly women, especially in the Third World countries are, more often than not, illiterate, dependent, economically, socially and psychologically on the male members of the family. These factors have limited opportunities of confidence building among women, particularly elderly women.

Sensitivity: This dimension is measured through 9 statements in the SIS, with range of scores from 0 to 27. Sensitivity is the only dimension, where old-old respondents have scored more than the young-old (Table 1). Thus, sensitivity increases with age. Data further show that scores of elderly women on sensitivity are slightly higher than aged men. It may be inferred that octogenarians and elderly females are more sensitive than their counterparts in age-groups of young old and middle old. Females are considered more emotional than males, which may have led the former having higher scores on sensitivity. Added to this, as introvertness increases with age, so is the sensitivity.

Recognition of the social environment: The range is from 0 to 9 with 3 statements under this dimension. The young old scored higher than middle old and old-old respondents. There is a minor gender difference on this aspect with males having higher score. Disengagement theory fits in here also. Seemingly, octogenarians are disassociated with any significant social roles and on their part too, recognition of social environment is diminished. In the case of females, patriarchal social norms are the main cause for lack of this social skill.

Table 3 : Distribution of Age and Dimensions of Social Intelligence

Dimensions	Group	Mean
Patience	Young-Old	20.52
	Middle-Old	18.40
	Old-Old	17.20
Cooperativeness	Young-Old	16.68
	Middle-Old	15.64
	Old-Old	13.28
Confidence	Young-Old	14.18
	Middle-Old	13.86
	Old-Old	12.82
Sensitivity	Young-Old	14.10
	Middle-Old	14.54
	Old-Old	15.06
Recognition of Social Environment	Young-Old	3.24
	Middle-Old	3.06
	Old-Old	2.78
Tactfulness	Young-Old	12.50
	Middle-Old	11.96
	Old-Old	11.52
Sense of Humour	Young-Old	13.64
	Middle-Old	13.30
	Old-Old	12.56
Memory	Young-Old	15.42
	Middle-Old	15.36
	Old-Old	14.40

Tactfulness: This dimension has 7 statements in the Social Intelligence Scale and range of scores is from 0 to 21. Table 3 depicts that young old respondents are more tactful than their older counterparts. Social intelligence is a function of active social life. People in the age category of old-old do not have their social engagements as active as young old (also see Disengagement theory). Added to this, Disuse theory says that skills or body parts remain unused for a long time, they tend to diminish. Disengagement from active social life reduces tactfulness among old-old. Elderly males scored more on tactfulness (see Table 4). Elderly women, more often than not, in their youth-hood have remained in the four walls of the household. They hardly got the opportunities to hone their social skill termed as tactfulness.

Sense of Humour: In Social Intelligence Scale, it has 8 statements with range of scores from 0 to 24. Young old respondents scored better on this dimension and males have better average than females (see Table 3 and Table 4). It may be noted that sense of humour is honed through active social life, regular and mutually satisfying interactions with peer groups and confidence and extrovertness. When old-old persons and elderly women are analyzed on these grounds, they definitely lag behind due to social limitations. Aged women have hardly enjoyed active social life even when they were young and old-old with increasing age have remained cocooned. This is probably the reason why they scored low on sense of humour.

Memory: This dimension was measured through 12 statements in SIS. Range of scores is from 0 to 36. Data have shown that though young-old have better memory than old-old but it is quite interesting to note that octogenarians have scored more on this dimension than the middle old respondents. There is a small difference in the scores of males and females on memory (Table 4), with females lagging behind. Needless to add, opportunities of education and carrier development have honed memory among males while remaining in the households have diminished chances of women to sharpen their memory.

Table 4 : Distribution of Gender and Dimensions of Social Intelligence

Dimensions	Group	Mean
Patience	Male	15.88
	Female	15.04
Cooperativeness	Male	16.03
	Female	15.06
Confidence	Male	13.56
	Female	12.88
Sensitivity	Male	14.36
	Female	14.89
Recognition of Social Environment	Male	2.47
	Female	2.36
Tactfulness	Male	11.97
	Female	11.64
Sense of Humour	Male	13.27
	Female	12.87
Memory	Male	14.63
	Female	14.23

Conclusions and Suggestions

The present study aimed at appraising the social intelligence among elderly. Results have shown that among elderly, with increasing age, social intelligence scores are reduced. Eight components of social intelligence were studied — patience, cooperativeness, confidence, sensitivity, recognition of social environment, tactfulness, sense of humour and memory. It was found that young-old respondents scored higher than old-old elderly on all the dimensions of social intelligence scale except Sensitivity. Likewise, female respondents too scored lower than their male counterparts on all the dimensions of SIS except sensitivity.

On the whole it can be said that young-old elderly possess higher social intelligence than middle old and old-old elderly. This might be due to age, home environment or other social factors (Boone *et al.* 1993; Kaur and Kalaramna, 2004; Yeh and Liu, 2003). On the other hand low social intelligence among old-old may be due to their poor psychological health (Hooda, 2009) developing from their detrimental and lonely environment.

Based on the findings of the study, some of the suggestive measures may be described:

- ◆ With Alzheimer's disease and Dementia on the rise and increasing susceptibility of elderly, it is important that measures to enhance social intelligence should be chalked out, which would work at the preventive level.
- ◆ Social intelligence is not exclusively an inherited attribute. Social environment does play a significant role in the same. Lowering social intelligence with increasing age also indicates that social environment is not conducive especially for old-old elderly. Therefore, it is the duty of the family and society to ensure social acceptance and social support to the aged as a matter of their Right.
- ◆ Sense of humour, cooperativeness and amicable relations with significant others help reduce physical and mental health problems among the elderly. There is a need to improve social intelligence among elderly that would, among others, limit ailments in old age.
- ◆ Pre-retirement counseling and counseling to accept age related changes would contribute positively to social intelligence among elderly.
- ◆ Recreational centres or Day Care Centres providing opportunities for interaction with peers and purposeful and creative utilization of leisure time of elderly would be of great help.
- ◆ Self-help groups of elderly and civil society organizations working for the welfare and well-being of the aged assist in reducing vulnerability of senior citizens, which indirectly, adds to their social intelligence.

