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Changes in Peroxidase Activity and Structure of Testes, Epididymis and Seminal Vesicles in Aging Swiss Albino Mice

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ABSTRACT

Age related changes in testes (T), epididymis (E) and seminal vesicles (S V) and the peroxidase enzyme activity were studied in aging male mice from 10 to 24 months age. The weight (T, E and SV), decreased after 16 months and was significantly low at 24 months. Thinning of germinal epithelium of testicular tubules as well as columnar epithelium of epididymal lobules, along with apparent decrease in sperms number were observed at 20 months which further decreased at 24 months. In seminal vesicles, low fructose content was noted at 12 months which further declined in 24 months old mice. Peroxidase enzyme involved in detoxification of free oxygen radical is under hormonal regulation and its activity (in T, E and SV) was low at 14 months and further declined at 24 months. These results suggest that regressive age related changes in structure and physiology of testes, epididymis and seminal vesicles are due to changes in the hypothalamo-hypophysealgonadal axis.

Keywords: Aging, Swiss albino mice, Testis, Epididymis, Seminal vesicles, Peroxidase.

Aging is highly complex phenomena and age related changes in organisms, cells, tissues, organs and macromolecules are very well described in many laboratory animals (Holliday, 1995). Alterations in cellular functions are consequence of changes in the biochemical composition of the cells. Similar to female, in male too there is progressive decline in reproductive capability with advancing age. A decrease in testes and epididymis weight and changes in their morphology and sperm count are reported in aging mice (Saaal and Finch, 1988). Seminal vesicles weight too declines, but it may also increase due to epithelial dysfunction (Huber *et al.*, 1980). Plasma LH,

testicular androgens and steroid synthesizing enzyme 3 β -hydroxydehydrogenase also decline in aging mice (Takase *et al.*, 1989; Gruenwald *et al.*, 1992), and rats (Lamberts *et al.*, 1997; Chen *et al.*, 2004). Peroxidase, a scavenging rate limiting enzyme involved in detoxification of reactive oxygen is implicated in steroidogenesis (Fridovich, 1986) and tissue injuries as well as aging del Rio, 1990). Pituitary LH increases the activity of this enzyme (Kaur, 1997) while LH antisera inhibits it.

Free radical production and lipid peroxidation are important mediators in testicular physiology. The enzymes of steroidogenesis pathways are known to produce free radicals (Fridovich, 1986, Peltola *et al.*, 1996). In interstitial tissue peroxidase activities are much higher than in seminiferous tubules. It is further reported by using GnRH antagonist that peroxidase was induced by HCG only in interstitial tissue (Peltola *et al.*, 1996).

Epididymis spermatozoa in mammals exhibit diverse stages of maturation and their plasma membrane shows diverse composition and stability levels thus enabling these spermatozoa to undergo acrosomal reaction after transit through the epididymis. Epididymal spermatozoa must be properly protected against agents such as reactive oxygen species which can impair the complex maturation process. Complex enzymatic activities are correlated with the different stages of sperm maturation which are characterised from caput to cauda epididymis by progressive destabilization of the plasma and acrosomal membranes (Tramer *et al.*, 1998). Besides these the enzyme which reduces the lipid peroxides was also detected in glandular epithelium of dorsolateral prostate following testosterone treatment (Murkoshi *et al.*, 1997).

There is no systematic report on reproductive changes in aging mice. Therefore, weight and histology changes of testes, epididymis and seminal vesicles and their peroxidase activity and changes in fructose content of seminal vesicles were studied in aging Swiss albino mice from 10 to 24 months age.

Materials and Methods

Laboratory bred Swiss albino mice were kept under standard conditions of temperature (23 $\pm$ 2°C) and photoperiod (14L + 10D) and had free access to animal chow and water.

Animals were weighed and autopsied by decapitation from 10 to 24 months age at 2 months intervals. Testes, epididymis and seminal vesicles were weighed and a few were processed for histological studies. Tissues were sectioned at 7μ and stained with eosin and hematoxylin. The rest were used for peroxidase estimation. Tissues of known weight were homogenised in phosphate buffer (pH 7.0) at 4°C and kept at the same temperature for 30 minutes. The extract was centrifuged at 3000g for 30 minutes at 4°C and supernatant decanted. To each 1ml aliquet, added equal amount of 0.2 mM benzidine (freashly prepared) and 0.83 mM H_2O_2 and recorded the absorption changes per minute at 485 nm in spectrophotometer (Cecil). Also prepared blank containing no enzyme but other constituents. Relative changes in peroxidase activity were expressed as absorption /O.D. changes/minute/mg wet weight of the tissue. Data were analysed by the method of analysis of variance by using one way classification (Gupta, 1991).

Results

Body weight does not show any significant change in aging mice. Testes weight decreased after 16 months and was further low at 24 months. The epididymis weight showed no change till 18 months but declined between 20 and 24 months. Seminal vesicles weight too remained unchanged till 16 months but increased slightly at 20 months and was further low at 24 months (Fig 1).

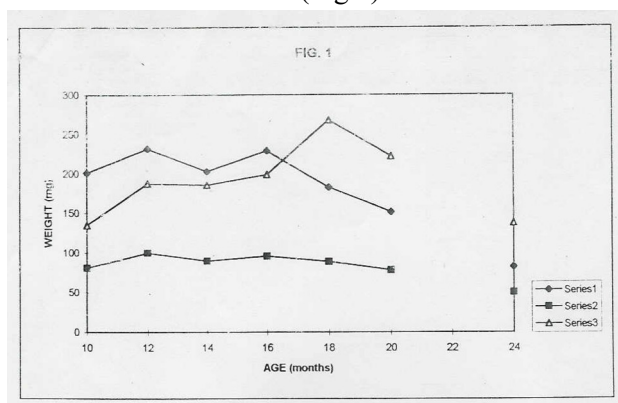


Fig. 1 Weight of testis (series 1), epididymis (series 2) and seminal vesicles (series 3) in aging Swiss albino mice (8-24 months).

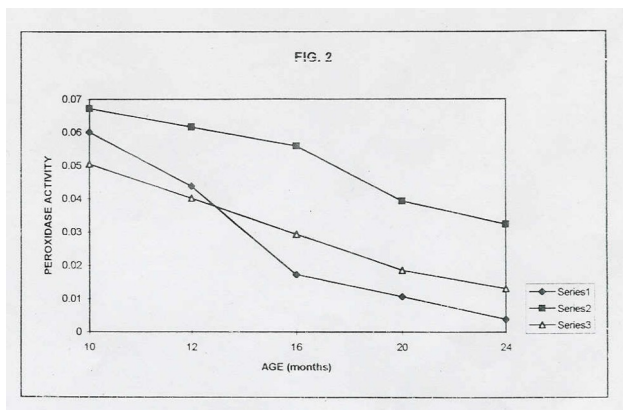


Fig. 2 Peroxidase activity in the testis (series 1), epididymis (series 2) and seminal vesicles (series 3) in aging Swiss albino mice (8-24 months).

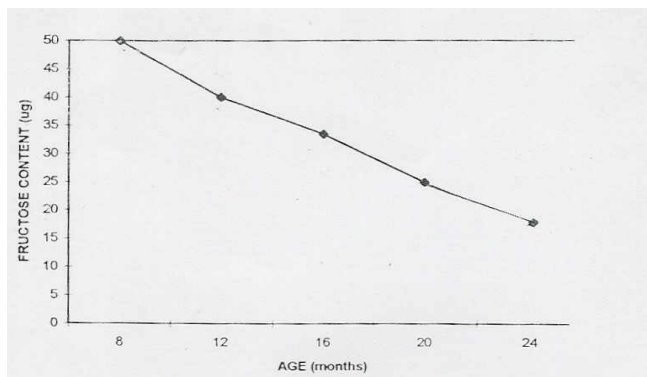


Fig. 3 Fructose content in seminal vesicles (μg) in aging Swiss albino mice (8-24 months).

The histology of testis showed spermatocytes and spermatids till 24 months but the apperent number of spermatozoa and other cells in different stages of spermatogenesis is greatly reduced which results in thinning of germinal epithilium (Fig 4, 5). The normal structure of epididymis showing lobules lined by ciliated, tall columnar cells and bundles of spermatozoa in the lumen is noted upto 12 months of age. Later, thinning of epithilium starts and is considerably low at 20 months with very few sperms present in the lumen (Fig 6, 7). Fructose in seminal vesicles also decreased after 12 months and was significantly low at 20 months age (Fig 3).



Fig. 4 T.S. testis (8 months) showing active spermatogenesis and bundles of spermatozoa in the seminiferous tubules. X 100

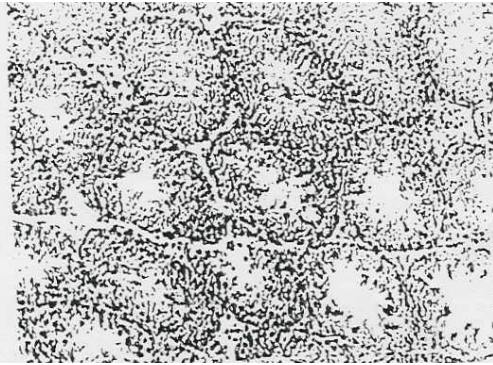


Fig. 5 T.S. testis (20 months) showing thinner germinal epithelium and fewer spermatozoa in seminiferous tubules. X 100

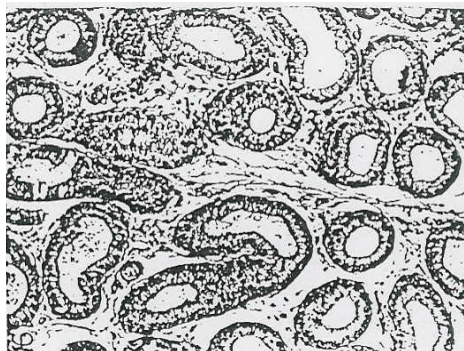


Fig. 6 T.S. epididymis (8 months) showing lobules full of secretory material and bundles of spermatozoa. X 100

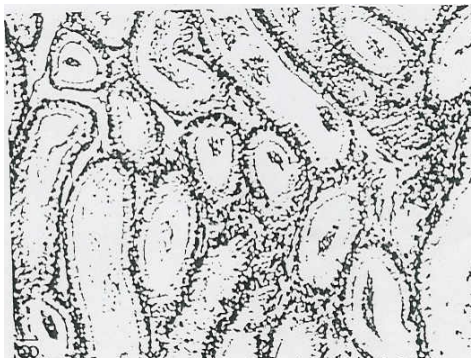


Fig. 7 T.S. epididymis (20 months) showing low epithelium and very few spermatozoa in the lobules. X 100

Peroxidase activity in the testes, epididymis and seminal vesicles remained nearly the same upto 12 months, but decreased later and was significantly low at 20 and 24 months age. However, the decline was more in testes than in the other two tissues (Fig 2).

Discussion

In the present study, decrease in testes, epididymis and seminal vesicles weight and apparent low sperm count in the testes and epididymis are observed in aging mice, which is in agreement with earlier findings (Saal and Finch, 1989). However Takase *et al.*, (1989) reported decline much earlier probably due to different strain studied. The changes are due to decrease in plasma LH and testosterone (Gruenwald *et al.* 1992, Lamberts *et al.* 1997). In aging brown Norway rats, low testosterone synthesis is found to be due to changes in intrinsic factors in leydig cells (Grywaez *et al.*, 1996). In man too, decreased testosterone and estradiol which arises through its aromatisation are reported during aging (Sherwin and Barbara, 2003). Epididymal lobules epithelium too appears collapsed because of increased thickness and invasiveness of basal membrane (Serve *et al.*, 1996). Slight initial increase in weight of seminal vesicles may be due to urinary tract or kidney dysfunction.

Oxygen free radicals scavenging enzyme peroxidase is rate limiting and is involved in wide range of tissue injuries, disease, other disorders, aging and steroidogenesis of cholesterol (Fridovich, 1986; de Rio, 1990). Low testicular steroidogenesis and consequently low testosterone at higher age result in thinning of germinal epithilium,

low sperm count and other degenerative changes (Takase *et al.*, 1989, Gruenald *et al.*, 1992, Lamberts *et al.*, 1997 and Chen *et al.*, 2004). Gosden *et al.* (1984) too, reported decrease in sperm count in testes and epididymis in aging mice.

Low peroxidase activity in testes at higher age is probably due to low steroidogenesis since low androgen levels are reported (Takase *et al.*, 1989, Gruenwald *et al.*, 1992, Lamberts *et al.*, 1997 and Chen *et al.*, 2004) which is because of low plasma LH in aging animals (Saal and Finch 1988, Takase *et al.*, 1989). In epididymis too, apparent number of spermatozoa in lobules is low at higher age and there is thinning of wall of lobules. In seminal vesicles too the enzyme activity declines at higher age. There are reports on activity of peroxidase in ventral prostate. These changes are due to low testosterone in aging mice (Murakoshi *et al.*, 1997, Pelatola *et al.*, 1996). The results suggest that peroxidase is good indicator of testosterone/androgens and LH activity. The results also suggest that aging process can be explained on the basis of changes at cellular level. Alterations in cellular functions may be a consequence of changes in biochemical composition of cell which is in correlation with changes in cellular metabolism.

With existing knowledge of various factors responsible for aging, changes in structure and physiology of testes, epididymis and seminal vesicles there is evidence to show that it is primarily due to low plasma LH as well as steroidogenesis and other changes.

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Diabetes Mellitus among the Scheduled Caste Adults (> 50 Years) Residing in Urban Slums of Brahmapur Town

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ABSTRACT

A total of 761 schedule caste adults above 50 years of age residing in urban slums of Brahmapur town were selected by random sampling technique for a community based cross sectional study to assess the prevalence of diabetes mellitus. Sex ratio was 63.6% males and 36.4% females of them. 63.6% were in the age group of 50-60 years and 15.9% were above 70 years of age. The overall prevalence of diabetes mellitus among schedule caste adults was 19.81% with males having 24.3% and females 12.2%. The prevalence of the disease with increasing BMI was found to be statistically significant ($P < 0.05$). Also its prevalence with increasing daily calorie consumption (> 2000 Kcal) was also found to be significant ($P < 0.05$). As high as 68.46% had hypertension, 52.27% anaemia and 36% cataract as associated morbid conditions. The relation of prevalence of diabetes mellitus with hypertension and cataract was found to be significant. Hence, screening and imparting health education to this vulnerable section of the society can alleviate a major burden of non-communicable disease and its implications in the population.

Keywords: Diabetes mellitus, BMI, Daily calorie consumption, Hypertension, Cataract.

Diabetes mellitus is a syndrome characterized by chronic hyperglycemia and disturbances of carbohydrate, fat and protein metabolism associated with absolute or relative deficiencies in insulin secretion and/or insulin action (Joslin, 1994).

Diabetes is an iceberg disease. Development of diabetes mellitus is associated with increased mortality and a high risk of developing

vascular, renal, retinal and neuropathy complications leading to premature disability and death (WHO, 1985). The prevalence of diabetes mellitus in adults is 4% worldwide and this means that over 143 million are now affected, 2002. The major determinants for projected increase in the number of diabetes in SEAR countries are population growth, age structure and urbanization. One of the most important epidemiological features of diabetes is that it is now common in the lower social classes (WHO, 1998). Health problem of urban area, mainly slum areas, can be conceived in term of affluence and scarcity. Diabetes being mainly a disease of elderly. It was decided to take up a study among one of the weaker section of society of scheduled caste adults of more than 50 years of age residing in the urban slums of Brahmapur town.

Materials and Methods

As per 2001 census the total population of Brahmapur town was 3,07,664. The scheduled caste population accounted for 9.71% (29,751) and majority (64%) of them reside in urban slums. It was noted that 20% (3808) of the population were above 50 years of age and 761 of them were selected randomly as the population study. If a household had more than one person aged >50 years, then only one person from the household was randomly selected.

The investigation collected all the socio-demographic characteristics of household and socio clinical data from the individual on a pretested schedule. On the subsequent day, the investigators visited the study subject to collect blood sample to estimate fasting blood sugar level by GOD / POD method. Fasting plasma glucose is the most reliable and convenient test for diagnosing diabetes mellitus in asymptomatic individuals (Harrison, 2001).

A randomly selected sample of 761 individuals with 63.6% males and 36.4% females comprised the study. Majority (63.6%) of them were between 50-60 years of age, 20.5% were between 61-70 years and 15.9% were > 70 years of age (Table-1)

Table-1
Age and sex wise distribution of study population

Age	Male	Female	Total
50-60 years	290	194	484 (63.6%)
60-70 years	88	68	156 (20.5%)

> 70 years	106	15	121 (15.9%)
Total	484 (63.6%)	277(36.4%)	761 (100%)

Results

It was found that 24.3% of males and 12.2% of females were suffering from diabetes mellitus. But the difference between persons less than 60 years and above 60 years having diabetes was not found to be significant ($P < 0.5$) (Table-2).

Table-2
Diabetes Mellitus according to age and sex

Age (in yr)	Sex					
	Diabetic	Male Non- diabetic	Total	Diabetic	Female Non- diabetic	Total
50-60	83	207	290	34	160	194
> 60	34	160	194	-	83	83
Total	117 (24.3%)	367 (75.7%)	484 (100%)	34 (12.2%)	243 (87.8%)	277 (100%)

$$\chi^2 = 2.369 \quad P < 0.5$$

The body mass index of individuals was assessed and it was noted that 29.7% of the population were under weight whereas 1.8% were obese. Nearly half (45.9%) of the study population had a BMI ranging from 19-24. It was found that the occurrence of diabetes mellitus and BMI were statistically significant ($P < 0.05$). A total of 8.4% having BMI of < 10 were suffering from diabetes where as 38.5% and 100% of persons having BMI of 25-29 and ≥ 30 respectively had a FBS level of > 120 g%. (Table-3).

The waist circumference of the study population was measured and the cut off point for males was 102 cm and that of females was 88 cm (WHO, 1985). Of them 23% of males having waist circumference < 102 cm were having diabetes mellitus, 40% having waist circumference > 102 cm were found to have this disease whereas 93.11% of the female with waist circumference of < 88 cm did not have diabetes mellitus and 72.8% of the females with a waist circumference of ≥ 88 cm also did not have the disease. The relationship between waist circumference and diabetes mellitus was not found to be statistically significant (Table-4).