- ◆ Concept of active ageing should be propagated by gerontologists through various mass-media that would ensure maintenance of level of social intelligence among elderly as they pass through sixties to eighties.
- ◆ A role-less state makes the aged prone to social isolation and alienation. Elderly should, therefore, be facilitated and encouraged to take up newer roles and keep themselves busy meaningfully. This would ensure social acceptance and increase/maintain social intelligence.
- ◆ Further researches may be undertaken to study social intelligence of elderly in various social groups and assessing its linkage with factors influencing vulnerabilities and well-being. Gender angle too needs to be studied at length. This would give an insight to develop appropriate strategies for enhancing/maintaining social intelligence of people in old age.

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Status of Geriatric Care in Central Government Health Scheme Dispensaries at Kolkata

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ABSTRACT

Mainstreaming the rising geriatric population by maintaining their wellbeing is a formidable challenge. A cross-sectional observational study was carried out in OPDs of C.G.H.S. dispensaries in Kolkata to assess their pattern of care for the elder group of people. Data from interview and prescription examination of 421 new patients, selected by systematic random sampling, were recorded in a predesigned and pretested proforma. The results revealed significantly higher rate of referral, higher mean number of drugs per encounter for a significantly higher period of time causing a significantly higher cost per prescription for the elderly patients who shared a significant proportion of C.G.H.S. total beneficiaries. As per updated Beers criteria, there was also some extent of inappropriate use of drugs among the elderly patients which along with the higher rate of medication put the elderly patients on greater risk of adverse drug reactions. By providing a high demanding care to the geriatric patients in exchange of minimum or no contribution, CGHS dispensaries are setting a good example of geriatric care but its caregivers need reorientation regarding appropriate use of drugs for elderly patients.

Key words: Elderly people, Mainstreaming, Cost per prescription, Beers criteria (inappropriate medication).

Aging is universal physiological phenomena. Progressive constriction of homeostatic reserve of every organ system is gradually evident from third decade of life and is influenced by diet, disease, environment, personal habits, as well as by genetic factors.

Though it makes old people more vulnerable to environmental, pathological and pharmacological challenges and so as to diseases and disabilities, yet “healthy old age” is not an oxymoron (Alexander *et al.*, 2002). There are about 70 million old persons in India. The number is expected to rise above 200 million in another 30 years and 325 million by 2050, when it would be 21% of the total population of India. About 90% of the problems faced today by old persons are from unorganized sectors; 80% of elderlies are living in rural area; 40% are below poverty line and 73% of them are illiterate (Mehta and Sringarpure, 2000; Melanic *et al.*, 2004). This demographic shift not only has serious implications in social, cultural, economic fields, but also affects health and medical care that attenuates the quality of life of community as well, specially in our country where resource crunch is a formidable hurdle (Alexander Kalacha *et al.*, 2002; Mehta, P., Sringarpure, B. 2000). The modern philosophy is that the old must continue to take their share in the responsibilities and in the enjoyment of the privileges, which are an essential feature of remaining an active member of the community (Park, 2007). Providing comprehensive health care using all sorts of biomedical and socio-economic advances can only ensure disease and disabilities free productive old life. In general, elderly patients have multiple comorbidities, use multiple medications and as a result of their age related change in drug pharmacokinetics, they are on more risk of ADR (adverse drug reactions) (Anjareyulu, 2002). Dearth of information indulged this study to be carried out with an objective to get a snap shot of health care provided to senior people by Central Government Health Scheme.

Methods

This was an institution based cross-sectional study conducted for a period of nine months (from Jan, 03 to Sept, 03) at the O.P.D. facility of selected Central Government Health Scheme (CGHS) allopathic dispensaries, Kolkata, which provided health care to a sizable old people viz- pensioners; senior MPs, Judges, Ministers, Freedom fighters and all the present central government employees along with the aged and

other dependents of each groups. Four allopathic dispensaries were selected through simple random sampling method using random number from a total of 17 such.

Background information revealed that as on March 2003, CGHS, Kolkata had 38.7% treatment(t/t) cards and 26.6% beneficiaries belonged to people of >60 years of age. Sampled dispensaries shared 29.2% of total t/t card, 25.7% of total beneficiaries and 32.4% total OPD attendance. Within the selected dispensaries, as a whole 51.2% t/t cards & 35.7% beneficiaries were in elderly group. For the present study, a sample consisting of 421 new patients (who attended for the first time with a particular health problem), selected following a systematic random sampling procedure, were interviewed, their prescriptions were examined and the data were recorded in a predesigned and pretested format. Necessary official permission was sought beforehand from the Additional director; CGHS, Kolkata and informed verbal consent of the participants was obtained before actual data collection. Appropriate statistical tests were applied during analysis.

Assessment of cost of therapy: During the study period, drug supply from routine procurement source i.e.Govt.medical store depot (GMSD), was almost disrupted (supplied irregularly only 5-10% of total annual procurement) and CGHS dispensaries were using mainly drugs purchased directly from the approved local chemist (an alternate source of procurement for out of formulary drugs prescribed by specialists and emergency stock out situation) at negotiated rate of 13.5% less than the lowest market price. Commercial drug formularies (MIMS, SIMS, Drug- Today, idr) were used to assess the cost of drugs per encounter taking into account the lowest retail price and also 13.5% rebate. Some sort of approximation was done.