Table-3
Distribution of study population as per BMI and diabetes mellitus

Body mass index (BMI) Kg/M2	Diabetes mellitus		Total
	Present	Absent	
< 19	20 (8.4%)	206 (91.6%)	226 (20.7%)
19 - 24	55 (15.7%)	294 (84.3%)	349 (45.9%)
25 - 29	68 (38.5%)	110 (61.5%)	178 (23.4%)
≥ 30	8 (100%)	-	8 (1.8%)
Total	151	610	761

$$\chi^2 = 9.123 \text{ P} < 0.05$$

Table-4
Distribution of study population as per waist circumference and diabetes mellitus

Diabetes mellitus	Waist circumference					
	Male			Female		
	<102 cm	≥102 cm	Total	<88 cm	≥88 cm	Total
Present	103 (23%)	14 (40%)	117	14 (6.89%)	20 (27.2%)	34
Absent	346 (77%)	21 (60%)	367	189 (93.11%)	54 (72.8%)	243
Total	449 (100%)	35 (100%)	484	203 (100%)	74 (100%)	277

The daily calorie intake of each individual was assessed by a dietary survey of seven day recall questionnaire method. Percentage wise 38.73% of them consumed less 1500 Kcal per day and 27% consumed > 2000 Kcal per day only. 11.6% of cases consuming less than 1500 Kcal per day had the disease whereas 23.3% had the disease who consumed > 2000 Kcal per day. The daily calorie intake and prevalence of diabetes mellitus was found to be statistically significant ($P < 0.05$) and those who consumed more had a higher chance of having elevated blood glucose level. (Table-5)

Table-5
Distribution of study population as per daily calorie consumption and diabetes mellitus

Daily calories	Diabetes mellitus	Total
----------------	-------------------	-------

consumption in (Kcals)	Present	Absent	
< 1500 Kcal	34 (11.6%)	261 (88.4%)	295 (38.73%)
1500-2000 Kcal	69 (26.3%)	191 (73.7%)	260 (34.23%)
> 2000 Kcal	48 (23.3%)	158 (76.7%)	206 (27.00%)
Total	151 (100%)	610 (100%)	761 (100%)
$\chi^2 = 5.095$	$P < 0.05$		

Personal history regarding addiction to alcohol was taken and it was found that 81.4% males were alcoholics and 88.2% were diabetics. The difference between alcohol intake and occurrence of diabetes was not found to be statistically significant ($P > 0.05$) (Table-6).

Table-6
Distribution of study population as per addiction to alcohol and diabetes mellitus

Addiction to Alcohol	Diabetes mellitus		Total
	Present	Absent	
Present	103 (88.2%)	289 (79.2%)	392 (81%)
Absent	14 (11.8%)	78 (20.8%)	92 (18.6%)
Total	117 (100%)	367 (100%)	484 (100%)

All the alcoholics in the study were males.

$\chi^2 = 0.1303$ $P < 0.05$

The study had revealed that 68.5% were hypertensive. Musculo-skeletal complaints as low backache, arthritis of large joints were present in 72.9%. Anaemia was present in 52.27% of the cases and 9.9% had dermatological disorders as scabies, eczema, dermatomycoses etc. with 36% developing cataract (Table-7).

Among the diabetics, 86.4% were hypertensive and among the non-diabetics 64% were hypertensive. This difference between presence of diabetes and hypertension was found to be statistically significant ($P < 0.05$). Among the diabetics, 68.2% had cataract whereas among the non-diabetics 28.1% had cataract. Association between presence of diabetes and cataract was found to be highly significant ($P < 0.01$) (Table-8).

Table-7
Distribution of study population as per morbidity pattern

Type of morbidity	Number	Percentage
Anaemia	398	52.29%
Hypertension	521	68.46%
Cataract	274	36.00%
Diabetes mellitus	151	19.84%
Musculo-skeletal disorders	555	72.90%
Dermatological disorders	75	9.80%

Table-8
Distribution of study population as per diabetes mellitus and associated complication

Diabetes Mellitus	Hypertension			Cataract		
	Present	Absent	Total	Present	Absent	Total
Present	130 (86.4%)	21 (13.9%)	151	103 (68.2%)	48 (31.8%)	151
Absent	390 (64%)	220 (36%)	610	171 (28.03%)	439 (71.09%)	610
Total	520 (68.5%)	241 (31.5%)	761	274 (36%)	487 (64%)	761

Hypertension $\chi^2 = 4.056$ $P < 0.05$ Cataract $\chi^2 = 8.875$ $P < 0.01$

Discussion

The burden of non-communicable disease is gradually showing an increasing trend. Chronic diseases contributed to approximately 60% of the 56.5 million total reported deaths in the world and 46% of the global burden of disease (World Health Report, 2002). Diabetes mellitus is one of the major non-communicable diseases which has assumed epidemic proportion in many parts of the world and the development of this is associated with increased rate of premature disability and death (Park, 2002). The present population of 19.4 million diabetics is projected to be increased to 60 million by the year 2025 and India would rank first in sharing the global burden of diabetes (King H. *et al.*, 1998). Epidemiological transition including improved socio-economic status, rural to urban migration, adoption of sedentary habits and stress of modern life style is largely responsible

for this cataclysmic shift in the burden of diabetes (Sharp *et al.*, 1987 and Rama Chandran *et al.*, 2001).

The present study indicated the prevalence to be 19.81% in Scheduled Caste adults of more than 50 years of age in urban slum areas. Other authors reported 11.2% to 12.4% (Rama Chandran *et al.*, 2001, Mohan *et al.*, 201 and Kutty *et al.*, 2000). A significant relationship between the dietary calorie intake and diabetes mellitus existed. Rao *et al.* (2002) had also shown that higher total energy intake in subjects with abnormal glucose tolerance was statistically significant in the pooled data of for rural Indian population. Waist circumference and addiction to alcohol did not show any significant relationship with diabetes mellitus.

The study indicated a significant role of concomitant morbidity of hypertension and diabetes mellitus. Tuomilehto *et al.* (1999) had also shown that hypertension is prevalent by 1.5-3 times in diabetics. Jayakumar (2003) had also summarized that control of hypertension in diabetes has shown to decrease the complications like ischaemic heart disease and renal failure there by reducing the morbidity and mortality. Cataract was another important morbidity associated with diabetes and report of senile cataract developing at an earlier age appeared (Parson, 2002). So, control of blood sugar level by which not only cataract but also diabetic retinopathy can be prevented (Premalata *et al.*, 1999). Musculoskeletal disorders and anemia were other important morbidities prevalent among the study population. Health education regarding correct and adequate dietary intake and regular health checkups will definitely lead to an improve quality of life among the under privileged sections of the society.

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Prevalence of Hypertension in Geriatric Population : A Community Based Study in North-West Rajasthan

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ABSTRACT

Hypertension is a silent killer, which is common among elder men and women. Condition is diagnosed mostly after an individual suffers one of its grave complications. In India the prevalence of hypertension is lower in rural area compared to urban population. This community based study in North-West Rajasthan was conducted to know the prevalence, awareness and control of hypertension in geriatric population. Prevalence of hypertension in geriatric population of urban and rural population of Bikaner is very high; 51.2% (50.7% in men versus 51.8% in women); in urban population, it is as high as in 60.5% population and among rural population in 41.0%. The awareness of hypertension was only 39.2% (44.9% in men and 32.8% in women). Out of these only 37.2% was taking Antihypertensives and 8.7% had controlled their blood pressure.

It is very disheartening to note that there is striking lack of awareness of the condition among the subjects and a sub optimal rate of control among those treated. So, it is important to diagnose early, initiate, aggressive treatment and making awareness of hypertension to reduce morbidity and mortality and to prolongation the lifespan of geriatric population.

Keywords: Hypertension, Geriatrics, Community Survey, Prevalence of HT.

Hypertension is the leading cause of cardiovascular complications like myocardial infarction, cerebrovascular accidents and end stage renal disease.

Worldwide, the geriatric age group constitutes one of the most rapidly expanding segments of population. The increase in longevity due to improvement in socioeconomic conditions and health care

facilities has lead to surge in geriatric population as well as related illnesses such as cardiovascular disease. Worldwide including India, hypertension is one of the leading cardiovascular disorders and in itself is an important risk factor for coronary artery disease, cerebrovascular disease, cardiac failure and end stage renal disease in geriatric population.

Hypertension is one of the most important causes of mortality and morbidity in the elderly. As a consequence of a high prevalence, a substantial proportion of cardiovascular diseases in elderly is attributable to hypertension (high attributable risk) (O. Downell and Kenwal, 1998). Age is a very important non-modifiable risk factor for development of hypertension. Blood pressure rises with age in both sexes and the rise is greater in those with higher initial blood pressure. Considering the influence of age on blood pressure the increase in systolic blood pressure is generally linear from thirty years old age, whereas the increase in diastolic blood pressure peaks in mid fifties in men and early sixties in women declining slightly thereafter. It must be remembered however that increase in blood pressure does not represent an inevitable consequence of normal human aging but rather is caused by some genetic and/or environmental factors. What was once considered a physiological rise of systolic blood pressure is now regarded as an adverse response and is treatable. Several randomized controlled trials have firmly established that treatment of hypertension in elderly significantly reduces cardiovascular morbidity and mortality. (Amerj *et al.*, 1985; Przygoda *et al.*, 1998). In India, with increase in aging population the prevalence of hypertension is bound to increase. Yet there is paucity of studies assessing the prevalence of hypertension in geriatric segment of population. Only few studies have been conducted to gauge the burden of hypertension in geriatric Indian population. In our study we investigated the prevalence, awareness treatment and adequacy of control of hypertension in a cross section of geriatric population in Bikaner (Rajasthan). We would also like to examine the impact of selected sociodemographic characteristics like age, sex, socioeconomic status and smoking of the geriatric population on the prevalence, awareness treatment and adequacy of control of hypertension.

Material and Methods

Stratified random sampling was done in urban area of Bikaner city and a rural area of Udiaramsar. We initially obtained the voters list for the year 1998 both for the urban and rural areas. The voters list provides the names and age of all individuals 18 years or more. We then enumerated all houses with residents aged ≥ 65 years from the voters list. Thus two separate lists comprising 739 of 1974 rural household and 803 of 2113 urban households were obtained. Next we randomly selected 246 rural and 267 urban elders aged > 65 years (every third house from each list) for conducting our survey. We administered a pre-tested structured questionnaire that sought information on demographic characteristics, the socioeconomic status and the medical history of participant. A socio-demographic variable such as age, marital status, smoking habits, individual income and family income was assessed using previously validated method. During the course of the interview we obtained two measurements of blood pressure in right arm sitting position with rest of atleast of 5 minutes on each study participant with a Premarius, made in Germany, graduated at 2 mm interval, upto 300 mm mercury type, with cuff size of 22.3 cms $\times$ 13 cm. 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 a brief clinical examination. The age was recorded upto the completed years till last birth-day. Cigarette, tobacco and Bidi (tobacco rolled in *Diospyrus melanoxylon* leaf) is the commonest form of tobacco smoked in India. Smokers have been classified according to daily bidi and tobacco equivalent intake into three grades :

1. Light smokers < 5 bidis per day
2. Moderate smokers 6-20 per day and
3. Heavy smokers > 20 per day.

Table 1
Distribution of population sample according to age and sex

Age	Male				Female				Total				Total	
	Rural		Urban		Rural		Urban		Rural		Urban		No.	%
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
65-69	68	51.5	73	52.1	62	54.3	65	51.1	130	52.8	138	51.6	268	52.2
70-79	52	39.3	53	37.8	38	33.3	47	37.0	90	36.5	100	37.4	190	37.6
≥ 80	12	9.0	14	10.0	14	12.2	15	11.8	26	10.5	29	10.8	55	10.72

The hypertension status of the study participants was assessed by using standard criteria formulated by the World Health Organisation (WHO) and the US Sixth Joint National Committee on Detection, Evaluation and Treatment of Hypertension (JNC VI). 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 hypertensiveness who have reduced the blood pressure to a normotensive range by non pharmacological means. Awareness of hypertension was defined as the subject reporting a prior diagnosis of hypertension made by a health professional.

Treatment of the hypertension was defined as the current use of a prescription medicine for lowering the elevated blood pressure among hypertensive subjects. Control of hypertension was defined as pharmacological treatment associated with systolic blood pressure and diastolic blood pressure less than 140 and 90 mmHg, respectively.

Result and Discussion

Hypertension is a condition that can be easily and speedily diagnosed and can be successfully treated to prevent complications. Insidious onset, lack of awareness of the risk factors and of the disease, reluctance to consult a physician, inadequate treatment and follow up are common problems in the community. Hence, it is important to know the magnitude of the problem as population aging has received an increasing attention in recent years, particularly in developing countries.

It was observed that about 51.2% of subjects in our community based sample had elevated blood pressure level. The prevalence of hypertension was observed to be 50.7% in men and 51.8% in women. A similar 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 observed to be 47.2% and in women was 52.8%. Both these studies indicate that the prevalence of hypertension is quite high in geriatric age group and more than half of the geriatric population is hypertensive. We observed and age related

increase in the prevalence of hypertension across the seventh to ninth decade of life. The prevalence of hypertension in subjects aged 65 to 69 years was 49.6 which increased to 58.1 in individual aged ≥ 80 years. Similar trends of increase in the prevalence of hypertension with increase in age were observed in a study conducted by Singh *et al.* (1997) at Moradabad India.

Table-2
Distribution of population sample according to smoking status

Age	Male				Female				Total			
	Rural		Urban		Rural		Urban		Rural		Urban	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Smokers	64	48.8	65	43.7	6	5.2	6	4.7	70	28.4	76	28.7
Non-Smoker	68	51.5	75	53.5	108	94.7	121	95.2	176	-	-	-
Total	132		140		114		127		246		267	

Table-3
Prevalence of hypertension according to age gender and place of residence

	Gender		Age (Yrs)			Residence	
	Male	Female	< 70	70-79	> 80	R	U
HTN (%)	50.7	51.8	49.6	54.2	58.1	41.0	60.5
HTN n	138/ 272	125/ 241	133/ 268	103/ 190	32/ 55	101/ 246	162/ 267

Prevalence figures we noticed approximate age specific prevalence for corresponding age group in studies conducted at Jaipur and Kerala, in India (Gupta *et al.*, 1994 and Kalavanthy *et al.*, 2000) and Egyptian study (Ibrahim *et al.*, 1995) whereas the prevalence figures are less than those from the prevalence studies done at Buenos Aires Argentina (Przjgoda *et al.*, 1998). Besides, inherent difference between population, difference in sampling and survey methods may contribute to these geographic variation in prevalence and mean age of population sample.

Table 4
Distribution of hypertension according to age and sex

Age	Urban						Rural						Total					
	Male			Female			Male			Female			Male			Female		
	No	HT	%	No	HT	%	No	HT	%	No	HT	%	No	HT	%	No	HT	%
65-69	73	41	56.1	65	37	56.9	68	27	39.9	62	26	41.9	141	68	48.2	127	63	49.6
70-79	53	33	60.0	47	30	63.8	52	22	42.3	38	17	44.7	105	55	52.3	85	47	55.2
≥ 80	14	9	64.0	15	9	60.0	12	6	50.1	14	7	50.0	26	15	57.6	29	16	55.27

Table-5
Distribution of population sample according to age and sex

Group	Total	Optimal (SBP<120 and DBP <80)	Normal (SBP 120-129 and DBP 80-84)	High normal blood pressure (%) (SBP 130- 130 or DBP 85-89)	Controlled	Stage-1 (SBP 140- 159 or DBP 90-99)	Stage-2 (SBP 160- 179 or DBP 100-109)	Stage-3 (SBP $\geq$ 180 or DBP > 110)
Total	513	5 0.97%	128 24.95%	117 22.8%	23 4.4%	126 24.56%	80 15.59%	34 6.62%
By gender								
Female	241	0	62 27.72%	54 22.4%	10 4.1%	60 24.8%	39 16.1%	16 6.6%
Male	272	5 1.83%	66 24.26%	63 23.1%	13 4.75%	66 44.2%	41 15.0%	18 6.6%
By place of residence								
Urban	267	2 0.47%	47 17.60%	56 20.97%	17 6.36%	77 28.83%	49 18.35%	19 7.11%
Rural	246	3 1.21%	81 32.92%	61 24.79%	6 2.43%	49 19.91%	31 12.60%	15 6.09%

In our study sample, the prevalence of hypertension in men is 50.7% whereas among women it is 51.8%. A large scale Egyptian population study for prevalence of hypertension has shown hypertension to be more common among women than in men (26.9% versus 25.7%) (Ibrahim *et al.*, 1995). The study done at Kerala (Kalavanthy *et al.*, 2000) shows a higher prevalence of hypertension among women as compared with men (53.9% versus 49.7%). In our study the prevalence of hypertension in urban subjects was quite higher than that in rural subjects. The prevalence among total urban subjects was found to be 60.5% whereas prevalence among rural subjects was 41.0%.

Study done at Jaipur, Rajasthan (Gupta *et al.*, 1995) showed a higher prevalence of hypertension among urban subjects when compared with rural subjects. The prevalence among urban subjects was 30.9% whereas it was 21.2% among rural subjects. The overall lower prevalence of hypertension is due to the fact that this study included all adults aged 20 years and more and not just geriatric population. The reason for this difference in the prevalence of hypertension among urban and rural subjects as well as the prevalence of higher mean blood pressure of urban subjects could be attributed to the sedentary habits, heavier weights, higher mean caloric consumption, better socioeconomic status and psychological factors associated with urbanization. In our study, smokers were found to have a higher prevalence of hypertension than the non smokers in both urban and rural societies. It was observed that among urban male 76.9% of the smokers had hypertension similarly 64% of rural smokers had hypertension which is significantly higher than the prevalence among non-smokers. Only 41.3% of urban non-smoker male 37% of the rural non-smoker male had hypertension. In our study, the proportion of women who smoked was very low as compared to men. Only 12 women out of 241 women included in our study were found to be smokers. Study done by Gupta *et al.*, (1995) has similarly predicted a higher prevalence of smoking habit among hypertensives. The reason for this higher prevalence of hypertension among smokers may be that the mean systolic and diastolic blood

pressure rise with increase in the duration of smoking. In chronic smokers, it may be the contribution of nicotine to the pathogenesis of atherosclerosis. Cadmium which is present in cigarette smoke is deposited in renal parenchyma also results in higher blood pressure. Similarly a slight rise in basal blood pressure after smoking has been reported by Fishberg 1954.

It is observed in our study that the awareness of being hypertensive was quite low in sample population. Nearly 263 (5.2%) of the subjects were hypertensive of which, only 103, i.e. 39.2% were aware of their condition. Of the 138 men who had hypertension, only 44.9% were aware of their condition; whereas out of 125 hypertensive women, only 32.8% were aware of their condition. Clearly, awareness is low in women as compared to men. Of the 162 hypertensive who were residing in urban areas, 42.6% were aware of their condition whereas out of the 101 hypertensive subjects who were residing in rural areas, only 33.6% were aware of their condition. This indicates that awareness is high in urban subjects as compared to rural subjects. Of the 138 men who had hypertension only 60 i.e. 43.4% were taking treatment; whereas of the 125 hypertensive women only 38 i.e. 30.4% were taking any form of medical treatment. Of the 162 hypertensive who had residence in urban area, only 67 i.e. 41.3% were taking treatment whereas out of 101 hypertensive from rural side, only 31 i.e. 30.6% were taking treatment showing that as compared to urban hypertensive lesser rural hypertensive were taking treatment. When we considered control rate of hypertension, it was obvious that out of 263 subjects only 23 i.e. 8.7% had their blood pressure under control after treatment. Of the 138 hypertensive men only 13 i.e. 9.4% had their blood pressure controlled after medical treatment, whereas out of 125 women hypertensives, only 10 i.e. 8% had their blood pressure controlled after treatment indicating that control rate after treatment are low in women as compared to men. We found lack of awareness of elevated blood pressure among hypertensive participants in our study. Only 39.2% of hypertensive were aware of their condition and even lower proportion (37.2%) were being treated. It is not worthy that less than one quarter of treated hypertensives were adequately controlled. When we compare these figures with corresponding figures from

developed countries, these figures are substantially lower as the Third National Health and Nutrition Examination Survey (1988-1991) in United States of America showed that the overall two thirds of the population with hypertension were aware of their diagnosis (69%) and majority were taking prescribed medication (53%) of which 25% achieved control. (Bart *et al.*, 1995).

Summary and Conclusion

This study was conducted in Department of Medicine, SP Medical College and associated Group of Hospitals, Bikaner to assess the prevalence, awareness, treatment and adequacy of control of hypertension in geriatric population. The prevalence of hypertension in geriatric age group in our community based sample was observed to be 51.2%.

The prevalence appeared to be higher in women (51.8%) than men (50.7%). The prevalence in urban subjects was 60.5% and among rural subjects it was 41.0%. The awareness of hypertension was only 39.2% i.e. 44.9% in men and 32.8% in women. Only 37.2% of the hypertensive were taking any form of medical treatment. Only 8.7% hypertensive had their blood pressure under control after treatment.

In our study over 50% of individuals of age 65 years or over had hypertension. It is very disheartening to note that there is striking lack of awareness of the condition among the subjects and a sub optimal rate of control among those treated. It is important to early detection, aggressive treatment and making awareness of hypertension is necessary to reduce morbidity and mortality for prolongation of life-span of geriatric population.

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A Study on Nutrition, Diet and Disease Profile of the Elderly Anemic Women With or Without Intervention through Iron Folic Acid Supplementation

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ABSTRACT

Two hundred and fifty adult women aged 60 years and above were screened for iron deficiency anemia. A total of 30 subjects were selected to study the effect of IFA supplementation, (mean age 70 years). The percent prevalence of anemia in elderly women was 51.6%. Majority (48.8%) of the anemic subjects required help in climbing stairs, 22.5% in walking, whereas 11.6% required help in getting up. In elderly those who were anemic had higher Total Iron Binding Capacity values (520.89 ± 41.99) and Mean Corpuscular Volume was significantly depressed (78.58 ± 5.33). The NHE intervention study showed a notable difference in the retention of knowledge and practices in the intervention group. The daily Iron Folic Acid Supplementation for a period of six weeks daily produced a significant ($P < 0.01$) impact on hemoglobin levels, physical performance and cognitive functions of the elderly.

Keywords: Anemia, Elderly Women, IFA Supplementation, NHE.

Women experienced greater life expectancy than men and as a result they comprise majority of older adults. Consequently, older women exhibit higher health service utilization rates than older men. Anemia is common in elderly and its prevalence increases with age (Amia *et al.*, 2001). The function of some organs and system is decreased by aging process. Age related declines in gastrointestinal and bone marrow functional reserve have been found to occur in elderly. The elderly have decreased physical activity, changed dietary pattern and in developing countries, lowered food supply due to socio

economic factors. This population group also has increased frequency of inflammatory processes. These factors make elderly more prone to develop anemia (Olivares *et al.*, 2000). Anemia should not be accepted as an inevitable consequence of aging. Although WHO has not given cut off values of anemia for elderly, most of the studies recommend use of reference values for hemoglobin concentration for older individuals same as adults. Prevalence of anemia in older individuals is about 50% in developed countries and 12% in developing countries (WHO, 2000). Iron deficiency anemia is the second most common cause of anemia in elderly. A study carried out by Argyriadrou *et al.* (2001), in Greece on subjects aged 65 years revealed that the prevalence proportions of possible cognitive impairment among anemic and non-anemic males were 55.6% and 34.4% respectively. The corresponding proportions in females were 47.5% and 40.1% respectively. Supplementation with medicinal iron is short term strategy to combat IDA. There is need to further formulate and see the effect of IFA supplementation on cognitive and physical performance of elderly women. Therefore, in the present study iron folic acid was supplemented to the anemic elderly women for a period of six weeks. Usual recommended daily dose of 50 to 100 mg three times a day or a single dose of 325 mg tablet of iron sulphate may minimize the side effects and improve the compliance in elderly (Smith, 2000).

The present study aimed to investigate the impact of NHE given to the patients and controls in terms of knowledge retention and practices. Thus in light of this background, the broad objective of this study was to assess the nutrition, diet and disease profile of elderly anemic women (aged 60 years and above) with and without intervention with iron folic acid supplementation residing in Baroda city.

Materials and Methods

Two hundred and fifty women as subjects were selected from the population living under major five zones of Baroda city. Basic information was collected from the subjects enrolled for the study which comprised socio economic survey, anemia assessment activity pattern, nutritional status, hemoglobin estimation, disease profile, morbidity profile, and were grouped as anemia and non anemic. All elderly enrolled for the study were in the age group of 60

years and above and from lower middle income group. The control groups consisted of subjects matched for their age and economic background. The experimental group was supplemented with IFA tablets for six weeks along with NHE whereas control group received no intervention. Nutritional status was determined by anthropometric measurements and diet profile. Biochemical parameters included hemoglobin estimation, MCV and TIBC.

Socio-demographic data was obtained using a carefully planned questionnaire. This included information on age, sex, education, religion, income, living arrangements and marital status. Nutritional status was assessed using anthropometric measurements like height, weight, MUAC and BMI. Data on dietary intake was obtained using food frequency method and was further substantiated by 24 hour dietary recall.

Anemia self assessment form, a 5 point rating scale was used to elicit information regarding the symptoms experienced by the subjects. The subjects were categorised according to symptoms experienced by them all the time, most of the time and occasionally. The data on activity pattern was collected using 24 hour activity recall and was divided into activities which required help and activities which do not require help.

A pretested proforma was used for recording the morbidity. The proforma included the community encountered ailments in elderly. Biochemical parameters that are employed in the diagnosis of IDA included measurement of hemoglobin concentration. Iron deficiency and inflammatory disease are thought to be the most common causes of anemia. Therefore, to differentiate iron deficiency anemia and anemia of chronic disease TIBC and MCV was calculated. MCV was measured by electronic counter. Some anemias, including iron-deficiency anemia result in microcytic red blood cells; a low MCV thus indicates microcytic anemia. On the basis of laboratory criteria that are used for the diagnosis of iron deficiency in adults (TIBC > 400 µg/dl MCV < 80 fl), the subjects were imparted NHE using a pictured booklet, the contents of which deals with the information related to etiology, signs and symptoms of IDA and key messages. Pictured illustration were used to show the foods that are to be restricted, consumed liberally along with some proper methods of cooking and

healthy eating patterns. All the questions under this section were analyzed on the basis of percent responses before and after intervention.

The association between iron deficiency and poor cognitive performance has been well documented. A deficiency of iron impairs cognitive performance and hence supplementation with iron improves selected aspects of mental functions. Two aspect of mental functioning were assessed, namely attention and concentration and memory.

Physical performance test was assessed by measures of standing balance, walking speed, and ability to rise from a chair. For tests of standing balance, the subjects were asked to attempt to maintain their feet side-by-side, semi-tandem (heel of one foot beside the big toe of the other foot), and tandem (heel of one foot directly in front of the other foot) positions for 10 seconds each. An 8 ft (2.4 m) walk at the subject's normal pace was timed and timed of the faster of two walks was used for scoring. Regarding rise from a chair, subjects were asked to fold their arms across their chests and to stand up from a sitting position. If they successfully rose from the chair, they were asked to stand up and sit down five times as quickly as possible. Time required for this measure were used for scoring.

Results and Discussion

The socio-demographic data of elderly women subjects showed that the majority of anemic subjects were in the age group of more than or equal to 70 years. The data revealed that percentage of married subjects was higher in both anemic (60.5%) and non-anemic (67.8%) groups, whereas percentage of singles i.e. unmarried (4%) and widow (31.6%) was low. In both the groups majority of the subjects were staying in joint family (46.4%) followed by nuclear family (38.4%) as compared to only 15.2% elderly who lived alone. The socio-demographic characteristics of the subjects were similar in the two categories (anemic and non-anemic). The data revealed that no difference existed in any of the parameters studied between the anemic and non-anemic groups.

Table -1
Anemia self assessment by the present subjects in terms of percentage

Symptoms	Percentage respondents		
	Anemic subjects n=129	Non-anemic subjects n=121	Total subjects n=250
Lack of strength			
All the time	12.4% (16)	5.8% (7)	9.2% (23)
Most of the time	41.9% (54)	9.9% (12)	26.4% (66)
Occasionally	45.7% (59)	84.3% (102)	64.4% (161)
Tired & weak			
All the time	20.9% (27)	8.3% (10)	14.8% (37)
Most of the time	62.0% (80)	22.3% (27)	42.8% (107)
Occasionally	17.1% (22)	69.4% (84)	42.4% (106)
Dizzy after climbing or walking			
All the time	40.3% (52)	20.7% (25)	30.8% (77)
Most of the time	49.6% (64)	28.9% (35)	39.6% (99)
Occasionally	10.1% (13)	50.4% (61)	269.6% (74)
Short of Breath			
All the time	10.1% (13)	1.7% (2)	6.0% (15)
Most of the time	24.8% (32)	9.1% (11)	17.2% (43)
Occasionally	65.1% (84)	89.3% (108)	76.8% (192)
Difficult to Concentrate			
All the time	8.5% (11)	0.8% (1)	4.8% (12)
Most of the time	25.6% (33)	4.1% (5)	15.2% (38)
Occasionally	65.9% (85)	95.0% (115)	80.0% (200)

(Figure in parenthesis denote number of subjects)

The result of assessment and information collected revealed that out of 129 anemic subjects, 83.8% were able to assess themselves as anemic as compared 25.9% who were not anemic.

The data on activity pattern indicated that 48.8% of the anemic subjects required help in climbing stairs, 22.5% required help in walking; whereas only 11.6% required help in getting up. In non-anemic group, only 19.8% of the subjects required help in climbing followed by 5% in walking, 1.7% in getting up and no help in rest of the activities. This gave a clear cut view of problems faced by the anemic elderly subjects in daily routine activities, showing the unhealthy physical status. Smieja *et al.* (1996) conducted a study on 6 hospitalised patients of 65 years of age or older, admitted between April 1992 and March 1993 in secondary care hospital, Hamilton. Results showed that 36% of the subjects had anemia. They concluded that anemia is common among elderly patients in hospital.

Initially, 250 women were screened for their hemoglobin levels. A large proportion (28.4%) of the women were totally anemic with hemoglobin levels ranging from 10-11.99 g/dl and 22% of the women suffered from moderate anemia ($Hb < 10$ g/dl). Two cases of severe anemia were identified. The women screened for the present study also manifested a high prevalence of anemia following under the category of mild-moderate type. This may be due to poor iron stores continuing even beyond menopause. In some women, it may be due to poor dietary supplies of iron in old age.

There are few data concerning anemia in adolescent and in elderly people, which precludes any precise estimates for these two groups, but it is thought that the prevalence rate for adolescents is close to that for adult females and the rate for elderly is slightly higher than that for adult males (Demayer and Adiels-Tegmen, 1989).

The mean body weight of 50.49 kg and 51.26 kg was observed in anemic and nonanemic women. The mean value for BMI and MUAC was reported as 21.05 ± 4.55 and 26.39 ± 5.9 , respectively for the anemic subjects. However there was not much difference in the mean anthropometric measurements of anemic and non-anemic elderly. The disease profile of the subjects revealed that nervous system problems (74.5%) ranked first followed by oral cavity problems (73.6%). Problems of gastro-intestinal tract were present in 61.6% of total subjects. Other problems related to respiratory, urinary tract, locomotor and miscellaneous problems were also reported by 36.9% of the total subjects.

Guyatt *et al.* in 1990 carried out a study on 259 anemic patients at community hospitals over the age of 65 years in whom complete

blood count processed by a hospital laboratory demonstrated previously undiagnosed anemia. Results showed that 36% per cent of patients had no demonstrable marrow iron and have been classified as iron deficient.

Those who were anemic had higher TIBC and MCV were also significantly depressed. Iron deficiency in this anemic group is defined on the basis of TIBC > 400 µg/dl. By this definition, 30 elderly women in whom there was complete laboratory analysis done were iron deficient. The mean value of TIBC was 520.89 µg/dl. The predominance of the iron deficiency was more pronounce in the age group of 70 years and above.

Table - 2
Percent prevalence of anemia in subjects screened

Degrees of anemia	Hb g/dl	Percent prevalence n = 250
Severe	< 7	1.2 (3)
Moderate	7.1 - 9.99	22.0 (55)
Mild	10-11.99	28.4 (71)
Normal	≥ 12	48.4 (121)

(Figure in parenthesis denote number of subjects)

At the end of supplementation period, significant impact of the intervention was noted. Group I, which was supplemented with IFA tablets showed an increase from an initial 9.43 g/dl to the final mean haemoglobin level of 10.42 g/dl. On the other hand, the control group which received no tablets, demonstrated a slight change in mean hemoglobin level form 9.44 g/dl to a final of 9.49 g/dl. A statistically significant rise was shown by the subjects who had initial hemolobin levels between 10-11.99 g/dl.

The mean nutrient intake reveals that diets were deficient in energy, protein and iron as compared to that of recommended dietary allowances in both the groups. Similarly, there was a significant rise ($p \leq 0.50$) energy intake by subjects. The supplementation also increased the intake of vitamin-C, β-carotene, fat, calcium by the subjects wherewas hardly and change was noted in iron and protein.

The NHE intervention showed improvement in mean knowledge retention scores of the experimental group. Regarding knowledge about having heard anemia 100% of the subjects could retain the

information. All the cases were able to retain the knowledge about risk factors of anemia. Warning signs of anemia was fully recalled by 32.37% of the subjects after intervention and all the subjects in the group were able to retain 1 or 2 warning signs of anemia. About necessity to treat anemia, 96.4% of the subjects positively responded. A notable difference was found in the retention of knowledge with respect to treatment and prevention of anemia. Almost 86.7% cases recalled about correct ways of cooking food using iron utensils, out of which only 40% cases followed iron utensils. Out of total 8 subjects, 6 of them retained not to consume tea and coffee with meals, whereas 2 of them still followed the similar practice. Hundred percent cases could correctly recall about different types of green leafy vegetables and fruits. A striking difference was noted in practicing frequency of consumption of fruits and vegetables in the intervention group ($P \leq 0.05$). The impact of NHE was observed more in cases as they made necessary changes in their eating pattern as illustrated in the booklet. The trend in the cognitive function shows experimental group performed much better than the control group.

Table-3
Pre and post intervention mental function test score

Group	N	Performance in mental function tests					
		Attention and concentration test			Memory test		
		Pre	Post	Paired 't'	Pre	Post	Paired 't'
Experimental	30	5.80 ± 3.03	6.70 ± 2.83	3.80***	4.53 ± 1.99	5.23 ± 2.54	2.00*
Control	30	5.10 ± 1.62	5.466 ± 2.03	2.26NS	4.60 ± 1.33	4.60 ± 1.58	0.00

Significant at $P < 0.05^*$; $P < 0.001^{***}$

N.S. = Nonsignificant

On an average, the group of control subjects scored 10.5 in attention and concentration test and a score of 5 in memory test as compared to scores of 13.7 and 9.7 of experimental group after intervention, respectively. As observed, there was a highly significant difference in the memory test as compared to attention and concentration.

Table - 4
Pre and post-intervention physical performance test score

Group	N	Performance in mental function tests								
		Mean $\pm$ SE								
		Standing balance			Walking speed			Rise from a chair		
		Pre	Post	Paired 't'	Pre	Post	Paired 't'	Pre	Post	Paired 't'
Experimental	30	2.13 ± 1.19	2.73 ± 0.94	4.54***	2.70 ± 1.1	2.86 ± 1.07	1.72*	2.36 ± 1.15	2.83 ± 1.05	3.29**
Control	30	2.33 ± 1.26	2.30 ± 1.23	0.37 ^{NS}	2.63 ± 1.06	2.66 ± 1.02	0.57 ^{NS}	2.56 ± 1.07	2.60 ± 0.96	0.74 ^{NS}

Significant at $P \leq 0.05^*$; $P \leq 0.01^{**}$; $P \leq 0.001^{***}$

N.S. = Non Significant

A cohort study carried out by Pennix *et al.* (2003) included 1146 participants aged 71 years. An assessment of standing balance, a timed 2.4 m walk and a timed test of five chair rises were combined into 0 to 12 summary scale. Results revealed that anemia was associated with 2.3 mean decline in physical performance in subjects with anemia and 1.4 mean score in those without anemia.

The physical performance of the experimental group after intervention was satisfactory when compared to control group. Among the experimental subjects there was a highly significant difference in scores after intervention. The experimental group performed better than the control group in case of standing balance and rise from a chair. Anemic elderly subjects face more daily activity problems as compared to the non-anemic ones. Use of pictured NHE booklet along with verbal counselling can be effective in bringing awareness regarding the risk factors as well as preventive aspects of iron deficiency anemia. The findings of the present study have shown that IFA supplementation even for a short duration of 42 days is an effective and efficient method for combating iron deficiency anemia reflecting physical performance and cognitive function test.

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Outcome of Cardiac Surgery in Elderly Subjects

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ABSTRACT

Retrospective study of hospitalized elderly patients in a tertiary hospital shows that coronary artery bypass graft (CABG) was preferred method (69.7%) compared to PTCA (29.3%). Triple vessel disease was prevalent (37.28%), followed by involvement of four vessels (32.89%), two vessels (22.63%), 5 vessels (16.23%), single vessel disease (4.82%), six vessels (4.39%) and that occlusion of LAD is predominant. Risk factors in blocking of the vessels were DM (11.11%) and HT (25.25%) and both HT and DM (14.14%). Number of vessels blocked increased with increasing percentage of risk factors.

Keywords: Elderly, Cardiac surgery, Risk factors.

Cardiovascular diseases are one of the major non-communicable diseases in many developing countries. Hypertension (HT) and diabetes mellitus (DM) are leading risk factors in the development of coronary heart disease. The number of elderly patients referred for coronary artery bypass graft (CABG) is growing because of aging population and progress in surgical and anaesthesiologic techniques. There is general trend towards increasing use of coronary artery bypass grafting in elderly patients Ghali (1999). A number of studies demonstrated higher perioperative mortality rates (Gersh *et al.*, 1983; Rahimtola *et al.*, 1986; Edward *et al.*, 1994 and complication rates (Hammermeister *et al.*, 1990; Roach *et al.*, 1996; Chertow *et al.*, 1997). Percutaneous transluminal coronary angioplasty (PTCA) in totally occluded coronary arteries was first described by Savage *et al.*, (1982). PTCA comprises approximately 10% of the total number of the procedure.

The purpose of this study was to assess the short term outcome of cardiac surgeries and the risk factors in elderly population treated in a tertiary hospital.

Material and Methods

A total of 547 consecutive elderly subjects from a tertiary hospital during one year (Jan 1998 - Dec 1998) above the age of 60 years were retrospectively studied. These subjects were studied in various age groups. Other parameters included sex, number of occluded arteries and the type of occlusion. 2D ECHO was the main investigation followed by the angiography to ascertain the status of the occluded arteries. The risk factors such as diabetes mellitus and hypertension were also recorded.