Results and Discussion

Results showed, the number of specialist’s prescription (table-1) was significantly higher in elderly group of patient (48.3% Vs 31.3%, Z= 3.53, p<0.05). This was obviously due to multiple chronic diseases (specially Non-communicable diseases) of old age that needed complex costly therapeutic procedures² by the experts in different disciplines of medicine. The av.cost per prescription was also higher for the elderly group of clients (table-2) and the difference was statistically significant

(Z=5.51, p<0.05). This higher cost might be due to significantly higher number of drugs per prescription (Z=4.4, p<0.05) of elderly group of patients for a significantly longer period (table-2) of time (Z=5.46, p<0.05). Again these significantly higher av.cost, av.drug per prescription and av.duration of treatment for the elderly group of patients were due to higher proportion of specialists’ prescriptions in the elderly group. Analysis of all the 421 prescriptions revealed that the av.drug per prescription (4.7±5.0 Vs 2.6±2.8, Z=5.0, p<0.05) and av.duration of treatment (15.4±13.8 Vs 10.5±12.2, Z=7.57, p<0.05) both were significantly higher in case of specialists’ prescriptions which resulted in significantly higher av.cost per specialist’s prescription than those of the GDMO’s (Rs.269.4±540.4 Vs 86.4±182.8, Z= 8.44, p<0.05).

Table-1. Distribution of respondents according to some general parameters (N=421).

Attribute		* Elderly (n ₁ =203) No, (%)	Other (n ₂ =218) # No, (%)	Total (n=421) No, (%)
Sex	Male	148(72.9)	101(46.3)	249(59.1)
	Female	55(27.1)	117(53.7)	172(40.9)
Status of the patient	Self	157(77.3)	91(41.7)	248(58.9)
	Dependent	46(22.7)	127(58.3)	173(41.1)
Category of the patients	Referred/ specialist’s	98(48.3)	69(31.7)	167(39.7)
	GDMO’s	105(51.7)	149(68.3)	254(60.3)
**Rate of contribution for CGHS beneficiary according to basic/pension (in Rs.per month)	Basic/pension ≤3000	15	15	——
	3001-6000	40	40	——
	6001-10000	70	70	——
	10001-15000	100	100	——
	>15000	150	150	——

* Participants belonged to > 60 years of age and # Participants d” 60 years of age.
 **Source: CGHS circular, 2000. Rates of contribution were minimum and graded according to basic salary/pension. Pensioners were to contribute for 10 years from the date of retirement, might be one time, monthly or yearly payment. After 10 years pensioners were provided with free service.

Table 2 : Distribution of prescriptions according to some drug use indicators.

Indicators/ parameters	# Elderly (n ₁ =203) Av. ± 2sd, Range	*Other (n ₂ =218) Av. ± 2sd, Range	Total (N=421) Av. ± 2sd, Range	Z and p value
\$ Av. cost per encounter (in Rs.)	193.2±484.0, (7.5-2377)	128.2±322.4, (0-1156)	159.4±412.4, (0-2377)	Z=5.51, p<0.05
\$ Av. no. of drugs per encounter	3.9±5.0, (1-14)	3.1±3.4, (0-11)	3.5±4.2, (0-14)	Z=4.4, p<0.05
Av. duration of t/t (in day).	14.3±14.2, (3-50)	10.8±12.4, (1-30)	12.5±13.8, (1-50)	Z=5.46, p<0.05
Av. per capita per day cost (in Rs.)	13.6±28.4, (1-122)	13.3±26.6, (0-89)	13.2±28.4, (1-122)	Z=0.21, p>0.05

\$ WHO drug use indicators

Table 3 : Distribution of prescriptions containing inappropriate use of drug among the elderly as per Beer's criteria (n=203)

Inappropriate drug use	No. of prescription	Percentage
Irrespective of any concomitant illness	68	33.5%
With respect to any concomitant illness	9	4.4%
Both	3	1.55%
Total	80	39.4%

An estimation of per capita per day cost per encounter showed that the difference was not significant (Rs. 13.6±28.4 Vs 13.3±26.6, Z=0.21, p>0.05) between the elderly and other group of patients. This reflected that higher cost of prescription for the elderly group was due to longer duration of drug utilization, as per prescription, for complex chronic diseases of old age. Almost 40% of CGHS treatment cards were occupied by elderly people, 1/4th of CGHS service beneficiaries belonged to them (one t/t card for the person concerned and all his/her dependents); they had a significantly higher proportion of referral (48.3% Vs 31.7%) and longer duration of treatment with higher number of drugs. As a matter of concern, polypharmacy and inappropriate drug use were also found to be present. In the present study on an average

3.9 drugs (with a range of 1-14) were prescribed per encounter and 39.4% (table-3) prescriptions contained at least one medicine inappropriate for age and or comorbid conditions. A study in USA involving 1106 patients in 12 skilled-nursing facilities determined that on an average, patients were prescribed 7.2 medications (Melanic *et al.* 2004). An additional study in 12 intermediate-care nursing facilities of over 800 patients, revealed that on average 8.1 medications prescribed per encounter (Melanic *et al.* 2004). One publication reviewed articles that used the 1997 Beers criteria to assess inappropriate medication use in the elderly in the United State showed a range of 21.3% of community-dwelling elders to 40% of nursing home elders using at least one inappropriate medication (Swirski, 1998). A retrospective cross-sectional study in 17 Japanese long term care facilities involving 1669 patients and using 2003 Beers criteria showed that 21.1% were treated with potentially inappropriate medication independent of disease or condition (Satoko *et al.*, 2006).

It is well known that health problems increase with age, and that the average per capita outlay on health for persons over the age of 65 is about 4 times that for persons in younger age groups (Swirski, 1998). Cost of illness related to drug related problems can further escalate the rising health budget for geriatric care. Geriatric morbidities and cost accrued to it can only be avoided or at least minimized to some extent by providing well planned life long comprehensive safe health care, starting from the early phase of life and on going research using all sorts of biomedical and socio-economic advances. This also demands necessary reform of the health care delivery system, specially reorientation of the health care providers regarding geriatric care. As a pioneer, CGHS has already set up an example to be followed by other concerned authorities both governmental and non-governmental, related with health care and an integrated multipoint approaches (as per National Policy for Aged Persons, GOI, Jan. 1999) by all sectors of the society (including the elderly people) should be attempted for mainstreaming of geriatric group of people for their welfare and purposeful living.