Results

Five hundred and forty seven cases of ischaemic heart disease (IHD) admitted to Bombay Hospital were included in this study. Number of admissions declined with age (Table-1). CC angiography was performed in (59.4%). Surgery was performed in 43.53% of which coronary artery bypass graft (CABG) was involved in 41.53% compared to percutaneous transluminal coronary angioplasty (PTCA) (18.03%). Number of CABG cases were inversely proportional with age. (Table-2). One of the interesting finding was safe surgery even at very advanced age (90 years). Out of occluded vessels from 1 to 7, three vessels were involved in 37.82%; four vessels in 32.39%; five vessels in 16.23%; 1 vessel in 4.82%; 6 vessels in 4.39%; 2 vessels in 22.63% and 7 vessels in 1.76%. Involvement of various arteries are as follows CABG : LAD was maximum 84.2%, followed by Lcx 44.29%, RCA 58%, MCA 14.03%, Comparative figures in PTCA were maximum in LAD 69.69% followed by RCA 16.16%. Lcx 10.10% (Fig. 1). Number of occluded vessels increased with percent risk factors. Risk factors were mainly either hypertension (25.25%), diabetes (11.11%), or both (14.14%) (Fig.-2). Other risk factors related to CABG were : hypercholesteremia (12.72%), smoking (0.88%) and family history in 0.88%. However, in cases of PTCA, 10.1% showed hypercholesteremia, 2.02% had hypercholesteremia and family history of IHD while 1.01% had raised cholesterol and habit of snuff.

Amongst patients with CABG, mortality was 5.26% during hospital stay, but none in PTCA group (Table-3). Complications in CABG group were : pulmonary embolism (one) septecemia (two), renal failure (three), primary myocardial failure after (CABG) (four), DIC (one) and cerebral and temporo-parietal infarct (one).

Table-1
Ischemic Heart Disease

Age	60-64	65-69	70-74	75-79	80-84	85-89	90-94	Total
Number	222	181	80	42	12	8	2	547
%	40.6	33.1	14.6	7.7	2.2	1.5	0.4	100

Table-2
Surgical Interventions

Age	60-64	65-69	70-74	75-79	80-84	85-89	90-94	Total
CABG	110	84	25	8	-	-	1	228
%	(48.2)	(36.8)	(11)	(9.5)			(0.44)	
PTCA	43	29	15	11	-	-	1	99
%	(43.4)	(29.3)	(15.1)	(11.1)			(0.99)	

Table-3
Mortality

Age	60-64	65-69	70-74	75-79	80-84	85-89	90-94	Total
CABG	110	84	25	8	-	-	1	228
Deaths	6	3	2	1			12	
PTCA	43	29	15	11	-	-	1	99
Deaths	-	-	-	-	-	-	-	-

Mortality was 5.26%

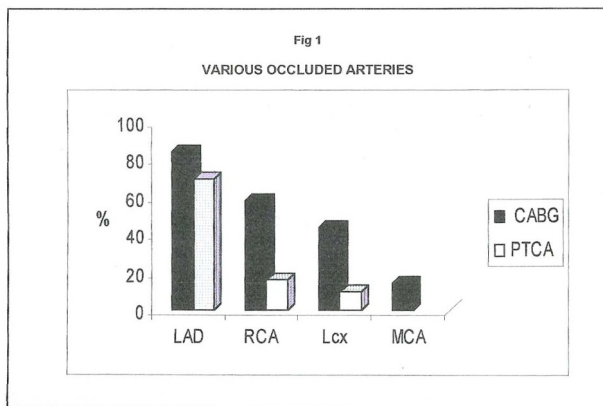


Fig. 1: Various Occluded Arteries

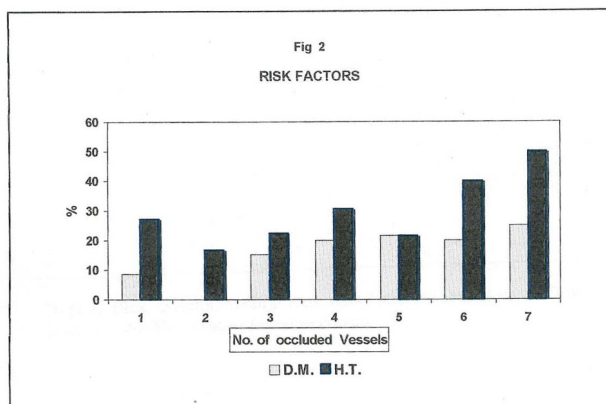


Fig. 2 : Risk Factors

Discussion

Surgery was performed in 43.53% of which coronary artery bypass graft (CABG) was involved in 41.53% compared to Percutaneous Transluminal Coronary Angioplasty (PTCA) (18.03%). Triple vessel disease was prevalent (37.28%), followed by involvement of four vessels (32.89%), two vessels (22.63%), 5 vessels (16.23%) and single vessel disease (4.82%), six vessels (4.39%). Junceja *et al.*, (9) from New Delhi showed that 80% of the patients received at least one arterial graft. In our series one of patients had pulmonary embolism. Other complications were septicemia (two), renal failure (three), primary myocardial failure after CABG (four), DIC (one) and cerebral and temporo-parietal infarct (one).

Involvement of various arteries in CABG : LAD (84.2%), followed by Lcx (44.29%), RCA (58%) MCA and (14.03%). Risk factors in blocking of the vessels were DM (11.11%) and HT (25.25%) and both HT and DM (14.14%). Number of vessels blocked increased with increased percentage of risk factors. Vaccaro and Stamler (1998) reported diabetes as one of the risk factors.

Percutaneous transluminal coronary angioplasty (PTCA) was done in (18.03%) with no death in the series. Similar findings were reported by Doshi *et al.* (1993) in a four year study of patients (37 to 81 years) who underwent PTCA. In our study in PTCA involvement of LAD (69.69%) was maximum followed by RCA (16.16%) and Lcx (10.10%). Comparative figures were LAD (50%), Lcx (25%) and RCA (25%) in patients in the age group ranging from 37-81 years Doshi *et al.* (1993). Higher incidence of occluded LAD in our study could be due to higher age group.

Deaths during early post-operative period was low (4.48%). Bochenek *et al.*, (1998) reported higher values (10%) in patients aged > 70 years. Perioperative mortality was reported to be 2.6% in > 75 years old and 2.25 in < 75 years elderly patients (Conaway *et al.*, 2003). However, Ghali *et al.* (2001) reported (3.3%) hospital deaths among the young septuagenarians and octogenarians (4.2%) compared to old septuagenarians (5.7%). However, Juneja *et al.*, (2001) reported higher (8.5%) in-hospital mortality after CABG. Lower death rates in our study suggest that age alone should not be deterrent for recommending bypass surgery.

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Health Problems and Health Seeking Behaviour of the Rural Aged

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ABSTRACT

The study aims to find out the prevalence of self-reported health problems and health seeking behaviour among rural elderly population. A cross sectional study was conducted in an intensive field practice area of Comprehensive Rural Health Services Project Ballabgarh in district Faridabad, Haryana. It's a rural field practice area of Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi. The sample was selected using stratified random cluster sampling. The duration of recall was one month for acute problems and one year for chronic problems. Out of the 1117 aged (60 yrs. of age) a total of 987 (88.4%) could be interviewed. Among these 490 (49.6%) were males and 497 (50.4%) were females. About four-fifth of the males and half of the females were widowed. 1% of men and 4.2% of women lived alone. Most (78.2% males and 86.1% females) of the aged were having one or the other health problems. Fever (28.6%), joint pain (22.4%), cough (19.6%) followed by palpitation (15.1%), cold (11.3%), decreased vision (10.3%) was reported as acute problems by majority of them. Chronic problems reported were joint pain (53%), cataract (32.6%), lung diseases (20.9%) and high blood pressure (15.2%). Four-fifth (83.2%) of the sick aged had received some health care in last one month. The study highlights the need for proper health facilities to be made accessible and affordable to the elderly.

Keywords: Aged, Rural, Self-Reported Health Problems, Health Seeking Behaviour, Aids.

Graying population is one of the most significant characteristic of twentieth century. Recent demographic trends have shown a considerable increase in elderly population all over the world. In 1950 there were about 200 million people over 60 years throughout the world. In the year 2000, this number increased to 550 million, and by 2025 there will be about 1.2 billion. The rate of growth of older population is highest in developing countries. The world population of people over 60 increased by more than 12 million in 1995, and 80% of the increase occurred in developing countries (UN Population Division, 1996). In India elderly population has doubled from 24.7 million (5.6% of total population) in 1961 to 56.7 million (6.8% of total population) in 1991 and is expected to be 70.6 million (6.97%) in 2001 and approximately 113 million (8.94%) by 2016 (Registrar General of India, 1991, 1996).

As age advances, lot of physical, mental and social changes take place. Physical condition may restrict movements, social changes may force dependency and mental conditions may lead to depression and anxiety. To worsen the situation, health problems, especially age-related, may lead to major disabilities. Health care of the elderly has not received adequate attention from policy maker in developing countries, like India as they were pre-occupied with maternal and child health, communicable diseases, malnutrition, and increasing population. One of the possible reason for this could be lack of data on health problems of elderly.

Majority of the India's elderly (78%) population lives in rural areas (Registrar General of India, 1991). Considering this, the present study was planned with the objective of finding out the prevalence of Self-reported health problems among elderly and the health seeking behaviour of the aged.

This study was conducted in Intensive Field Practice Area (IFPA) of Comprehensive Rural Health Services Project (CRHSP) Ballabgarh in district Faridabad (Haryana). This is a rural field practice area of Centre for Community Medicine (CCM), All India Institute of Medical Sciences (AIIMS), New Delhi. This period of data collection was January 1998 to December 1999. Twenty eight villages with a

population of 69995 were covered by IFP. Health services are provided by two Primary Health Centres (PHC) Dayalpur and Chhainsa, Covering 8 Sub-Centres (SC) which included two PHC subcentres. The demographic data of all the population is stored electronically in a database, which is updated annually. The sample was selected using stratified random cluster sampling. To take a representative sample, Sub-centres were stratified on the basis of availability of health facility i.e. PHC (Sub-centre (2) and Non PHC sub-centres (6). Sample sub-centres were selected randomly by draw of lots i.e.

- One sub centre out of the 2 PHC sub-centre
- One sub centre out of the 6 non PHC sub-centres.

All the villages in selected two sub-centres were included in the study. Each village served as a cluster and all the aged people in the village were studied. This was a cross-sectional study of people, who had completed 60 years of age and had been resident of area for at least six months. A computerized list of elderly was obtained from computer data base of study area. Additional cases were identified with the help of health workers and personally by the researchers. If elderly were found to be absent on one visit, another visit was made within 7 days. If they could not be contacted despite two visits, then they were excluded from the study. Personal interviews were conducted in their local language by the researcher in the homes of respondents. An informed verbal consent from each participant was taken. When necessary, subjects were referred for further examination/ investigation and treatment. The approval of the ethics committee was taken for conducting of this study.

The data was collected using semi-structured interview schedule adapted from standardized schedules (Pareek, 1981; Andrews, 1992). Detailed information were collected regarding basic demographic-characteristics, current and past health problems, living conditions, health care practices, and use of medication and health care needs. Recall period for self reported health problems was of one month and of chronic health problems was the last one year. Problems were recorded on the basis of self report or history or examination or

records available. Dependency was assessed and categorized into three groups i.e. independent, partly dependent and dependents. All the interviews and measurement were performed by single investigator.

The data was analyzed using Epi Info 6.04 and SPSS version 7.5 Software. For comparison of proportions, chi-square test was used.

Results

The present study was conducted in 7 selected villages with a total population of 17795. There were, 1,117 aged (≥ 60 years) in this population, comprising 6.3% of the total population. Out of these 1,117 people, 987 (88.4%) could be interviewed and examined. Only 12 (1.1%) people refused to co-operate and rest 118 (10.5) could not be contacted, the reason being, either they had moved away or had died since inclusion in the database of the 987 subjects included in this study, 49.6% were males. Majority of the aged were illiterate (81.6%), living in joint families (82.9%), belonging to lower socio-economic status (48.8%), living with spouse and children (56.0%), presently head of the house-hold (40.1%), not working (64.5%) and fully dependent (71.1%). In general females were more likely to be illiterate (99.0% vs 63.9%), widowed (49.7% vs 20.4%), living alone (4.2% vs 1.0%), having son as head of house-hold (51.3% vs 27.8%), not working (74.4% vs 54.5%), and fully dependent (88.1% vs 53.9%).

Health Problems

In response to an open ended question about any health problem experienced in last one month, 86.1% females and 78.2% males reported having had at least one problem and this difference was statistically significant ($p < 0.001$). The health problems in last one month reported by respondents are presented in table-1. Most of the rural elderly were having multiple diseases (average number of conditions 2.3). One third (33.9%) of the male and half (52.8%) of the females had at least 3 morbid conditions. Overall, 21.6% men and 17.1% women reported occurrence of single health problem in last one month but 57% men and 69% of women reported at least 2 or more health problems.

Table-1 : Frequency of self-reported health problems in last one month among males and females aged

Health problems	Males (N=490) No. (%)	Females (N=497) No. (%)	Total (n=987) No. (%)
1. Fever	115 (23.5)	167 (33.6)	282 (28.6)
2. Cough	97 (19.8)	96 (19.3)	193 (19.5)
3. Joints pain	87 (17.8)	134 (27.0)	221 (22.4)
4. Cold	68 (13.9)	44 (8.9)	112 (11.3)
5. Giddiness	43 (8.8)	65 (13.1)	108 (10.9)
6. Palpitation	39 (8.0)	110 (22.1)	149 (15.1)
7. Skin problems	37 (7.5)	36 (7.2)	73 (7.4)
8. Decreased vision	34 (6.9)	68 (13.7)	102 (10.3)
9. Backache	33 (6.7)	54 (10.9)	87 (8.8)
10. Loose stools	33 (6.7)	36 (7.2)	69 (6.7)
11. Weakness	32 (6.5)	47 (9.4)	79 (8.0)
12. Expectoration	31 (6.3)	17 (3.4)	48 (4.9)
13. Vague body pains	31 (6.3)	57 (11.5)	88 (8.9)
14. Headache	23 (4.7)	64 (12.9)	87 (8.8)
15. Constipation	20 (4.1)	14 (2.8)	34 (3.4)
16. Indigestion/Gas	19 (3.9)	42 (8.5)	61 (6.2)
17. Loss of appetite	17 (3.5)	17 (3.4)	34 (3.4)
18. Abdominal Pain	16 (3.3)	25 (5.0)	41 (4.1)
19. Injury	15 (3.1)	7 (1.4)	22 (2.2)
20. Hearing deficit/ Ear problems	14 (2.8)	19 (3.8)	33 (3.3)
21. Watering form eyes	7 (1.4)	12 (2.4)	19 (1.9)
22. Worry	6 (1.2)	8 (1.6)	14 (1.4)
23. Vomiting/Nausea	6 (1.2)	16 (3.2)	22 (2.2)
24. Others*	49 (10.0)	35 (7.0)	84 (8.5)
25. No problems	107 (21.8)	69 (13.9)	176 (17.8)

(* Others include : micturition problems, dryness in mouth, prolapsed uterus, prostate, pains in testes, stammering, tumor, burning, fatigue, swelling, involuntary movement, sleeplessness, toothache, numbness, apthous ulcer, oedema, epigastric pain, fits, psychological problems, white discharge and cancer) (Figures in parenthesis are percentages)

The most common problem reported was fever (33.6% in females and 23.5% in males). Cough was reported by almost a fifth of respondents. Joint pains were more commonly reported amongst women (27.2%) than men (18.0%). Decreased vision was also reported twice more often by women (13.7%) than men (6.9%). Other common problems among women were palpitation (22.1%), giddiness and headache (13%), vague body pains and backache (11%). Amongst men, other commonly reported health problems were cold (13.9%), breathlessness (11.8%), Giddiness (8.8%) and palpitation (8.0%). Health problems were more among females ($p=0.001$), illiterates ($p=0.001$), having primary health centre/ sub-centre health facilities ($p=0.015$) (Table-2) and these were found to be statistically significant.

Health Seeking Behaviour

For these health problems, majority (83.2%) of the subjects had sought treatment (Table 2). No significant difference was observed by age ($p=0.24$), education ($p=0.53$), socio-economic status ($p=0.78$) but significant difference was observed by availability of health facility ($p=0.04$). Regarding the source of treatment, sixty percent availed treatment from private non-qualified and qualified doctors. Only 21.9% of the subjects utilized government facilities. About 10% availed over the counter drugs from shops. Other traditional methods of treatment were adopted by 7.6% of the elderly.

Of the type of medications taken, majority (77.3%) took allopathic medicines followed by home remedies (29.0%) either alone or along with prescribed medicine. Ayurvedic, Homeopathic, Traditional medicines and Magico religious practices were followed by less than 10% of respondents. No gender difference was observed in medication practices among these elderly.

Almost all the elderly seeking medical care in last month were treated on ambulatory basis (99.0%). Most of the subjects (44%) spent less than hundred rupees (~2 US\$) on their treatment. Another 17.2% spent an amount between Rs. 100 to Rs. 500 (2-10 US\$), but in a few (4.7%), more than Rs. 500 (>10 US\$) were spent. One-third of respondents, however, could not specify the amount spent on medical care in last one month as the money was spent by their family members, and aged were not aware of it.

Table-2
Distribution of the respondents according to health problems, treatment sought and source of treatment

Variables	N=	Health problems	Treatment sought	Source of Treatment			
		No. (%)	No. (%)	Private No. (%)	Public No. (%)	Self No. (%)	Others No. (%)
Age							
60-74	772	626 (81.0)	526 (84.2)	323 (61.4)	109 (20.7)	58 (11.0)	36 (6.8)
75+	215	185 (86.0)	149 (80.5)	83 (55.7)	39 (26.1)	12 (8.1)	15 (10.1)
Sex							
Males	490	383 (78.2)	314 (82.0)	175 (55.7)	70 (22.3)	36 (11.5)	33 (10.5)
Females	497	428 (86.1)	361 (84.3)	231 (64.0)	78 (21.6)	34 (9.4)	18 (5.0)
Education							
Illiterate	805	677 (84.1)	561 (82.9)	350 (62.4)	118 (21.0)	53 (9.4)	40 (7.1)
Literate	182	134 (73.6)	114 (85.1)	56 (49.1)	30 (26.3)	17 (14.9)	11 (9.6)
SES							
Upper	181	149 (82.3)	124 (83.2)	74 (59.7)	21 (16.9)	17 (13.7)	12 (9.7)
Middle	377	306 (81.2)	258 (84.3)	156 (60.5)	59 (22.9)	27 (10.5)	16 (6.2)
Lower	429	356 (83.0)	293 (82.3)	176 (60.1)	68 (23.2)	26 (8.9)	23 (7.8)
Health Facilities							
PHC	336	306 (84.3)	265 (86.6)	131 (49.4)	104 (39.2)	15 (5.7)	15 (5.7)
SC	206	176 (85.4)	147 (83.5)	91 (61.9)	23 (15.6)	17 (11.6)	16 (10.9)
Non PHC/SC	418	329 (78.7)	263 (79.9)	184 (70.0)	21 (8.0)	38 (14.4)	20 (7.6)
Total	987	811 (82.2)	675 (83.2)	06 (60.1)	148 (21.9)	70 (10.4)	51 (7.6)

(Figures in parenthesis are percentages)

There were 136 (16.8%) aged, who did not seek treatment for their reported health problems. The most common reason was on affordability (32.4%), followed by carelessness (31.6%) and disillusionment (23.5%) due to previous unsatisfactory experience. Very few reported distance, non availability of escort and fatalistic attitude as a reason for not seeking any treatment and these were more among females than males. With regard to treatment seeking behaviour in relation to presence of health facility 13.4% of respondents living in a village with PHC facility, 16.5% with SC facility and 20.1% without PHC or SC did not seek any treatment. The difference was not statistically significant ($p > 0.05$), but when compared with PHC and SC vs non PHC/SC, it was found to be significant ($p=0.04$).