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Spirituality and Holistic Well Being in Elderly : Perspective from Srimad Bhagwad Gita

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ABSTRACT

Old age is a stage of life cycle which bring along many physical and psychological consequences that need special attention and timely intervention for the well being of the elderly. There are different views on ageing, some defining it as a stage of physical limitations, others defining it as a phase in which active engagements with the surroundings and self to facilitate successful ageing. Yet another opinion is that attainment of spirituality motivates old age. Research in the area of spirituality and well being is gaining greater interest in recent times and many studies have thrown light on this aspect. Yet the concept of spirituality remains difficult to understand. This paper highlights the ways of understanding and attaining spirituality as a path to holistic well being as expressed in Srimad Bhagwad Gita which is the most widely-read, ethical text of ancient India. In the paper simple principles have been extracted out that if followed regularly can lead an individual towards attaining spirituality and thereby making ageing a process of joy.

Keywords: Spirituality, Old age, Srimad Bhagwad Gita and Holistic well being.

Ageing is neither a disease nor an illness. What it is often a matter of subjective perception. There are different views of ageing in our society. One view sees ageing as a period of physical decline, with a little hope for any fruitful activity A second view is of “successful

ageing” that promotes continued engagement with the wider community and pursuit of physical and psychosocial activities as a means of ageing successfully (Rowe & Kahn, 1999). In still another view ageing is seen as a “spiritual journey” that searches for the meaning in one’s life. This view accepts the possibility of death as a matter of fact, while living life to the full. This third view allows people living with increasing disability with hope and flourish, even in the face of uncertainty (Braxton et al, 2005). The search for meaning, connectedness and hope becomes more significant as older people are faced with the possibilities of illness, disability and various psychosocial complications.

The concept of spirituality is about a core meaning and connectedness. Anger, hate, love, forgiveness and hope, all come from this core. When we talk about spirituality, we are not specifically talking of religiousness, although for people who have a religious faith, religiousness is part of their spirituality (MacKinlay, 2006). A better way to think about spirituality is to imagine it as an umbrella. Religion, as being one way to express spirituality, comes under this umbrella. “Everyone has a spiritual component but not everyone is religious” (Twycross, 1988). Religion includes specific beliefs and practices, whereas spirituality is far broader (Ebersole & Hess, 1995). Describing the spiritual domain is deeply related to hope and is the spark that enlivens human beings. Essential elements of spirituality seem to revolve around a relationship with self, others and God, a sense of meaning and purpose, hope, connectedness and beliefs (Young & Koopsen, 2005). Issues of spirituality appear more urgent when people face situational and developmental crises of life, such as coming to terms with a terminal illness and the rising awareness of one’s own mortality (MacKinlay, 2001). At developmental stages of our lives or during critical life experiences, we assign meanings to our experiences. These “provisional meanings” are subject to change at a later point. Changes later in life, such as the diagnosis of a terminal illness or an increasing awareness of one’s own mortality, may be triggers to examine provisional life meanings and move towards assigning “final meanings (Coleman, 1999).

Spirituality remains important social and psychological factor in the lives of elderly and there is continued interest in examining the effect of the interaction with their environs on their health status and well being. Significant associations were found between dimensions of spirituality/religiousness, social support and psychological well being in a study by Yoon & Lee (2007) on a population of 215 older adults in rural areas where spirituality /religiousness were inversely related to depression. In another study by Koenig et al (2004) on 838 consecutively admitted patients of 50 years and above age, to a general medical service, religiousness and spirituality consistently predicted greater social support, fewer depressive symptoms, better cognitive function and greater cooperativeness.

A longitudinal study was conducted by Wink & Dillon (2003) to examine the relation between religiousness, spirituality, and three key domains of psychosocial functioning in late adulthood: (a) sources of well-being, (b) involvement in tasks of everyday life, and (c) wisdom. Religiousness and spirituality were operationalised as distinct but overlapping dimensions of individual difference. In late adulthood, religiousness was found positively related to well-being as a result of positive relations with others, involvement in social and community life tasks, and generativity. Spirituality was positively related to well-being in personal growth, involvement in creative and knowledge-building life tasks, and wisdom. Neither religiousness nor spirituality was associated with narcissism.

Although there has been increasing interest in the area of spirituality and its relation to well being there has been very little attempt to operationalise and explain spirituality in simplistic and practical way. This paper tries to make an attempt to explain spirituality in the most accessible manner and at the same time presenting ways to attain it gradually, based on the principles of Srimad Bhagwad Gita.

Spirituality in Srimad Bhagwad Gita: way to holistic well being

Srimad Bhagwad Gita is perhaps the most famous and definitely the most widely read ethical texts of ancient India. It emphasizes the

notion of God and the path to salvation which is an integral part of every religion. It emphasizes the importance of knowledge, peace, worship and charity. The Gita is universally applicable, multifaceted and multi-dimensional.

Perspectives on old age:

Birth, childhood, adulthood, old age and death are normal stages of our life which are essential for this world to go on and something which is necessary and, therefore, should be welcomed. Our personal identity, (our true self/ our soul) is common in all the stages of life cycle. It is the identity that we are born with, grow, and live throughout. So, till we are alive we should make our best possible efforts to strengthen our personal identity. Our life has got meaning till we are alive. In old age which is the last stage of life cycle, which may be compared to the third phase of ashram order called as *vanaprastha* we are free from one set of active responsibilities and get another set of responsibilities of understanding our purpose of existence, self, our relationship with others and with the supreme power that governs this world.

Understanding spirituality

Bhagwad Gita has explained spirituality in most simple way and its attainment needs no special training. Spirituality comes from the word 'spirit', meaning the soul, or in other words our complete self. The self is a composite of different identities:

1. The identity of being born in a material world: the personal self which includes the physical self (the physical body, its maintenance and survival), the emotional self (emergence and expressions of emotions) and the social self (behavior in social situations).
2. The identity which is indestructible and constant: the intellectual self (the way we think, perceive things and utilize our intelligence in knowing self and the world around us). and
3. The identity in relation to the supreme power: the spiritual self (understanding our relationship the supreme, path of sacrifice and devotion).

The concept of spirituality is a composite of all the above notions of self. Each one is mutually exclusive with separate conceptual definitions. These notions are interrelated also. Spirituality is the complete understanding of the self. Spirituality needs one to be fully aware of the surroundings and yet be inclined toward the search of purpose of the existence.

But how can one achieve it? The following are simple principles derived from the Gita. If followed honestly, they can lead an individual to complete happiness and well being particularly in old age.

The physical self:

1. Know your body completely, the physical symptoms, causes of any illness, disability and also about changes with the growing age. Give importance to the physical body and do not neglect it.
2. Have a proper balance in eating, working, relaxing, recreation and sleeping.
3. Eat healthy, eat less and keep working to have a healthy body and mind.
4. Get engaged in some activity (particularly in old age) which is beneficial, is of interest, and gives satisfaction and peace of mind
5. Be close to nature and practice meditation, deep breathing and exercise.
6. Maintain cleanliness of body both from inside and outside.

The emotional self:

1. Understand your emotions and have a control on their emergence and expression.
2. Practice tolerance, stay calm, think positive and feel energetic
3. If some damage or loss is inevitable and necessary let it happen, do not mourn for long, get back to life because there is no other way.

4. Avoid emergence of negative emotions, it blocks our intelligence, affects our decision making, physical health, and social conduct.

The Social self:

1. Respect every individual and give him independent intellectual space.
2. Try to find qualities in other person and value an individual for the qualities.
3. Listen to others first. Speak politely and do not use harsh words.
4. Fulfill your responsibility as parent, spouse, grandparent etc. Give unconditional and honest love and care to those who require it from you.
5. If you expect something from others, first give the same to them.
6. If you truly love and care somebody, tolerate them to the extremes.
7. If you see anybody acting out in an abnormal way, e.g. hostile, angry etc; you must always react in a positive way to help that person, because that behavior is the cause of ignorance and loss of control.
8. Do not blame others for what has happened as it closes all possibilities of finding solutions on our own and makes us dependent on others.
9. 'Mind your own business', and do not create situations that are difficult and disturbing to others.
10. We might find weak points in others and should try to eliminate them only if we ourselves are proficient in that area
11. It is very important in social relations to know the nature of the other person, and then act accordingly.
12. Share your knowledge with people whom you find can benefit from it, value it, and give you something back of intellect, otherwise remain quiet.

13. Be natural, the way you are. Naturally, we all are intelligent and good humans. Whenever we are hostile, arrogant etc. simply means that we are not acting naturally and this will never bring positive outcome.

The Intellectual self:

1. Try to clear your doubts by getting appropriate knowledge of the concerned area, understand the situations and find solutions to problems.
2. Use the power of insight.
3. Do not let situations take over you. Do not sit idle and wait for somebody else to come and help you out. Get up and act.
4. Make your intelligence independent to act. Listen your voice first. Avoid taking too many opinions as they may create conflicts.
5. Be bold enough to take the responsibility of your actions.
6. Try to understand your shortcomings and limitations and act accordingly
7. Believe in yourself. Believe that every dark side can be eliminated by thinking positive about it.
8. If you want to attain something, focus your mind on it, concentrate on it, and find appropriate ways to get it.
9. Prioritize your work and just leave the others at that very moment.
10. A person can attain perfection by focusing only on his own work and not bothering about what others think, how they react and go about it.
11. Situations change, surroundings change and so do we. Adjust in whatever situation, remain satisfied, and get prepared for the change.
12. Practice attaining stability of mind. Do not get affected by criticism or praise. Take both of them in a healthy and normal way
13. The language of mind is stronger than words. Think a lot before you speak and if not required do not speak at all.

The spiritual self:

1. Anything that begins has an end in this material world, so it is always better not to get over attached to it.
2. Tolerate the extremes of pleasure and pain and treat everything/ every aspect as moderate/normal.
3. Limit your requirements to less and less materials, only to maintain life, you would find yourself relieved from burden.
4. Try to keep yourself pure in the following three aspects:
 - i. Surrounding: be close to nature; avoid contact from stress producing, problematic and polluting situations.
 - ii. Body: regularly excrete body waste, avoid unhealthy food and habits, practice regular exercising and yoga, and,
 - iii. Thoughts: inculcate positive thoughts, develop optimism, spend some time with yourself, and in devotional activities.
5. Understand the fact that the Almighty controls all the aspects of happiness, sadness, fame, defame, and other extremes to make people understand and realize about these aspects and value life. But violence, anger, lying and being slaves to our senses, and acting out like a devil, foolish and selfish person - something for which an individual is responsible. A person loses control because of lack of knowledge and disbelief in the existence of a supreme power.
6. Value the long lasting aspects of life, e.g., relations, qualities, knowledge etc
7. Being in transcendence is knowing and understanding your self completely, the purpose of your life and ultimately your relationship with the supreme.
8. Transcendence means: self realization, self satisfaction, self bliss, control of senses, self modification, self discipline, performing charity, sacrifice and austerity, and belief in the supreme.

9. Practice Yoga- The union of self with the supreme is called 'yoga'. It can be performed at any time doing anything. Performing your duties equanimously is yoga. Yoga requires regulated patterns of sleeping, eating, working and recreation. By this one can discipline ones life and will be well equipped to tackle life situations in crisis. Yoga teaches us to be natural and normal, the way nature wants us to be. Yoga can never be attained by a person who works too much or too less, eats too much or too less, sleeps too much or too less.
10. Perform your duties with equipoise, abandoning attachment to success and failure. Leaving your prescribed duties and then simply worshipping God is not being mystic or renunciated, but performing all appropriate and doable work prescribed to you as per your natural mode, situation, capabilities and without attachment is being a mystic and renunciated.
11. Practice sacrifice. Whatever is consumed after sacrificing gives us immense peace. Sacrifice is not defined in strict boundaries. Anything by anybody as per his capabilities and his nature and position in the social structure, sacrificed with the aim of no gain at all of any kind takes us to liberation and peace.
12. Practice devotion. Devotion does not imply that you leave every work assigned to you and keep on chanting the name of God. Rather devotion is constantly working with engagement with the supreme.
13. Practice stability of mind, be relaxed and calm in any situation.