Chronic Health Problems

Table-3

Distribution of respondents according to self reported chronic health problems in last 1 year (multiple response)

Health Problems	Males (N=490)	Females (N=497)	Total (n=987)
	No. (%)	No. (%)	No. (%)
1. Arthritis or Rheumatism	219 (44.7)	304 (61.2)	523 (53.0)
2. Cataract	139 (28.4)	183 (36.9)	322 (32.6)
3. Respiratory diseases (Asthma/bronchitis)	117 (23.9)	89 (17.9)	206 (20.9)
4. Falls	89 (18.2)	144 (29.0)	233 (23.6)
5. High blood pressure	59 (12.0)	91 (18.3)	150 (15.2)
6. Tuberculosis	17 (3.5)	11 (2.2)	28 (2.8)
7. Cancer or any kind of tumor	14 (2.9)	21 (4.2)	35 (3.5)
8. Heart attack	9 (1.8)	13 (2.6)	22 (2.2)
9. Daibetes	9 (1.8)	3 (0.6)	12 (1.2)
10. Broken or fractured bones	9 (1.8)	12 (2.4)	21 (2.1)
11. Paralysis	5 (1.0)	6 91.2)	11 (1.1)
12. Otehrs*	59 (12.0)	56 (11.4)	115 (11.6)
13. No health problems	107 (21.8)	59 (11.9)	166 (16.8)

(*Note : Others include Low B.P., galucoma, piles, eczema, white discharge, pholla in eyes (opacity), Parkinson's disease, allergy, typhoid, hernia, prolapsed uterus, prostrate, leucoderma and epilepsy)

(Figures in parenthesis are percentages)

In response to close ended questions about various chronic health problems in last 12 months (Table 3), 78.2% of the males and 88.1% of the females reported chronic health problems. But most men and women reported arthritis or rheumatism (44.7% and 61.2% respectively) followed by cataract (28.4% and 36.9% respectively), lung diseases (23.9% and 17.9% respectively) and high blood pressure (12.0% and 18.3% respectively). Females reported more chronic health problems, compared to males. Chronic health problems increased with age from 85.0% to 93.0% in females and 75.0% to 81.0% in males.

Perceived Need for Medical Care

Out of 987, there were 45.8%, (47.9% females and 43.7% males) aged who perceived current need for their health problem but were not availing treatment and the gender difference was not significant ($p=0.18$). Pain in joints (25.0%), and decreased vision (21.5%) were the most common health problems for which need for current medical care was perceived. Less common problems, for which medical need was perceived were skin problems (9.5%), breathlessness and palpitation (8% each), and high/low blood pressure (7.1%). Most common reason for not seeking treatment was their previous unsatisfactory experience with treatment (42.9%), followed by non affordability (31.9%) and carelessness (20.1%). Amongst females, a higher proportion (8-12% as compared to 4-5% in males) reported reasons such as non availability of escort, distance from health facility and fatalistic attitude as a reason for not seeking treatment.

Perceived Health Problems requiring use of aids

The highest perceived health problem requiring use of aids was visual problems (70.6%), followed by dental problems (67.5%), problem with walking (51.8%) and hearing problems (35.4%). They were more frequently reported by females than males. Except for dental problems, the difference for vision ($p<0.001$), walking ($p<0.001$) and hearing ($p=0.02$) was statistically significant. Higher proportions of males were current users of corresponding aids among these problems. Large number of aged, though not using, felt the need for the respective aids (Table 4).

Table-4
Distribution of respondents according to health problems requiring use of aids, current use of aids and Reasons for non-sue of respective aids

Characteristics	Vision		Hearing		Locomotion		Dental	
	Males	Females	Males	Females	Males	Females	Males	Females
	(N=490)	(N=497)	(N=490)	(N=497)	(N=490)	(N=497)	(N=490)	(N=497)
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Number of aged reporting problems*	319 (65.1)	378 (76.1)	155 (31.6)	194 (39.0)	240 (49.0)	311 (62.6)	328 (66.9)	338 (68.0)
Using aids+	106 (33.2)	97 (25.7)	1 (0.6)	0 (0.0)	132 (55.0)	87 (28.0)	22 (6.7)	9 (2.7)
Not using but felt need of aids+	82 (27.5)	110 (29.1)	23 (14.8)	16 (8.2)	6 (2.5)	16 (5.1)	84 (25.6)	43 (12.7)
Neither using nor feeling the need+	131 (41.1)	171 (45.2)	131 (84.5)	178 (91.8)	102 (42.5)	208 (66.9)	222 (67.7)	286 (84.6)
Major Reasons for non-use of respective aids	N=82	N=110	N=23	N=16	N=6	N=16	N=84	N=43
Can't afford	37 (45.1)	41 (37.3)	16 (69.6)	10 (62.5)	4 (66.7)	8 (50.0)	8 (50.0)	26 (60.5)
Inaccessible	3 (3.6)	7 (6.4)	2 (8.7)	2 (12.5)	-	-	-	3 (7.0)

Characteristics	Vision		Hearing		Locomotion		Dental	
	Males	Females	Males	Females	Males	Females	Males	Females
	(N=490)	(N=497)	(N=490)	(N=497)	(N=490)	(N=497)	(N=490)	(N=497)
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
Fatalistic Attitude	1 (1.2)	8 (7.3)	2 (8.7)	2 (12.5)	1 (16.7)	4 (25.0)	4 (25.0)	4 (9.3)
Carelessness	28 (34.1)	29 (26.4)	3 (13.0)	1 (6.2)	1 (16.7)	4 (25.0)	4 (25.0)	3 (7.0)
Other reasons++	13 (15.8)	25 (22.7)	-	1 (6.2)	-	-	-	7 (16.2)

* Denominator is total no of respondents + Denominator is number of people problems

++ Other reasons include : waiting for surgery, fear, wrong belief, planning, surgery can't be performed (as per doctor), feels shy, superstitions, no time, waiting other teeth to be removed, some one said its not good, family does not bother)

(Figures in parenthesis are percentages)

The most common reason for not using these aids (vision, hearing, walking and dental) was non-affordability followed by carelessness (vision, hearing, walking). The other reasons given were fear, wrong belief and shyness.

Discussion

The study area was characterized by high level of illiteracy, dependency and support in terms of joint family. This is a usual picture in developing countries.

Prevalence of Morbidity

In the present study 82.0% of the aged reported some illness/health problems. Various studies (Elango, 1998; Singh *et al.*, 1990; Lal *et al.* 1997; Antilla *et al.*, 1985; Yassin & Terry, 1990) had also reported similar high prevalence (83-96%) of morbidity. As in our study, others also reported a higher prevalence among females (Elango, 1998; Singh *et al.*, 1990).

Acute Health Problems

Most common complaints reported were fever, cough, cold, giddiness, palpitation, backache and weakness and vague body pain. All these problems were reported more frequently by women than men. In various rural studies (Raj, 1971; NSSO 52nd round, 1998b) a similar acute morbidity had been reported.

Chronic Health Problems

83.2% of the respondents reported chronic health problems in last one year. In a rural survey (NSSO 52nd round, 1998b) chronic problems in last 15 days were reported by 46.7% of males and 47.4% of females in Haryana state, whereas it was 53% of males and 51% of females at national level. The higher prevalence of chronic problems in present study is probably due to the difference in the reference period.

Lung disease such as asthma or bronchitis were reported by 20.9% of the aged in the present study. A lower prevalence of chronic bronchitis was observed among 7%-15% subjects in some rural Indian studies (Elango, 1998; Raj, 1971; Kishore & Garg, 1997; Chacko & Joseph, 1990). A higher prevalence of chronic bronchitis and asthma (28% and 48%) was reported among the elderly by Grover *et al.*, (2000). Chronic Bronchitis/Chronic lung diseases were higher in men

(Lal, *et al.*, 1997, Raj 1971; Kishore & Garg, 1997; Chacko & Joseph, 1990) probably because the majority of the men smoked. The differences in various studies may be due to the different living habits and climatic conditions.

Arthritis/Rheumatism was reported to be 53% (44.7% in males & 61.2% in females) in the present study. Problems of joints (47.0%) were commonest among chronic diseases in a countrywide survey done by **National Sample Survey Organisation (NSSO 42nd round)**. Joints problems were reported by 53.4% of elderly in rural Rohtak. Like India, arthritis as the most common ailment has been frequently reported among elderly in rural communities in more developed countries like the Ireland (O'Connor, 1992) (59%) and Malaysia (Yassin & Terry, 1990) (64%). The problems of joints in our study were consistent with findings of (NSSO 42nd round, 1986-87) and Rohtak (Lal, *et al.*, 1997) study. The difference with other studies could be due to habits and ways of life in different regions.

In the present study, 70.6% of the respondents reported problems related to vision. This figure is almost similar to that reported (61.1%) by Lal *et al.*, (1997).

The presence of cataract in last one year was reported by 32.6% (28.4% of males and 36.9% of females) in our study. Kishore & Garg (1997) reported a similar (30%) prevalence of cataract. Other studies (Chacko & Joseph, 1990; Grover *et al.*, 2000; Purohit & Sharma, 1976; Singh *et al.*, 1997) based on clinical examination reported the prevalence varying from 39% to 69%. The difference could be either because of variation in methodology or due to regional differences. It may also be due to availability and accessibility of health services. Some of the studies (Kishore & Garg 1997; Chacko & Joseph, 1990; Grover, *et al.*, 2000) reported higher prevalence of cataract in females. Other studies (Purohit & Sharma, 1976; Singh *et al.*, 1997) found males having higher prevalence. This may be due to early health care seeking for this condition by men.

Hypertension was reported to be 15.2% (12% among males and 18.3% among females) in the present study. A lower prevalence (5.2% to 6.4%) of diagnosed hypertension among aged was reported in some Indian studies (Raj, 1971; Kishore & Garg 1997; NSSO 42nd round, 1986-87) while almost similar prevalence (11% to 18.0%) was found in other studies (Yassin & Terry, 1990; NSSO 42nd round, 1986-87;

Purohit & Sharma, 1976; Dilip, 2001; Swaddiwudhipong *et al.*, 1991). A higher prevalence of hypertension (37%) was reported in an **Ireland study** (O'Connor, 1992). The discrepancies in prevalence of hypertension may be due to variation in tool, methodology, nature of population itself, accessibility to health services and observer bias etc. A large number of those, who were aware of their hypertension status, were currently not on treatment. These findings were in agreement with those in other reports (Swaddiwudhipong *et al.*, 1991; Swaddiwudhipong *et al.*, 1996).

Health seeking behaviour

In **our study** 83.2% of the aged had sought treatment. The observation of our study was consistent with the findings of Human Development Indicator Survey (Gupta *et al.*, 1994). The proportion of respondents who sought treatment from PHC/SC/Government hospital was 22% in present study and it was less than what was reported by Gupta *et al.*, (2000). This difference in service use may be due to affordability and accessibility to private doctors/hospitals, differences in available facilities, faith of respondents on a particular doctor, long distance which need further study. We saw in our study that as the level of health facility increased from none to Sub-centre to PHC, utilization of public health services improved probably indicating the importance of physical accessibility of health services for people of this age.

A lower proportion of allopathic (61%) treatment, but similar proportion of Ayurvedic treatment (9%) was preferred in a south Indian study (Nayar, 2000). In a Human Development Indicator Survey (Gupta *et al.*, 1994), allopathic doctors and medicines (53.6%) were the most common source of treatment followed by indigenous doctors (13.6%).

The reasons for not seeking treatment by elderly are an issue that has not been adequately addressed. Health perceptions, socio-economic factors, reduced physical mobility, attitudes towards pill taking, and level of overall education in general and health education in particular have an impact on the health-seeking behaviour of the elderly. Nearly half (45.8%) the subjects (presently having health problems) perceived some need for treatment. A lower proportion (35%) of the elderly stressed the need of medical assistance in a Kerala study (Nayar, 2000).

Using Aids

As far as vision and hearing were concerned, in a study in rural Delhi, only 22% of the aged using spectacles and none were using hearing aids as compared to 29.1% & 0.3% respectively in our study. A very few males (5.8%) were using dentures and sticks, whereas none of the females were using either walking stick or dentures (Grover *et al.*, 2000). Our study has found a greater proportion of aged both males & females using sticks and dentures. The reason for using stick, we could elicit was of previous history of fall among both the genders (18.2% in males & 29.0% in females respectively). Most of the above mentioned Indian researchers have not discussed about the proportion of aged using various aids. Hunt *et al.*, (1985) reported 39.6% of the rural aged using dentures.

Conclusion

Most of the aged were having one or the other health problems. Some of the health problems were accepted as a part of ageing and they didn't perceive the need for care or for aids. Aged were not aware of the consequences they might suffer and the health services they may require. This was accentuated by other factors like non availability, low income etc. Now the govt. has made a "National policy on older persons" (Govt. of India, 1999) and taken initiative for increasing the awareness of this low recognized group. This will be possible by making aware of the seriousness of the problems and finding out the solution at a primary health care level to cope up with health and associated problems. For this trained personnel in the field of Geriatric care are the need of the hour. The use of health aids, such as spectacles, hearing aids and dentures could have a great impact on physical, social and mental well being of the elderly. Therefore, such appliances should be made available and affordable to the elderly.

Key Messages

- ♦ Most of the aged suffer from acute or chronic health problems, but many of these problems were accepted as a part of ageing.
- ♦ They should be made aware to identify their health needs and act at a proper time without delaying the action.
- ♦ For many problems they didn't perceive a serious need for medical care or for aids.

- ♦ They should be encouraged to make use of various aids/facilities to lead a better/healthy life.

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Promotion of Healthy Aging in the Context of Population Aging Phenomenon in India

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ABSTRACT

The purpose of this review article is to outline the population aging phenomenon observed in several countries around the world, including India, and to highlight the need for the promotion of healthy aging in the India. The pouplation aging phenomenon observed in India has been attributed to the increase in life expectancy, decrease in mortality rate and birth rates in the last 35 years. While people are living longer, it is not always in a state of good health and well-being. In fact, many of Indians elders, particularly women, live in poverty and are afflicted with chronic illnesses and age-related disability. Limited financial resources of the government, the changing family structure and high rates of illiteracy and unemployment have been identified as contributing to the state of India's elderly. To increase the awareness of aging issues and to rise to the challenges of an aging society, World Health Organisation and United Nations have introduced the concept of active aging as a health promotion and policy framework. While taking stock of the current status of active aging in India, the authors highlight the need for the development of research, innovative planning to develop programs, systems and structures and substantial reforms and policies at global, national and local levels.

Keywords: Active aging, Elderly, Kerala, Review

I. Population Aging Phenomenon in the Indian Context

The 20th Century has been an era of unprecedented scientific achievement. We have seen a significant increase in life expectancy around the globe. In 1947, when India became independent of British rule, life expectancy hovered around 32 years. By 2000, however, life expectancy had nearly doubled to 63 years (Population Reference Bureau, 2002). While several factors have contributed to the increase in life expectancy, the role of medical advancement in reducing high mortality can not be ignored. The crude death rate has changed from 27.4 in 1950s to 8.5 in 2000 (United Nations, 2002a). Accompanying these trends is a decrease in the overall fertility rate, from 5.97 in 1950 to 3.0 in 2002 (United Nations, 2002b). The shift from high fertility/ high mortality to lower fertility/ lower mortality resulting in a higher proportion of older adults is a common trend in developing countries. However, while countries like France experienced the shift over a period of 125 years, India has seen this change in a greatly condensed time-span of approximately 35 years. Within India, the state of Kerala has been classified as an “aging state”. The combination of a low mortality rate and low fertility rate has resulted in the proportion of elderly increasing at a substantial pace. The 1961 Kerala census reported the number of elderly aged 60 and above was just one million people or 6% of the population (census of India, 1984). By 1991, this number had increased to 2.6 million or 9% of the population which is a 160% increase (Government of Kerala, 1991). It is predicted that the number of elderly in Kerala will reach 7.2 million or 20% of the population in 2021 and 37% in 2051 (Rajan, Mishra and Sarma, 1999). Within the context of population aging, we have observed a higher proportion of older women in our societies. In 1961, women over 60 years represented 6% of Kerala’s population. This figure increased to 11.5% in 2001 and is projected to increase to 19.5% by 2026 (Bhat and Rajan, 1989). This phenomenon is referred to as the feminisation of aging.

II. Reasons for Concern : The Challenges of Being an Older Adult in India

“Longer life can be both a penalty and a prize” – The World Health Organisation

Population aging, which is touted as humanities greatest triumph, is also one of our greatest challenges. Prolongation of life span does not imply that the extra years bring continued health and prosperity. Aging, marked by these aforementioned trends, is said to put an increased burden on the social, economic, and health care demands of all countries, especially in developing countries such as India (United Nations, 2002b). The rapid population aging will contribute to dramatic changes in the social fabric and in the structure of nations. Quality of life, level of familial support, and income generation are all major concerns of an aging society. Demographic trends, such as the increasing number of elderly, the decreasing number of children available to give support, and the stagnant economic infrastructure, coalesce to create further challenges to the aging population that must be met with appropriate policy and action.

A challenge to ensuring the quality of life of the aging population is the *double burden of diseases* and disability, especially in developing countries, which still struggle with infectious diseases and malnutrition as well as the recent, rapid growth of non-communicable diseases such as diabetes, cardiovascular diseases, and hypertension. In later years, Non-Communicable Diseases (NCDs) become the main harbinger of death and disability. In 1998, NCDs were the cause of almost 60% of deaths in the world, 77% of those deaths occurred in developing countries (World Health Organization, 2000). Statistical trends indicate that we can expect an increase in NCD deaths to 73% in 2020. In addition, osteoporosis which is a debilitating bone disease associated with progressive decline in bone mass and increased susceptibility to fragility fracture is common among older individuals. In the last few years, the World Health Organisation (WHO) and world health experts have been cautioning the impending osteoporosis epidemic in the developing world (Johnson, Rajan, McLeod, 2003). Yet, in many developing countries including India, osteoporosis is not recognised as a source of concern.

Another layer of health concern is disability caused by age-related changes in physical health, including mobility and ability to perform activities of daily living (Manton, Stallard and Corder, 1998). In India, 75% of aged individuals are afflicted by a physical disability

(vision, hearing, locomotor, speech and senility) (National Sample Survey Organisation, 1998). The most common chronic conditions reported by India's elderly are joint problems (72.4%), cough (38.2%) and hyper/hypotension (33.2%) (National Sample Survey Organisation, 1998). The physical health concerns are often compounded by increasing psychosocial problems as the traditional extended family structure experiences breakdown and the elderly find themselves isolated and experiencing loneliness and depression. The mental and emotional challenges of aging have yet to receive proper acknowledgement and support. Prakash (2001b) writes that, "Mental health issues receive little attention in India". The Mental Health Policy (MHP) of Kerala, states that "[it is a] common misconception that prevalence of mental illness is low in India particularly as compared to the West" (Praveenlal, Shaji, and Mohandas, 1998). The MHP also recognises that Kerala lacks understanding of the mental health situation "because of lack of epidemiological data". As a result of the double burden of diseases and increasing psychosocial problems, only 6% of the elderly reported "good health"; 69% had "moderate health", while 20% had "poor health" and 5% had "very poor health" (Nayar, 2000).