Karmayoga: selfless action- a practical explanation.

- 1) Keep doing your duty of the moment. If you do not do so, your work will get accumulated, more energy will be required of you, and you will feel drained off. As a result your performance confidence and social standing will be affected.
- 2) Try something whole heartedly without thinking of happiness or distress, loss or gain, victory or defeat. Keep doing your work

according to your nature, mode, situations and age. The only thing in your hands is your own effort. If you are dedicated to something just do it.

- 3) If one has taken birth as a human there are some jobs that are to be done, and one cannot become free simply by leaving them or not initiating them.
- 4) We should keep working because we are humans and are bound to work. This is necessary to maintain our living and healthy body and mind and the people around us get benefited and developed by us, in turn we receive the same benefit from others .
- 5) No work is less important. Concentrate and dedicate yourself completely to your work without bothering and comparing it with others work.
- 6) It is always good to finish the work that we have to do. Postponing will result in clubbing of work which will require more time, more energy and more resources than we have, affecting the total outcome.

Conclusion:

Spirituality in Srimad Bhagwad Gita has been explained as a composite term emphasizing the notion of well being of an individual in totality. The concept has been made simple, practical and accessible for those who have to fulfill their duties playing different roles in this world. Old age has been explained as yet another stage of life cycle which has to be welcomed , the main purpose of which is to find meaning and purpose of life and understanding relationship with the God, keeping in mind the responsibility and duty of a parent, grandparent etc. Spirituality can be achieved by understanding ourselves completely which implies the complete understanding of our physical, emotional, social and intellectual self and our relationship with the supreme power which governs this world irrespective of any religious faith associated.

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(Footnotes)

Second Home After Home for Elderly : A Study of Old Age Homes in the Globalized Era

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ABSTRACT

The continued growth of elderly population both in absolute terms and in relation to other segments of the society is the most significant demographic trend of the twentieth century. Throughout the human history the family has been the safest heaven for the aged. Its ties have been the most intimate and long lasting and on them the aged have relied for greatest security (Simmon.L, 1945). The rapid increase in the elderly population, the changes in the family system, the lifestyle of the younger generation have led to changes in the living arrangements of elderly both in developed countries and developing ones. Viewed from whatever angle, Old Age is characterized by diminished physical and psychic activity, altered status and role and a plethora of problems. This has serious implications for society. Several endogenous and exogenous factors give rise to variety of problems to the elderly. The processes of industrialization, commercialization, urbanization and democratization have a negative influence on the elderly. Nonetheless; neither ageing nor societal changes can be halted or reserved. It is thus, clear that institutionalized care is the need of the hour.

Key words: Old age Homes, Family Living arrangements, Social change.

Ageing is a normal inevitable and universal phenomenon literally it refers to the effects of age commonly speaking, it means the various effects or manifestation of old age. In this sense it refers to various deterioration in the organism. While they have been usually perceived as biological, the deterioration in mental capabilities and social adaptability is no less important. Ageing has thus three aspects biological,

psychological and social. The elderly person represents a store house of knowledge and experience and reservoir of wisdom but is a highly vulnerable group in society. Their vulnerability increases with age. The vulnerability lies mainly in lack of employment, financial insecurity, ill health and neglect by society. Any system of social security of the elderly should address all these vulnerabilities. It has, therefore, to be a multi dimensional programme providing income security, health security and emotional support. While the family can provide the basic security. The major responsibility for providing social security to the elderly lies on the community and the state in the age of industrialization (Subrahmanyam, 2005).

Since time immemorial ,the aged have been accorded a place of honour and importance in the family and community .Ancient literature is replete with relevant reference to the aged .Long life was cherished, old age was viewed with differences and the aged had a substantial role to perform in the society. In the joint family settings ,their opinion in the religious, economic and social matters was valued ;and in the clan and the community their counsel carried weight .In the process of socialization of the younger generation they have their specific role. They showered affection and enforced social norms and woes. On the other hand family and community looked after them irrespective of their productive capacity (Gurumurthy 1998).

In the modern times, the social situation however, has undergone a perceptible change. Forces of the industrialization, commercialization and modernization have influenced and altered many social values and institutions. There has some substantial dilution of traditional economic and social values. The continued growth of elderly population both in absolute terms and in relation to other segments of the society is the most significant demographic trend of the twentieth century. The rapid increase in the elderly population, the changes in the family system, the lifestyle of the younger generation have led to changes in the living arrangements of elderly both in developed countries and developing ones.

Viewed from whatever angle, Old Age is characterized by diminished physical and psychic activity, altered status and role and a plethora of problems. This has serious implications for society. Several endogenous and exogenous factors give rise to variety of problems to the elderly. The processes of industrialization, commercialization,

urbanization and democratization have a negative influence on the elderly. The joint family is giving way to nuclear family. All this has seriously affected the situation of senior citizens in society. Neither they have the earlier position of importance in the family and community, nor are they looked after the way it was done earlier. The social changes continues at a brisk pace –affecting the aged in the ways more than one. Often experiencing generation-gap, they find themselves strangers in the very own household they had built. The rapid increase in the elderly population and the changes in the family system and lifestyles of younger generation have led to changes in the living arrangements of elderly both in developed and developing countries.

However in recent times, as a result of demographic transition, rapid pace of industrialization and urbanization, disintegration of joint family structures into nuclear ones the older people have become more vulnerable. The lack of familial support made elderly resort to old age homes run by private and or voluntary organizations for their care and support.

In this coming day population ageing has already emerged or going to be a used human success story which is due to public health medical advancement economic development and control over various disease. It has been emerged by United Nations with all its challenges various issues concerning the sustain of family of state and community to provide better ageing population in 2002 April, Madrid Plan of World Assembly of Ageing was organized to discuss the demography and economic development and advancement which is supportive environment to the elderly. As per the projection of population ageing it is expected that by 2030 the population will increase to 71% percent that is 690 million from where it is now 10.3 million as India is in the category of developing stage through it population has increase is larger due to all other resources and it is needed to be maintain as a future acid. With the rise in population of the aged people throughout the world, concern and care of the aged have attracted global attention of the scientists and the administrators. The aged people and their problems exist right from the beginning of human civilization.

Origin of idea of the Homes for the Elderly

Person who not just by the ill-effects of any disease but because of his/her age and the physical limitations of the human gross body, is confined to his/her house and faces difficulties in carrying out his/her

house and faces difficulties in carrying out his/her daily activities, needs someone to take care of him/her. He may be 55, or 60, or even 90, but a person who faces difficulty in walking, has problems of sight and hearing problems, some typical problems like loss of memory, disease like the Alzheimer's disease, people Parkinson's disease, prostate gland disease. People who may not be able to eat on their own or may have lost control over the passing of urine.

Apart from these extreme cases, just physically old people- where the pace of life has been slowed down by age, where wounds take time to heal and where heads turn from gray to white- these are the people who can actually be categorized into elderly.

Previously, in our country, society held such elderly in high esteem. A peep into the social conditions and the family background of those times would help us to decipher the reasons why India is, essentially, an agricultural was practically controlled by the elderly. The fast moving generation had hardly any time to take care of their old, sick parents. One more reason was that previously, people had more number of kids and many times- the sons used to happen- that a daughter-in-law would take care of her mother-in-law during the latter's pregnancy. So, instead of a generation gap- a phenomenon which was to develop later on there was a generation overlap. The psychological demerits of a generation gap, like total polarization of the family members in to the older and the younger generation gap, were totally absent. But, with the growing development, there was a great increase in the life expectancy and a drastic fall in the death rates and the number of the elderly people who were practically redundant, went on shooting up.

Because of the fact that the average number of children per couple went on decreasing, there were not many to take care of the needy elderly. To cater to the needs of such a large block of our population, to ensure that they spent their last days on this earth happily, to give them individual attention which they so badly need- the idea of the Homes for the elderly was born.

Apart from the popular belief that only elderly with ungrateful kids resort to the homes for the elderly. There are many elderly who care in genuine need for the homes for the elderly. They can be listed as:

- The Elderly...
- (a) Who are unmarried

- (b) Who are widows/widowers
- (c) Who do not have kids
- (d) Who only have daughter's who are, now married and the parents do not want to stay with them
- (e) Who have kids in foreign lands and they cannot adjust in their son's\ daughter's country.
- (f) Who feel lonely at their place or cannot move freely in a congested locality.
- (g) Who are happy and well settled. But come for a change from the daily urban humdrum.
- (h) As far as the immobile elderly are considered, their family members have to spend a lot of time and money after their nursing and care. For many, it is neither possible nor feasible.

The problems of the aged have different dimensions in different countries (Sinha 1998). It varies according to the country's living patterns, economic status, climatic conditions, food habits etc. in India we can generalize the problems as follows:-

- (1) Generally old people from lower income groups and below poverty line need only food and shelter.
- (2) The migration of younger generation to cities in search of employment opportunities increases the vulnerability of the old people who stay behind.
- (3) The destitute old people who have no income of their own, employed in their early years for a low income, which is spent mostly on their kith or kin hoping that they would support in their old age, are left uncared for and considered as a burden.
- (4) The elderly people who cannot accept the changes feel worthless and try to seek recognition from other sources.
- (5) Disintegration of joint family.
- (6) Change in social structure.
- (7) Conflict between older and younger generations.
- (8) Absence of control.
- (9) Tension/security, anxiety about declining health.
- (10) Change in personal function.

These all are the reasons, which forces the elderly to seek admission in old age homes.

In India, the first Old Age Home was established in Bangalore in 1983 by the "Bangalore Friends-in-Need Society" and was called the

"Cobb Home". For many older people who have no one to support them, old age homes serve as a safe heaven.

Old Age Home is the institution where the older person is admitted in, to meet his needs there. He/She spends his old age in the company of the people, who are similar to him in age, state of health, mental make-up and outlook towards life. *National Centre for Health and Statistics* define old age home as, "a residence facility with three or more beds that provided nursing and personal care to the aged who are chronically ill or destitute or needy persons".

Home for aged is a community that provides a homely environment in which the residents can feel secure, comfortable and happy while retaining a fair degree of independence. A home for the aged is expected to provide regular on going supervision of people who are no longer competent and for those who become socially and financially destitute. The standards of continuing care in a residential institution should be based on principles of care like fulfillment, self-respect, emotional needs, individuality and privacy (Goel 2008).

There are various types of Old Age Homes which are categorized as follows:

1. **Short and long term care:** - short and long term old age home are sponsored by voluntary agencies, religions etc. actually aged persons are likely to require hospitalization or other forms of long term care for a wide variety of conditions, including acute and chronic illnesses, accidental injuries and mental illness. They are the users of institutional facilities for prolonged periods of time. These types of old age home that emerged to meet those needs represent a wide range at service. In practical term they provide the broad spectrum of institutional services to large group of aged. Long-term care facilities are classified on terms of etiology or nature of their problem, i.e. types of illness.
2. **Non profit old age home:** - non profit old age homes are sponsored by voluntary agencies, religious and other nonprofit or other organization. There are often religions, ethnic, cultural or residency criteria for admission of these facilities. Non-profit homes are supported by both sponsoring organization and tax funds.

3. **Commercial old age home:** - these types of old age homes settings have historically also come from poor house tradition of caring for the non hospitalize but needy or ill aged person.
4. **Basic care old age home:** - basic care old age home, which are also called intermediate care facilities, provide limited nursing supervision in addition to personal care.