Yet another challenge involves the traditional paradigm that old age is associated with disability and diseases, loss of autonomy and productivity. This has remained a barrier in the allocation of limited resources to improve the health and well-being of the population. A major portion of the funding allocation has concentrated on children and women in their reproductive years. The Government of Kerala is repeatedly reported to have "limited financial resources." Despite this status, however, the state does provide some social security for the aged. A study conducted in Trivandrum found that 60% of the elderly get subsistence from past or current work. Twenty five percent rely on children who live elsewhere for income, and 20% live on past savings and pensions (Rajan, Mishra and Tamil Nadu, 2002). It is also important to note that a significant portion of elderly men and women (68%) are illiterate or have five or fewer years of schooling. They are not participating in the work sector and over 75% have a monthly

income of Rs. 1,500 which represents two lower socio-economic classifications (Nayar, 2000).

While the population of elderly is rising steadily, the number of people who can provide physical, emotional and financial support in their later years is declining. While inter-familial support used to be the norm for caring for elderly persons, this social safety net no longer functions as it should due to increasing levels of out-migration and a growing trend towards nuclear rather than extended family systems. The highest proportion of migrants (44%) fall into the age group of 25 to 34 (Devi and Sukuman, 2001). Furthermore, of all the Indian states, Kerala has the most old age institutions. The migration of young workers to Gulf countries has been suggested as a major factor in the institutionalisation of older adults in Kerala.

In India, women are especially inclined to feel the burden of aging. They experience poor nutrition, dangerous working conditions, violence, and lifestyle related diseases (Bagchi and Puri, 1999). The depletion of hormones at menopause is also a cause of gender and age specific morbidity and mortality. Older women are vulnerable to health problems for socio-cultural reasons as they are less likely to be financially independent and less likely to have power and status compared to old men (Prakash, 2001a). Given the feminisation of aging and lack of inter-familial support, higher proportions of women find themselves economically vulnerable in old age as they are largely mothers and wives, and not workers in the formal sector.

III. Rising to the Challenge : The Active Aging Concept

When considering the demographic inversion and associated challenges, it becomes evident that investments in aging and health are necessary to ensure human rights and sustainable development. Given that people are living longer and the proportion of older adults in our society is higher, understanding the aging process and facilitating healthy aging is and will be critically important. Unless vigorous measures are taken to prevent non-communicable diseases commonly associated with the aging process and to promote health during old age, the aging of the population will place new and perhaps impossible demands on health care systems and younger generations. Meeting

these challenges requires a clear understanding of the health needs of older adults, innovative planning to develop programs, systems and structures which will support the health and welfare of the aging population, and substantial reforms and policies at global, national, and local levels. Recently, the WHO's discussion paper on health and aging indicated that "we can afford to get old if countries, regions and international organisations enact 'active aging' policies and programmes that enhance the health, independence, and productivity of older women and men. The time to plan and to act is now" (WHO, 2001). *Active aging is the process of optimising opportunities for physical, social and mental well-being throughout the life course in order to extend healthy life expectancy, productivity and quality of life in old age. Active refers not only to physical activity but also to continuing involvement in social, economic, spiritual, cultural and civic affairs.* Similar sentiments have been conveyed in the 2002 International Strategy for Action on Aging (United Nations, 2002a). In addition to the call for awareness of aging issues and challenges, WHO and UN has issued policy framework and priority directions for action and research, which identify health and independence/ autonomy, productivity and protection of the aging population as the three critical pillars essential for active aging (United Nations, 2002a; WHO, 2001).

Active aging promotes the level of health required for the elderly to continue as productive members of society, and saves them from the position of being mere recipients of care and services. In turn, this will benefit India's younger population who often take on the burden of caring for the elderly. Indeed, the country as a whole benefits from a healthy elderly population, a fact that high-income countries have recognised; they have been adjusting for some time to meet the needs of their older citizens. The governments of low-income countries are only just beginning to recognise the long-term socio-economic implications of their aging populations. Economic facts to consider regarding active aging :

- It is often less costly to prevent disease than to treat it. In Canada, it has been estimated that a reduction of \$ 150 million a year in health care expenditures is possible if the prevalence

of physical inactivity was lowered by 10% (Katzmarzyk, Gledhill and Shephard, 2000).

- Old age itself is not associated with increased medical spending. Rather, it is the disability and poor health often associated with old age that are costly.

In order to provide research, program and policy direction, WHO has created a comprehensive list of factors that affect the health of the elderly population across the globe. These include :

- Culture and gender : Social status, which affects access to nutritious foods, education, meaningful work, and access to quality health care.
- Health and social service systems : Access to quality health care throughout the lifecycle, disease prevention, equitable access, long-term care availability, curative services, affordability of medication and care services, availability of mental health services.
- Behavioural determinants : Tobacco use, alcohol use, level and type of physical activity, healthy eating, oral health, medication usage and adherence.
- Personal factors : Biology and genetics, cognitive capacity.
- Physical environment : Physical safety (falls), adequate housing, social support, clean water, clean air, and safe foods.
- Social environment : Violence and abuse (including physical, sexual, psychological, and financial) level of education and literacy.
- Economic environment : Income, social protection, work.

While considerable research is available on the determinants of health and active aging in developed countries (Johnson, 2000; Johnson 2002), there is limited research on healthy aging and the determinants of autonomy among older adults in developing countries such as India (Johnson, Rajan and McLeod, 2003). Research indicates that social, personal, economic, environmental and behavioural factors as well as health and social services are all considered determinants of

active (WHO, 2001). In addition, culture has been identified as a critical role in how these determinants are translated within population groups. While population statistics, such as census data, are useful in identifying the size and socio-economic characteristics of the older cohort, limited research is available on the determinants of health among older adults in India.

IV. Taking Stock : Need for Research, Programs and Policies to Promote Active Aging in India

As indicated earlier, the population aging phenomenon in India has been well documented using both census data and population projection data. The challenges related to the aging society are described in various reports and research articles. Specifically, the National Family Health Survey (1998-99) has shed some light on health issues, dealing mainly with chronic conditions faced by individuals across the lifespan and with changing family structure (Rajan and Kumar, 2003). While much of the health research has focussed on understanding and addressing cardiovascular diseases and diabetes, further research is needed to understand the prevalence rates of other NCDs such as osteoporosis, particularly among women, and various prevention and treatment options. While active aging has been considered as a solution to the growing challenges associated with an aging society, there is little or no research on the determinants of active aging within the Indian context. To date there has not been a single population-based epidemiological study investigating these determinants among older adults within the Indian context. This has been a major impediment to the transfer from our recognition of health concerns to the actual development, implementation and evaluations of programs and policies that address the health issues of the elderly. Also, given the multidisciplinary nature of active aging, research efforts should include collaborative partnerships across disciplines, health sectors, and older adults themselves. Along with the interdisciplinary epidemiological studies on aging, other studies should also investigate the perceptions and practices of health professionals providing care for the elderly.

In Kerala and other states in India, the extent of programs and policies targeting the elderly is limited. For example, available programs include pension programs such as retirement benefits, welfare and social security schemes, agricultural workers' pension, destitute and widow pension, pension for the physically handicapped, old age pension for craftsman and the federal old age pension of Rupees 110 per month. However, the overall coverage of government and non-government schemes reaches only 25% of the population over the age of 60 (Rajan and Mishra, 1997). Also, various reports suggest that the reliability of these pension schemes has been less than ideal. The second level of programs for the elderly includes the provision of institutionalised care by government and non-government organisations. Thirty six percent of old age home residents support themselves, whereas the remaining 64% stay for free. However, the level of satisfaction among the residents varies. Those residents in government run old age homes (OAHs) were 76% less satisfied with their accommodation than those in non-government OAHs. Currently, there are no current national or state-wide programs related to health promotion among elderly, targeting the determinants of active aging. While several effective programs such as exercise and nutrition strategies have been identified in the western world (Johnson, Myers, Scholey, and Cyatro, In Press; Tudor-Locke, Jacob (Johnson), Ecclestone, Myer, and Jones, 2000) the effectiveness of these strategies in the Indian context needs to be explored. Development of health promotion programs should be based on actual needs identified in a systematic way involving elderly persons and should use the community development approach for ownership and sustainability of programs.

In addition, there is a great need for suitable policies to promote active aging in a coordinated and efficient manner. Currently, the well-being of older persons has been mandated in the constitution of India. Article 41, which is a directive principle of the state policy, has instructed that the state shall make effective provisions for securing the rights to public assistance in care of old age (Tyagi, 2000). The National Policy on Older Persons visualises that the state will extend support in the areas of : 1) financial security, 2) health care, 3) shelter,

4) welfare, 5) protection against abuse and exploitation, and 6) opportunities for the development of older person's potential. However, the actual translation of these policies into program options is yet to happen, particularly in the area of health promotion. Health care has been operating on the medical model of treating the diseases rather than preventing them through health promotion initiatives. In order to create efficient policies and programs which will act in those areas exerting a negative influence on the health of the elderly, it is critical to understand the determinants of active aging such as access to quality health care; health practices and beliefs of professionals, as well as of the elderly themselves; and the current health policies. Also, existing policies should be re-visited in light of new and emerging trends.

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Status of Health of Women After Retirement

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ABSTRACT

Aging as a problem has arisen due to a relatively higher increase in the proportion of the population of the aged. The easy availability of life saving drugs, better knowledge of health awareness and nutrition has increased the life expectancy, delay in the onset of aging and the associated health problems. This has resulted in the increase in the population of elderly persons.

As the individual grows older his health begins to decline. Healthy body and healthy mind are a prerequisite of all meaningful existence. A problem very closely associated with aging is the loss of job or retirement. The contention that retirement may have an adverse effect on health has become increasingly popular with the categorization of this phenomenon as a 'Stressful Life Event'. The debate over the validity of viewing retirement as a major stress inducer or life event has pointed out the importance of taking into account many issues. This paper presents various aspects of health of aged women after retirement, exploring their present health status, change found after retirement, various ailments reported, mode of treatment, taken care by during illness, change in diet, reasons for change and also various other factors responsible for change in health after retirement etc.

Keywords: Meaningful-existence, Healthy body, Healthy mind, Retirement.

Aging is a toilsome treadmill grinding to a tragic halt as the years pile up. It is a life spanning process of growth and development running from birth to death. It is generally associated with fatigue and decline in the functional capacity of the organs of the body due to physiological transformation.

Interest in human aging and in the aged has increased markedly among social scientists during the past few decades. The easy availability of life saving drugs, better knowledge of health awareness and nutrition has increased the life expectancy, delay in the onset of aging and the associated health problems. This has resulted in the increase in the population of elderly persons. According to UNESCO estimate the number of the aged above 60 is likely to go up from 378 million in 1975 (171 million in developed world and 207 in developing world) to 590 million in 2005 (230 million in developed and rest in third world) India alone has 43 million old people according to 1981 census. Aging as a problem has arisen due to a relatively higher increase in the proportion of the population of the aged (Kumar, 1992).

Problems of the Aged

Various studies (Mahajan, 1986; Chadha, 1989, Kan and Kan, 1987) have discussed the range of problems of the aged varying from ensured sufficient income to sound health. The aged are one of the vulnerable groups of our society. As the individual grows older his health begins to decline. He becomes financially dependent as he is not able to earn his livelihood. He tends to feel that he is socially vulnerable because he finds that his status in society has declined and his own family may not give him the same importance. He fears becoming psychologically vulnerable and that pushes him to loneliness. Being subjected to stress and anxiety over his future, failing health, reduced financial resources, decreasing mental abilities and care and attention he thinks he will have a tough time at death (Desai, 1985). Aged are not a homogeneous as their problems and needs vary and can be seen mainly under three headings, (i) Economic (ii) Physical and Physiological (iii) Psychosocial and Environmental.

Health and Aging

Healthy body and healthy mind are a prerequisite of all meaningful existence. Man being a social animal needs to participate in social life for which he needs a role and the role implies physical energy, the source of which is a healthy body. Healthy mind is required to govern and appreciate one's social action and to maintain mental peace and poise.

WHO defines 'Health' as a state of complete physical, mental and social well being not merely the absence of disease or infirmity. In the last decade increasing concern has been expressed world wide regarding the health of high risk groups, mothers, children and elderly. International meetings and conferences have been held such as United Nations Assembly on Health of the Elderly etc.

A distinction is made between the terms aging and senescence emphasising that the former is a natural process occurring with passage of years while the latter is pathological. It is how ever difficult to demarcate where physiology ends and pathology begins. Truly the distinction very often is not clear cut and one may be inclined to accept that "old age itself is a disease". The relationship between chronological age and illness is well known and well documented.

Aging is generally associated with fatigue and decline in functional capacity of the organs of the body due to physiological transformation. Oberoi and Dey (1991) in their study of rural and urban aged found that first and foremost problem felt by elderly was physical problem and reason for maximum importance given to it by old people was associated with fact that the persons with good health can satisfy all of their needs but physically incapable persons become fully dependent for their every day needs on other family members.

Retirement

Another economic problem very closely associated with aging is the loss of job or retirement. Retirement for many people is not a peaceful welcome retreat to the pleasant pastures from hurley-burly of unmitigated toil. Work provides most with the source of legitimate income and hence with self respect. In Britain it was found by several national and locally conducted surveys that the bare subsistence income to many of the elderly is a substantial contributory factor to their poor health. Low income contributed particularly to poor nutritional standards. (Jaffery, 1972).

Health and Retirement

The contention that retirement may have an adverse effect on health has become increasingly popular with the categorization of this phenomenon as a 'Stressful Life Event'. The debate over the validity

of viewing retirement as a major stress inducer or life event has pointed out the importance of taking into account many issues.

Several studies (Martin and Doran, 1966, Hynes, *et al.*, 1977) attempting at the empirical examination of the effects of retirement on health status have suggested the possibility of differential morbidity, morality and preceived health status at different points in the retirement process, Palmone *et al.* (1979) while studying the effects of five major life events (retirement, spouse's retirement, major medical event, widowhood and departure of last child from home) and of three types of resources (physical, psychological and social) on the physical and psycho-social adaptation, found that retirement had the most negative socio-psychological effects but had little over all effect on physical adaptation. Also this effect tended to be limited to only those with lower resources.

An individual may be seen to respond differently to an event prior to, during and at different intervals following its occurrences. Atchley (1976) tried to relate this temporal view of life changes, especially to retirement. He conceptualized seven distinct phases during which the retirement role is approached, taken and relinquished. Pre-retirement has 'remote' and 'near' phases, latter one often involved 'gearing up' for separation from one's job and from the social situation in which work takes place. This phase has been observed to bear a significant relationship to changes in morbidity and mortality. It also involves differential life satisfaction for persons in different socioeconomic and occupational categories (Burgess. 1958; Haynes, *et al.*, 1977). The retirement is followed by 'honeymoon phase' which is characterised by a positive perception of retirement and high level of activity. This stage may be absent for low income individuals and for those who retire against their will.

Where a honeymoon phase occurs, it is often followed by a 'disenchantment phase' a period of let down and despondency, as the retiree begins to cope with such problems as inadequate income, poor health and loss of friends. This also lends a support to the notion of disenchantment phase of retirement. The 'reorientation' and 'stability phase' are described as involving an acceptance of and adjustment to retirement role. In the last phase, that is of 'termination', the

retirement role becomes irrelevant in one's life. It often involves the concealing of the retirement role by illness and disability. The retirement role is then replaced by the sick and disabled role as the key organising factor in an individual's life.

The retirement phases described above clearly are not tied to specific periods or chronological ages nor are they in any way universal, rather, they constitute an 'ideal type'.

Health, Woman and Retirement

An old saying is 'A man is as old as he feels and a woman as old as she looks'. It is well known that chronological age and physiological-psychological ages do not correspond. No two men of same chronological age, are identical regarding efficacy of their body and mind. We may date the beginning of aging more precisely in women-from the onset of menopause but not so in men (Pathank, 1982).

In terms of health status, differences between the sexes have most often shown women to have higher rates of morbidity. In fact it has been observed that 'women are sicker but men die sooner' (Nangla, 1987).

Philip (1976) in his study of women and retirement found that women perceived their health positively despite the fact that many reported at least some degree of functional disability and many were quite incapacitated. Older women are found to be more prone to overestimation of their health and ignorant to their physical limitations. Levy (1980) found that healthy women retirees seemed to experience a sense of personal time ahead of them in comparison to those who were chronically ill.

An attempt was made to study the various aspects of health of retired women exploring their present health status, change found after retirement, various ailments reported, mode of treatment, taken care by during illness, change in diet, reasons for change and also various other factors responsible for change in health after retirement etc.

Objectives of the study

1. To compare the change in health of retiree before and after retirement.
2. To study the impact of change in health on adjustment to retirement.
3. To observe the ailments from which women retirees suffer
4. To study the mode of treatment of illness after retirement
5. To compare the change in the medical expenses before and after retirement
6. To compare the change in the pattern of care by family members before and after retirement.
7. To study the dietary pattern of women retirees and the changes that come in it after retirement.

Sampling Method

Sampling frame of the study was AGCR, New Delhi, from where the list of 2345 retirees was procured. Out of which 300 retired women were selected as a sample of the study. The sample consisted of women belonging to the urban areas of Delhi and were in the age group of 58-66.

Systematic random sampling technique was applied to frame the sample of the study. From list of retirees every 5th retired women was contacted, if that retiree was not available then the next in the list was added into the list of the sample.

Tools

A detailed structured interview schedule was prepared pertaining to the items concerning different aspects of health, Dietary patterns, Pattern of care, ailments and items pertaining to medical expenses. The schedule was pretested and validity was found out.

Chi-square and percentages were calculated to find out the significant differences between groups under study.

RESULTS AND DISCUSSION

Health before retirement and after retirement

With advancing age the health of an individual begins to decline. The physical stamina of the individual also decreases. To start with the retirees were asked about their health 4-5 years prior to retirement and their self assessment about health at present.

Table-1
Respondent's health before and after retirement

Health status	Before retirement		After retirement	
	Frequency	Percentage	Frequency	Percentage
Very Good	8	2.5	8	2.7
Good	06	70.3	81	27.6
Fair	63	21.5	141	48.1
Bad	13	4.4	53	18.1
Very Bad	3	1.0	10	3.4
Total	293*	100.0	293*	100.00

**NA/NR = 7 respondents*

A significant difference was found in the health before and after retirement. The chi-square value being 112.24 at 4df ($P < 0.05$). A substantial decline was observed (Table-1) as 70.3 per cent of the retirees reported to have been in good health 4-5 years before retirement, where as only 27.6 per cent reported to be in good health after retirement. Only 1 per cent reported to be in very bad health (incapacitated) before retirement which increased to about 3 per cent after retirement.