Ideal Old Age Home

Old age home required and lot careful planning, innovation and most important sensitivity to the ageing processes. It is not only the building but also the caring attitude of the staff, which will ultimately determine the successes of the residential programme. An ideal old age home is the one which consider the three under mentioned parameters and provides utmost care in following them: -

- (1) Building design of old age home
- (2) Caring of the residents

A good old age home should have the following room area such as that of Bedrooms ,Common room, Dining room, Kitchen, Toilet and Bathroom ,Store room ,Laundry, Sick room, Guest room, Office ,Staff quarters ,Recreation hall etc.

The aim of the home should be to provide the needy senior citizens a second home after home and away from home, where they can continue to live in dignity as a useful member of the society and from where they would be able to extend their help and services based on their individual talents, interests and hobbies. They should be thus fully involved in the day to day various activities and management of the homes ,aimed at keeping the inmates mentally as well as physically healthy and cheerful .They should be provided with opportunities for part time social work like teaching, office administration, hospitals works ,reception counter management, organizing social visits and counseling services as per their talent and attitude .Facilities for meditation, yoga and light physical exercise including in house talks by eminent persons, artists, poets, saints, medical specialists need to be catered. Recreation, library and other similar avenues for entertainment must be provided to avoid boredom and depression. Every inmate should be encouraged to ensure that physical and intellectual functions remain in control in spite of advancing years. The perspective to keep in mind is that the most

valuable phase in life is these years when one **“is not only full of life, but also full of wisdom and understanding.”**

People in the home for the elderly come from different places, from different backgrounds. So, adjusting to a new setup. For new people, is a tough job. And handling them is a tougher. Sometimes by just listening to them, sometimes by giving a valid solution, sometimes, by experimentation, sometimes, by trial and error method, problems which sparring up in the day-to-day life can be dealt with. These problems are meager, very trivial, the reason being the same again, that old age is another childhood

The analysis is that in so far the care of aged is concerned, after family, institutional care or homes prefer the most plausible alternative .Theoretically, old age homes provide the basic needs of the aged, avenues for proper utilization of their spare time and an ambience in which they live relatively free from worries and with emotional satisfaction and self-esteem.

In real sense the concept of Old Age Home has played a positive impact on the Quality of Life and have boost up the attitude of elderly towards their lives .It is hence forth clear that institutionalized care that through the Old Age Homes is the need of this busy hour .It is important to improve the quality of life and make the life of the aged more momentous and delightful by maintaining and enhancing the lives and abilities of the elderly physically, emotionally, socially and cognitively.

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BOOK REVIEW**SUNSET YEARS OF LIFE : A STUDY OF RURAL ELDERLY**

By Prof. Prafulla Chakrabarti (published by Urbee Prakashan, Kolkata, R, 2009, 280 Pages).

The book on "Sunset Years of Life – A Multi-dimensional Study of Rural Elderly" is a collection of articles written by the author Prof. Prafulla Chakrabarti at various points of time in the field of Social Gerontology. The focus of this volume is on lives of rural elderly, who constitute more than half of the 60+ population in India characterized by poverty, illiteracy, dependency and dearth of health care services and supports. Coming from a committed researcher in sociology, with an experience of more than five decades, this book gives an overview of various aspects of rural elderly and is a useful addition to the area of Social Gerontology, a field of growing importance.

Ageing is an inevitable process of life that needs for its understanding, a comprehensive picture of its various aspects in a multidimensional perspective. This book has tried to provide such a perspective. The topics covered are wide ranging, multi-dimensional and comprehensive. Part-1 covers the Demographic dimension of ageing; Part- II focuses on Psychological dimension of aging; Part - III is on the Anthropological dimension of aging; and Part-IV covers the Socio-economic dimension of aging.

In Part I the author made an attempt to highlight the global and regional scenario of ageing as interstate variations in terms of numbers / proportion of elderly, sex ratio, dependency ratio and marital status. The second chapter focuses on characteristics of population aging in Asia and the west. The third chapter attempts to highlight problems of senior citizens. The inputs on mainstreaming the elderly into the society needs more indepth analysis.

Part II on Psychological dimensions of ageing (part— II) is currently relevant. The analysis is from a psychological perspective to understand and to draw insights on stress, loneliness and dementia. Some specific rigour is essential in the description of tools.

Part - III of the book -The Anthropological dimension of aging covers health status, familial networks, chronic health problems; sources of treatment, care during illness with a focus on aging in rural areas, has an important policy directive. Part IV of the book, the socio-economic dimension of aging, is an useful and interesting addition to the volume. The chapter on spirituality and concluding note on lively and enjoyable old age are worth reading with a clear message not only for older persons but also to the younger generations as well.

A thorough reading of the book gives a clear answer to the question "who said that older persons are obsolete? Ultimately it is the mind that makes the person feel "young" or "old".

However, some suggestions and observations that need to be considered at the time of updating the book may not be out of place. In the section on Demographic dimension of ageing text tables and related content may be reorganized in a more cohesive manner highlighting their implications. Not being a Psychologist, one may not expect the author to ensure technical rigour in the formulation, standardization and use of tools. Similarly analysis of age related risk factors in physical and mental health and also the projected social implications of population ageing would be more useful to the readers.

Of interest, are the data on dementia and health status in various socio demographic groups. These are the areas of key importance for the future of health and longevity and depends on future health care policies. It would have been more meaningful had there been more data on age related risk-factors and age related health conditions. Nevertheless, this book is a valuable and comprehensive resource to a researcher in the field of Social gerontology in specific and for an academician who carries out research on aging in general.

The author of the book who has a good reputation in his field as a Sociologist, needs applause for his unstinted effort. Coming from a senior sociologist in India this book will be a meaningful contribution to the field of Social gerontology in India.

Jamuna Duvvuru
Professor of Psychology
S.V. University, Tirupati (A.P.)

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BOOK RECEIVED FOR REVIEW

Grey Areas - An Anthology of Indian Fiction on Ageing edited by Ira Raja, Published by Oxford University Press, YMCA Library Building, Jai Singh Road, New Delhi - 110 001, 2010, Page 253, Price Rs. 659/-.

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