Change in health and adjustment to retirement

Health is an important factor which can influence an individuals adjustment to retirement. Bad health could negatively effect adjustment to or acceptance of retirement whereas good health could enhance adjustment to retirement, but no significant impact of health wa seen on the adjustment to retirement (chi-square value being 6.519 at 4df $P < 0.05$) the percentages shows (Table-2) that while majority 45 per cent of retires with improved health had adjusted well to retirement also 34 per cent of those reporting deterioration in health had adjusted well to retirement.

Table - 2
Change in health and adjustment to retirement

Change	Very well	Well	Casually	Poorly	Very poorly	Total
Improved	11 (45.8)	9 (37.5)	4 (16.7)	- -	- -	24 (100.0)
No change	38 (32.2)	20 (22.7)	20 (22.7)	8 (9.1)	2 (2.3)	88 (100.0)
Deteriorated	60 (34.3)	49 (28.0)	37 (21.1)	26 (14.8)	3 (1.7)	175 (100.0)
Total	109 (38.0)	78 (27.1)	61 (21.2)	34 (12.0)	5 (1.7)	287* (100.0)

*NA/NR = 13

Ailments from which retirees suffer

The older people are often seen to be suffering from multiple diseases. In the present sample also retirees were found to be suffering from one disease or the other, few were found to be suffering from even more than one. About 29 per cent of the retirees suffer from arthritis, followed by 17.6 per cent suffering from hypertension (Table-3), 18 per cent retirees reported to be suffering from no disease at all where as 28 per cent had different disease like heart problem, stone in gall bladder, acute acidity, etc.

Table-3
Ailments from which retirees suffer
(Distribution of responses)

S.No.	Ailments suffering from	Frequency	Percentage
1.	Arthritis	87	29.0
2.	Hypertension	53	17.6
3.	Cataract	21	7.0
4.	Spondilitis	17	5.7
5.	Diabetes	26	8.7
6.	Minor Problems	68	22.6
7.	Any other	84	28.0
8.	None	54	18.0
	Total	410*	100.00

**410 responses are from 293 respondents
7 respondents did not have any ailment.*

Mode of treatment

It is mostly found that older people have inclinations for homeopathy or other home remedies. In the present sample (Table-4) it is seen that contrary to the belief 85 per cent of the retirees take allopathic treatments. Only about 7 per cent take homeopathy and about 8 per cent believe in other modes of treatment like Unani, Ayurvedic or home remedies.

Table-4
Mode of treatment

S.No.	Mode of treatment	Frequency	Percentage
1.	Allopathy	255	85.0
2.	Homeopathy	20	6.7
3.	Others	25	8.3
	Total	300	100.0

Medical expenses before and after retirement

As a substantial deterioration in health was recorded, the expenditure on health was expected to increase. A significant change has been observed in the pattern of expenditure on health before and after retirement. Chi-square value is 168.68 at 3 df, ($P < 0.01$). According to percentage where 13.4 per cent retirees had reported that they were spending more on health before retirement about 60 per cent reported spending more on health after retirement (Table-5). Also 4 per cent reported that their maximum expenditure was on health after retirement. While none reported spending most on health before retirement.

Table-5
Medical expenses before and after retirement

Medical Expenses	Before Retirement		After Retirement	
	Frequency	Percentage	Frequency	Percentage
More	40	13.4	179	60.1
Less	242	81.2	91	30.5
Nil	16	5.4	16	5.4
Most	-	-	12	4.0

Total	298*	100.0	298*	100.00
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*NR = 2

Taken care by, during illness before and after retirement

Illness is the time when an individual needs love and care especially in old age when tendency to fall sick is more and diseases take long time to recover. Women always take care of other family member at the time of their illness. It is important to see who takes care of them when they are taken ill. 45 per cent retirees had a decline in the whole family taking care of them before retirement (Table-6) where as only 32 per cent reported that whole family took care of them after retirement. This decline can be attributed to the children leaving the house or getting busier in their jobs and lives or death of husband etc. 27 per cent reported being taken care by husbands, after retirement compared to 17 per cent before retirement which could be attributed to husbands getting retired and having more time at hand. Also in the later age it is seen that the older couples become more insecure and starts taking more care of each other. Decline in the number of daughters and increase in the number of daughters-in-law taking care of retiree could be due to the fact that daughters get married and go away and daughters-in-law could have been added to the family after retirement. 9 per cent of the retirees did not have any one looking after them after retirement compared to about 6 per cent taking care of themselves in illness before retirement. It is good to see that about 91 per cent of our retirees did have some one or other to take care of them during illness. 18 retirees were on their own and were in vulnerable situation.

Table-6
Taken care during illness before and after retirement

Taken care by	Before Retirement		After Retirement	
	Frequency	Percentage	Frequency	Percentage
Husband	51	17.0	80	26.7
Son	13	4.3	18	6.0
Daughter	40	13.3	31	10.3
Daughter-in-law	13	4.3	18	6.0
Whole family	135	45.0	96	32.0
Any other	31	10.3	30	10.0

Self	17	5.7	27*	9.0
Total	300	100.0	300	100.00

**18 respondents live alone*

Change in diet

A complex relationship is seen between nutrition, health and environment. It is often observed that elderly have the same diet as the rest of the family. The elderly tend to eat less, required food of more nutritive value. There is relatively higher dissatisfaction with the quality and quantity of diet and this is generally attributed to their lack of purchasing power to buy more and better food. In keeping with the cultural pattern of women eating after men, older women may receive food in even more insufficient quantity.

About 36 per cent of the retirees reported to have reduced their quantity of diet (Table-7). 44.3 per cent reported no change in their diet. Only 7.7 per cent reported increase in quantity and 11.7 per cent reported deterioration in quality.

Table-7
Change in diet

Change in diet	Frequency	Percentage
Reduced in Quantity	109	36.3
Increased in Quantity	23	7.7
Deterioration in Quality	35	11.7
No change	133	44.3
Total	300	100

Reasons for change in diet

There are unfortunately no specific guidelines to meet nutritional needs of the elderly. It has to be taken into consideration that besides aging there can be other factors that effect the quality and quantity of diet of elderly. Disease, disability, climate, socio-economic conditions, eating habits, religion or life style can alter the health and nutritional status of elderly. Aging changes in digestive system are important. There is usually loss of natural teeth which are replaced by dentures. There is also decrease in the amount of saliva. These are bound to affect the chewing, resulting in the self imposed restrictions which affects the person emotionally and socially. Essential foods are some

times not taken at all. Intake of food decreases as one crosses the sixty years but in certain cases poverty, not age is the major factor for the decrease of in intake. But contrary to the above, retirees in the given sample (Table-8) only 2 per cent reported financial reasons to be the cause of change in diet while majority 31.7 per cent reported health to be the reason for change in diet like women with diabetes, B.P. etc. had restricted to specific diets. Als 25 per cent reported indigestion to be the reason for change, (few because of dentures and others because of less of activity had developed problem of indigestion and thus reduced their diets or started eating less spicy and oily food). Some retirees were of the belief that with age one shold start getting detached from worldly desires and food is one of them. In general it was observed that most of the retirees were not alert about nutritive value of food taken by them and it was health and digestion more than any other reason the cause for a change in diet.

Table-8
Reasons for change in diet

Mode of treatment	Frequency	Percentage
Socio-Familial	24	18.4
Economics	3	1.8
Changing Habits	31	18.6
Due to Age	12	7.2
Indigestion	42	25.1
Health Problems	53	31.7
Others	2	1.2
Total	167	100.0

*NA/NR = 133

Conclusion and suggestions

1. Regarding change in the diet it was found that a significant difference was seen in the dietary pattern of 56 per cent of women retirees.
2. A significant difference was found in the health before and after retirement. A substantial decline was observed in the health after retirement.

3. Majority of women retirees suffer from one disease or the other diseases.
4. Substantial increase was found in the medical expenses after retirement.
5. They were significant difference in the pattern of care before and after retirement of retirees. However a substantial increase has been found in the care taken by husbands and decrease in the care of other family members after retirement.
6. No significant impact of health was seen on the adjustment to retirement.

Suggestions

1. As per study health status gets substantially changed after retirement. Thus care should be taken to improve the dietary pattern of retiree.
2. Members of family should psychologically be prepared before retirement about the need of taking care of retirees after retirement.
3. As the medical expenses substantially increase after retirement government should provide better and maximum monetary facilities to the retirees.
4. The retiring person should pre-plan be psychological and social preparation for the retirement regarding their health status and consequences there after.

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Sex and Indian Elderly

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ABSTRACT

The purpose of this study was to ascertain the sex life in elderly subjects of mixed population of Mumbai. 70 subjects were interviewed for detail sex history along with health survey. Results show that as age advances sexual activity reduces and completely discontinued after 80 years. Frequency of intercourse reduces with age but males predominate. Males also predominate in discontinuing sex life, however, difference is not significant. Study concludes that as age advances inactivity to sex life predominates in males and that in the presence of male partner females do not loose interest.

Key words : Elderly, Sexual activity

In the elderly, sexual relationship is not just physical intercourse, but a sort of sharing and communication of love with each other. Mutual need for each other is re-emphasized unlike youngsters.

Most elder people want and are able to enjoy an active and satisfying sex life. Regular sexual activity helps maintain sexual ability and continued sexual activity could prove to be therapeutic for older men and women (Dhar, 1999). However, over the time everyone may notice a slowing of response as a part of normal aging process. But sexual activity in the aged is a matter of extreme individual variation. It has been reported, few people aged over 75 were having intercourse fairly frequently once or twice a week but majority had totally left it at a median age of 58.5 years (Pathak, 1978). Caressing and fondling which are part of sexual activities have not been included in this study.

Purpose of present study was to ascertain sexual activities in elderly subjects of cosmopolitan city of Mumbai. Attempts have been

made to correlate sexual intercourse with age, diet, disease and discontinuation of sexual activities in both males and females.

Material and Method

A camp of elderly camp people was organised at Prabhadevi, Mumbai for survey of demography, disease pattern, diet, mental alertness, lung function, social and economic conditions, sex history was taken by the senior author in private.

70 subjects (males and females) of which 61 above 60 were the age of interviewed for detail sex life including frequency of performance, abstention from sex act, presence of disease, dietary habit, erection defects and other physical and mental conditions contributing to sex act. Emphasis was given on drug intake affecting sexual activities.

Results

Table 1 shows age wise distribution of males and females. It shows that both males and females predominate in the age group of 60-69, male predominance in the age group of 70-79 but only presence of female above 80 years.

Table 1
Age and sex

	Below 60	60-69	70-79	80-89	Total
Males	7	25	19	0	51
Females	2	13	3	1	19
Total	9	38	22	1	70

As age advances sex activity reduces but males predominate, males also predominate in inactivity compared to females although difference is not statistically significant (Table 2 and Fig. 1).

Table 2
Active/Inactive male and females

	Below 60		60-69		70-79		80-89		Total	
	M	F	M	F	M	F	M	F	M	F
Active	5	2	17	11	9	2	0	0	32	14
Inactive	2	0	8	3	10	1	0	1	17	5

M = Male

F = Female

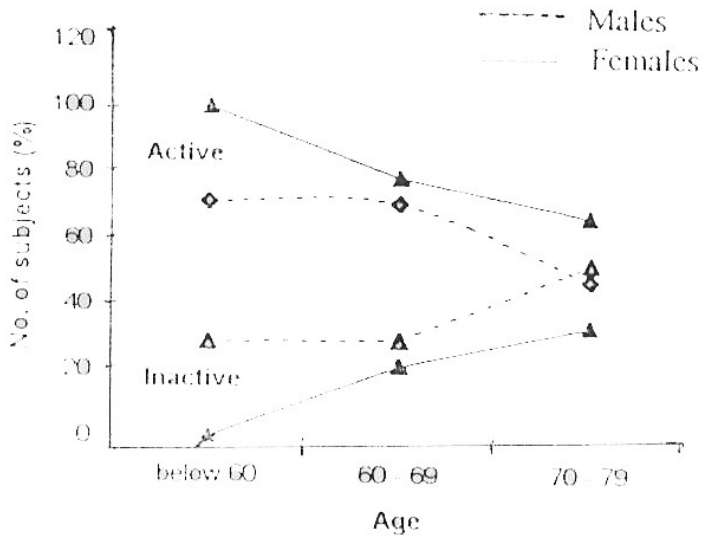


Fig. 1

Table 3 shows frequency of sexual intercourse in different age groups. In this series there was no elderly subjects above 80 years except one female but sexually not active in the absence of sex partner. Fig. 2 shows discontinuation of sex with age. Here again males predominate over females.

Table 3
Performance of sex at different age groups

	Once or more than once in a week		Once in two weeks		Once in month or less		Total
	M	F	M	F	M	F	
Below 60	5	2					7
60-69	13	9	4	2			28
70-79	4	1	3	1	2	0	11
80-89							0
Total	22	12	7	3	2	0	46

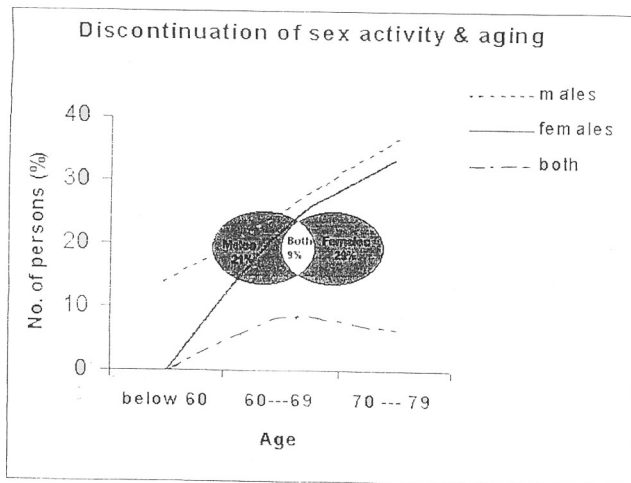


Fig. 2 : Discontinuation of sex activity & aging

90% of subjects were Hindus and 10% Muslims as such no correlation was possible. Most people were vegetarian. Only 4 people were diabetic and 6 were hypertensive but no correlation with disease could be established.

Discontinuation of sex activities were due to either loss of erection (Pathak, 1978), ejaculation (Adis, 2000), desire (Pathak, 1978) in the males and no reason could be found in other subjects. Among 5 females who discontinued sex act no reason could be established except one gave history of asthma and psychological problems. No history of drug intake could be ascertained in altered sex function in either sex.

Discussion

Personal interview and discussion with elderly subjects (70M, 20F) show that males predominate in sexual inactivity. In the age group below 60, none of the females were found inactive against 2 males (Table 2). In subsequent years no significant difference could be found. Sexual inactivity could also not been related with menopause. Many could not remember exact year in which menopause occurred, but in most it occurred between 44-48 years. It has been reported that lower estrogen level after menopause might cause pain during intercourse and lessen sexual interest but no relationship of estrogen

level with sexual functioning could be established (Adis *et al.*, 2000). However, in our series no one gave the history of pain during intercourse.

Sexual intercourse was found variable in different age groups, 28 males out of total 50 and 11 females out of total 20 were active with reduced frequency up to 79 years of age. There was no male in the age group above 80 but only one female who was inactive due to absence of male partner. However, we could find frequency once in 3-4 months in 70-79 years age group against few cases reported by Pathak (1978) having frequency of once or twice in a week. High frequency of orgasm has been reported to reduce mortality by 50% (Smith *et al.*, 1997). We are making efforts to keep track with the senior citizens' organization where this survey has been conducted to enable us to assess the mortality with frequency of sex act.

Our study shows that only 21% males and 29% females discontinued sexual activity which was completely stopped at 80 in male and due to absence of sex partner in female against about 90% who stopped sex at 58.5 years reported by Pathak out of 200 cases (Pathak, 1978). We could not establish any relationship of withdrawal of sex activity with disease, diet etc. due to less number of cases and hope to throw some light in future when more number of subjects are included. However, in our study discontinuation was due to loss of erection in two and loss of ejaculation in 3 males and one each due to disease in male and female. It has been reported in literature that physical abilities (Pathak, 1978) and disabilities (Smith *et al.*, 1997) may affect sexual responsiveness. Diseases such as diabetes, protein malnutrition, zinc deficiency, thyroid problems and anemia can cause sexual dysfunction. Any problem affecting flow of blood in the blood vessels could result in problems of erection (Dhar, 1998). In our study 2 cases of erection failure could not be associated with any disease or dysfunction of local blood supply. Chronic alcoholism, heavy smoking and injection of certain drugs such as tranquilizers and barbiturates have also been reported to affect sex drive and potency (Dhar, 1998). None of our subjects except one was smoking and none drinking. No history of consumption of tranquilizers and barbiturates could be established in this series. Obesity and excess food intake also are known to reduce sex drive, but none of our subjects were obese except 2 women but was found active in sex life. It has been reported that

hysterectomy though does not hurt sexual functioning may affect sex interest in men who may feel their partners are less feminine (Gaithersburg, 1994). Although there were 2 cases of hysterectomy in one case husband was not available and in another case sex activity was stopped before surgery desired by both.

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Retirement Transition, Health and Well-Being

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ABSTRACT

The paper attempts to understand the retirement transition and the factors affecting this transition. This article also focuses on the health and well being of retirees and those factors that contribute to their health and well-being, and the gender differences in the elderly.

Keywords: Retirement, Health, Well-being, Gender differences.

Retirement is a crucial phase in one's life. There are sudden changes taking place at this stage and these have far reaching consequences. An individual in active service gets a certain income, is kept busy during the major part of the day, and has a standing in his/her society and family because of his/ her status as a working man/ woman. But after retirement there is a drastic decrease in regular income, a lot of extra time at one's disposal that one may not know what to do with it and at the same time may also not get the same respect that he/she got earlier from society and family members. To add to the burden he/she may also have to cope with his/her increasingly failing health. These changes take place rather suddenly and mostly persons are not prepared to face and accept them. Prior to retirement the individual is perceived as a middle aged man/woman doing his/her work and taking care of his/her family and as a useful member of the society. But after retirement the same individual is perceived by society and family as a useless old man/woman with nothing to do and rather a nuisance. Therefore, among older people of the same age the one who is retired may have more problems than the one who is still working.

Mandatory retirement regulations reduce relative manpower requirements due to technological change and slower growth of the

economy, and moreover, the obsolescence of old skills combine to squeeze the vast majority of older persons out of the labor market, whether or not they are physically, psychologically or economically ready for retirement from life's major activities.

Retirement ushers in a period of phenomenal changes calling for adjustments both in the retired person's life schedule and in the attitude of family members. Retirement can be conceived as the end of the most important phase of life or the beginning of a new phase depending upon the mental makeup and personality of the individual. This new phase brings in its wake feeling of uselessness, sense of being a non-entity causing heart-burns, depression and soul searching. Generally people retire at the peak of their career where they have specific occupational identity and power, and loss of occupational identity at this stage in their career results in a loss of self esteem and self worth (Havighurst, 1982). The emotional trauma of retirement coupled with financial worries, and indifferent behaviour of family members makes the retired person emotionally insecure, dejected with life, very sensitive to one's surrounding and easily hurt.

Therefore, those persons who are not mentally prepared to face the subsequent changes of retirement are likely to face health problems in later years. On the other hand, those who are prepared to accept/face retirement and its repercussions have far less health problems.

Health is an important factor in the life of the retirees as it affects almost every single aspect of their life and determines what activities or tasks one engages in or not, and the likelihood of which tasks or activities one is able to complete successfully. Poor health can make one dependent on others even for the basic necessities of life and this can effect one's perception of oneself. In essence, health seems to be one of the most significant factors effecting adjustment, well-being and happiness in old age.

The word health comes from an old German word that is represented in the English language by the words "hale and whole", which refers to a state of "soundness of body." Linguists have noted that these words are derived from the medieval battle field, where loss of haleness or health was usually the result of grave bodily injury. However, today one is more likely to think of health as the absence of disease rather than as the absence of a debilitating battlefield injury.

This definition implies that truly healthy people are free of disease, but health involves much more, for it is quite possible that a person is free of disease but still is not able to enjoy a vigorous, satisfying life. However, health can not be limited only to physical well being alone.

The World Health Organization (WHO, 1946) defines health as “a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity.” Thus, health is a positive multidimensional state that involves physical health, psychological health, social health and spiritual health each being influenced by and influencing the other.

Physical health, involves having a sound disease-free body with good cardiovascular performance, sharp senses, a vital immune system, and the ability to withstand physical injury. It comprises life style habits such as eating a nutritious diet, exercising regularly, sleeping well, avoiding use of tobacco and other drugs, practicing safe sex, and minimizing exposure to toxic chemicals.

Psychological health comprises good self-esteem, enjoying a general feeling of well-being, creativity, problem-solving skills, and emotional stability. It is characterized by self-acceptance, openness to new ideas, and a general “hardiness” of personality.

Social health includes good interpersonal skills, meaningful relationship upon the life period one is in, and the perception of “good” health. People are willing to accept different physical health states as “normal” or “good” depending on the age, past health and current demands and expectations. Therefore, the conceptualization of health seems to be subjective. To get a better understanding about retirement transition, health and well-being of retirees, it is essential to review the literature or research studies conducted in this area.

Women may live longer than men but they have higher rates of illness, physician visits and drug prescription use as a result of more acute illness and nonfatal chronic diseases. Men over 65 years are likely to report limitations in their major activities, whereas women 55-74 years tend to report problems in work-related activities, such as lifting or carrying 25 pounds, walking up to 10 steps, stooping, crouching or kneeling. Both men and women’s ability to perform such activities affect whether they remain in the labour force or not. Chauhan and Hoberman (1983) examined the relationship between

retirement and changes in the functional health status and life satisfaction of a panel of older unmarried women who participated in the longitudinal retirement history study. Residual change analysis indicated that controlling pre-retirement health status and important demographic variables, women who were just retiring reported a greater decline in functional health during the transition period than those who continued to work. Crowley (1986) explored both the psychological and physical quality of life of retired men by using data from the National Longitudinal Survey of the labour market. She divided the sample in four categories : voluntarily retired at an early age; voluntarily retired at normal age; health mandatory or due to health reasons; and discouraged ones or those asked to retire. Voluntary retirees were found to consider themselves better off than did the other retirees who had to retire because of health reasons. She found that the effect of retirement on the well-being seemed to be related to other circumstances like financial security and health rather than the retirement event itself. Rudman (1987) investigated the social and psychological benefits of involvement in corporate fitness programs after retirement. He surveyed 10 retired employees who participated in a company - sponsored exercise and fitness program, about their reasons for involvement, the health and fitness needs of recently retired persons and the various ways the company can attract more retired workers into similar programs. The investigator found that initial involvement of retirees in this program centered on physiological concerns, adherence to fitness program was based primarily on social and psychological parameters. Subjects cited the positive atmosphere encountered at the fitness center as the main reason for continued participation. Stull (1988) compared the effect of income, health and social interaction on happiness at pre and post retirement for 300 couples. Findings show that husband and wives had a different conception of happiness, and women were more contented as compared to their husbands after their retirement.

Chakravarty (1990) conducted a study on middle class Hindus residents of Calcutta and observed that half of the Calcutta pensioners experienced difficulty in utilizing their free time. Time hanged heavily on 48.45% per cent of the pensioners. They felt bored for not being able to use their free time in some meaningful activities. The respondents cited various reasons for their boredom. These were : (1) financial constraints, (2) poor health condition, and (3) lack of work.

Health and finance were important variables, which restricted activities of these individuals. But a large section of the Calcutta pensioners complained they did not find any suitable substitute activity for the regular office work to which they were accustomed. Pothan (1990) undertook a study on aging and retired women in Urban Madhya Pradesh and interviewed 72 women retired from schools and hospitals in Indore. The data revealed that retirement does not affect women as badly as men in India because of extended families; women keep themselves busy at home, especially rearing grand children; majority of unhappy respondents were either spinsters, widows or separated from husbands; though the percentage of Christians in the general population is small, the percentage of retired women is high, and they mostly enjoyed good health and took over more household responsibilities to keep themselves busy, developing a new hobby or interest was rare after retirement but majority reported that their status in the family did not undergo any change because of retirement. Morebarak, *et al.*, (1992) investigated the social network and health of individuals in retirement. Results indicated that re-employed retirees had larger social network which indirectly led to better perceived health. Of the three social network sources—family, friends and confident relationships, the friendship network was found to be most important in social network and hence perceived health. Malhotra and Chadha (1994) investigated the problem of retirement and old age in pensioners (N=50) and non-pensioners (N=50). Major problems of retirement as perceived by pensioners were leisure time, accommodation, adjustment and fear of death and those for non-pensioners were financial, social dependencies, isolation and loss of spouse. Dharmalingam (1994) observed that the elderly experienced economic and health conditions as important factors after retirement. Sharma (1995) conducted a study on psychological well being of the retirees. The findings of the study showed that variables such as attitude towards aging, retirement specific self-esteem, goal directness, perceived social support, household decision making and leisure time activities were positively related to psychological well being of retirees. Negative relations were found between dispositional rigidity, regretfulness and psychological well being of retirees. However, no relationship was found between length of retirement and psychological well being of retirees. Based on these findings, retirees with low psychological well being were identified and given a group

counselling program which consisted of creating self awareness, assisting retirees to set new goals and find a purpose and meaning in life, encouraging them to plan and involve themselves in leisure time activities, giving a realistic appraisal of themselves and their problems and helping them to get rid of their irrational beliefs. After the group counseling program post-assessment was done. It was found that it promoted psychological well being of retirees. Sinha and Singh (1997) conducted a study on time structure and well-being among retired persons (N=120). The study aimed to know how individuals utilize their time after retirement and lead a purposive life with increased well being. Time structure and well being both correlated negatively with age. The findings also showed that engagement (after retirement) in activities of some formal/ informal organization led to better structuring of time and well being. Amy *et al.*, (1998) investigated the effect of walking on mortality among nonsmoking retired men (N=707). Results indicated that during the follow-up period there were 208 deaths. After adjustment for age, the mortality rate among men who walked less than 1 mile (1.6 km) per day was nearly twice than among those who walked more than 2 miles (3.2 km) per day (40.5 per cent vs. 23.8 percent; $p = 0.001$). The cumulative incidence of death after 12 years for the most active walkers was reached in less than 7 years among the men who were least active. The distance walked remained inversely related to mortality after adjustment for overall measures of activity and other risk factors ($p = 0.01$) among older physically capable men. The results indicate that regular walking is associated with a lower overall mortality rate and encouraging elderly people to walk may benefit their health. Puri and Khanna (1999) undertook a research study on health and nutrition profile of middle class elderly women living in Delhi. The findings indicate that elderly suffer from several health problems such as impaired vision, hearing, and immobility, loss of memory, urinary inconvenience, joint pains, spondylitis and hypertension. Most of the women in both groups were suffering from more than one health problem. The researcher suggested setting up of geriatric units/ special clinics/mobile medical units/health camps in different areas.

Benyamini *et al.* (2000) investigated the predictors of health on 851 elderly residents of a retirement community (mean age 73 years). Results of cross sectional and longitudinal analysis showed that functional ability, medication use, and negative affect were salient to

people judging their health. But a positive indicator of health was activity and mood which had an even stronger, independent effect. These findings show the importance of attending to the full illness-wellness continuum in studying people's perception of health. Gall and Evans (2000) investigated the impact of pre-retirement expectations for satisfaction and financial status on quality of life. Participants were 109 male residents (Aged 61-75 years) of London. Based on structural equation modeling, pre-retirement expectations for satisfaction with respect to activity, finances, health and interpersonal relations were identified as predictors of quality of life of males 6-7 years following retirement. Jungmeen and Phyllis (2002) did a study on retirement transitions, gender, and psychological well-being following the life-course ecological model. The study investigated the relationship between retirement transition and subsequent psychological well-being using data on 458 married men and women (aged 50-72 years) who were either in their primary career jobs, retired, or had just made the transition to retirement over the proceeding 2 years. Measures included the Philadelphia Geriatric Center morale scale and the center for Epidemiologic Studies - Depression scale. The findings show that the relationship between retirement and psychological well-being must be viewed in a temporal life course context. Specifically, making the transition to retirement within the last 2 years is associated with higher levels of morale for men, whereas being "continuously" retired is related to greater depressive symptoms among men. The result suggests the importance of examining various resources and contexts surrounding retirement transitions (gender, prior level of psychological well-being; spouse circumstances; and changes in personal control, marital quality, subjective health, and income adequacy) to understand the dynamics of retirement transition and its relationship with psychological well-being. Lum and Lightfoot (2003) studied, the effect of health on retirement saving among older workers by using data from the first wave of the health and retirement study. They investigated the association between health and retirement saving. The sample included 7,350 households (50% men and 50% women). The two most important findings were that : (1) health has a large significant effect on both the probability that a person nearing retirement age will contribute to an individual retirement account (IRA) and the amount of money that a person holds in IRA, and (2) spouse's health has a large significant effect on a person's access to an

employer-sponsored pension, the probability that a person will contribute to an IRA, and the amount of money held in an IRA.

Research reveals that the retirement event itself can be emotionally traumatic and it brings a number of changes in the schedule and life of the retired person, attitude change in family members and society which demands a lot of adjustment on the part of the retiree to maintain his/her well-being. It is also observed that the effect of retirement on well-being is related to the financial security and health of the retiree. Empirical research indicates that after retirement generally the health of retirees deteriorate (Stone, 1985) and retirees face a number of problems such as financial, lack of perceived social support, low self esteem, utilization of leisure time, loneliness, etc. However, a positive attitude towards aging and having a goal in life positively contributes to the well-being of retirees. A few researches have brought out gender differences in the elderly, in that, women have higher rates of illness, physician visits and drug prescription than elderly men; retirement does not affect women as badly as men in India due to extended families; women keep themselves busy at home unlike men who have the problem of utilization of free time; and elderly men report limitations in major activities, walking up the stairs, stooping, crouching or kneeling, etc. However, it has also been found that re-employed retirees have larger social network which indirectly leads to better perceived health and well-being.

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Social Problems of the Elderly : A Hospital Based Study

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ABSTRACT

Aim of this study was to assess psycho-social status, presence of health problems, and addictions among the elderly and to suggest measures to improve the health status of them. 200 aged persons, coming to the OPD were interviewed using an interview schedule. The schedule consisted of questions on socio-demographic profile, presence of any addictions, health problems and their attitude towards life. 171 (85%) persons responded that they are not happy. Main reason for their unhappiness was found to be loneliness, especially among the aged living in nuclear families. 128 (64%) persons were addicted to one or more addictives. 102 (79.6%) persons were addicted to bidi/cigerrate or Hubble/bubble. Commonest health problem among the elderly was Cataract (45.5%). Other problems included Phsyical and financial dependence, lack of social activities./ social contacts.

Keywords: Nuclear family, Joint family, Physical dependence, Addictions, Cataract, Socio-demographic profile.

The elderly are a precious asset for any country. With rich experience and wisdom they may contribute in the progress of the nation. Currently there are 580 million aged people in the world (WHO report). Of these 355 million live in the developing countries. During the last five decades in India life expectancy at birth has doubled from 32 to 64 years. The absolute number of elderly persons has more than trebled during the same period. The number and proportion of the aged population is increasing as a result of the

decrease in the birth rates and medical and economic factors that favour a longer life expectancy. The aged are dependant for all basic necessities of life like clothing, living arrangement etc. and sadly, they are the neglected group. The aim of this study was to assess psycho-social status of the elderly, presence of any health problems, habit of addictions among them and to suggest measures to improve the health status of the elderly.

Material and Methods

Patients more than 60 years of age, coming to general out patient department of Safdarjang Hospital, New Delhi were interviewed. Interviews were taken in the general OPD and they were started, when the patients used to come to collect medicines, prescribed by the consulting doctor. Overall 200 such geriatric patients were interviewed with the help of a predesigned. Interview schedule. Questions on socio-demographic profile, presence of any addictions, health problems and attitudes towards life were included in this schedule. This schedule towards life were included in the questionnaire. Persons, who were not in a position to give the interview like psychiatric cases, emergency cases and those with hearing problems, were not included in the study. Total Duration of the study was 5 months starting from February 2004 to June 2004. Data was compiled and analyzed and percentages were calculated.

Table - 1

Literacy status of the respondents

Literacy status	Males (No.) (%) (N=97)	Females (No.) (%) (N=103)	Total
Illterate	17 (8.5)	50 (25.0)	67 (33.%)
Primary school	20 (10.0)	22 (11.0)	42. (21.0)
Higher Secondary	1 (0.5)	5 (2.5)	6 (3.0)
Senior Secondary	19 (9.5)	9 (4.5)	28 (14.0)
Graduate	16 (8.0)	6 (3.0)	22 (11.0)

Results and Discussion

Table - 2**Relationship between type of family and neglectance of the family members**

Type of of Family (n=168)	Neglected	Not neglected
Nuclear	61 (36.4)	42 (25.0)
Joint	09 (5.3)	56 (33.3)

Overall 200 patients 60 years of age were interviewed. Sex distribution showed that 103 (51.5) were males and 97 (48.5) were females. 103 (51.5) persons were living in nuclear families and 65 (32.5) persons were living joint families. 32 (16.0) persons were excluded because they were living in an old age home and were referred cases to the hospital. 56 (86.2%) aged living in joint families, that they were never neglected by their family members. A prominent finding in our study was that 61 (59.2%) aged, living in nuclear families replied that they were neglected by their family members. A possible explanation for this might be that, since this study was done in a metropolitan city like Delhi and majority of couples are employed, the aged persons neglected and lonely. Out of 200, 76(38%) persons were occupied in some productive works (31 persons were full earners and 45 persons were pensioners who were involved in social work). 32 (16.0) persons were involved in agricultural activities in their villages. 128 (64%) persons were addicted to one or more addictives (Table 3). The common most addiction was found to be bidi/ cigarette smoking, which was found to be prevalent among both sexes (74%), followed by tobacco smoking in the form of hokah (14%).More than one addiction was present in 15 (7.5%) persons.

Table - 3**Presence of addictions among elderly**

Addictions (n=128)	Males (n=92)	Females (n=36)	Total
Hookah (Hubble/	26 (20.3)	2 (1.5)	28 (21.8)

Bubble)

Bidi/Cigarette	45 (35.1)	29 (22.6)	74 (57.8)
Alcohol + Tobacco chewing	11 (8.5)	00 (0.0)	11 (8.5)
Cigarette + Alcohol	06 (4.6)	00 (0.0)	06 (4.6)
Paan Chewing + Tobacco chewing	04 (3.1)	05 (3.9)	09 (7.0)

Table - 4

Presence of sad and indifferent attitude among elderly

Sad and Indifferent attitude (n=171)	Males	Females	Total
Loneliness	30 (17.5)	31 (18.1)	61 (35.6)
Loss of spouse / someone very near	19 (11.1)	12 (7.0)	31 (18.1)
Illness (Self/Spouse)	11 (6.4)	7 (4.0)	18 (10.5)
Poverty	16 (9.3)	14 (8.1)	30 (17.5)
Unspecified	19 (11.1)	12 (7.0)	31 (18.1)

Table - 5

Health problems of the elderly

Health problems (N=200)	Males	Females	Total
Cataract	42 (1.0)	49 (24.5)	91 (45.5)
Knee/Back/Joint	11 (5.5)	20 (10.0)	31 (15.5)
Hyperteision	19 (9.5)	10 (5.0)	29 (14.5)
Diabetes	7 (3.5)	4 (2.0)	11 (5.5)
Digestive disorders	16 (8.0)	11 (5.5)	27 (13.5)
ENT problems	9 (4.5)	2 (1.0)	11 (5.5)

29 (14.5%) respondents said they were living happily whereas 171 (86.5%) (Table 4) said that they were not. Commonset reason for unhappiness/ indifference towards life was found to be loneliness 61 (31.5%). Similar results were reported in another study (Goel, 2003)). Commonset health problem (Table 5) among the elderly ws cataract (45.5%) followed by knee / joint/ back problems (15.5%). Niranjan *et al.*(1996) also reported cataract, as a common health problem among

the elderly in 46% cases. 97 (48.5) persons in our study were financially dependant on their families. 68 (34.0%) persons were physically dependant. They required someone to help them with activities for daily living like bathing, shaving etc. 78 (39%) persons quoted that their advice was ignored. Pradhan (2000) also came out with similar findings. 76 (38%) said that they had no social contacts and were never involved in any social activities. Similar conclusions were drawn by other studies also (Goel *et al.*, 2003; Pradhan, 2000).

Conclusions and Suggestions

Major problems of the elderly were found to be loneliness, especially among the aged living in nuclear families. Addictions like smoking bidi / hubble-bubble, were quite common in both the sexes including multiple addictions. Commonest health problem was found to be cataract. Other problems like physical dependence, financial dependence, and lack of social activities/ social contacts. It is required to recognize these problems and carry out IEC (Information, Education and Communication) activities, targeting the elderly population. Mass media like radio, television should continue to include subjects like cataract, its early recognition and management, addictions among elderly, negligence of the family members and project problems of the elderly, to create awareness among the general population. Here comes the role of non-government organizations, which are playing a key role in identifying the problems of the elderly (Sawhney M, 2003).

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Book Review

An Aging India : Prespectives, Prospects and Policies

*Edited by Phoebe S. Liebig and Irudaya Rajan
The Haworth Press, Inc. 2003, NY pp. 248*

The volume presents the quality research on the population aging in India. The contributors include from abroad and India. All of them are committed to the cause of old age welfare and belong to different fields of expertise. This is in consonance with the interdisciplinary nature of the subject of Gerontology. After the introduction of the volume the editors organized all the papers into 5 sections viz., Economics; Health and Social networks; Social and family relations; Current interventions; Advocacy and Policy. Thus almost all the relevant issues of aging have been addressed to buttress the claim to "expose a wider audience in North America and the World to the dimension of aging in India" (p.8).

The section on Foundations of Aging in India has presented the analysis of the demographic data and projections for 2001-2051. While drawing on the conclusions of these projections authors get success in convincing the readers that high expectancy of life in India has created a challenging task to the Government and the society to provide the care for the increasing aged population. Obviously, the established tradition of family based care seems not viable. In the context of abject poverty to meet out this challenge is a daunting task. In fact a serious dialogue on the utility of day-care centers and old age homes is urgently needed before we emulate the Western models of old age homes. At this stage the flat suggestions of these authors for old age homes seem pre mature.

Another article of this section by Ramamurti, Director, Center for Research on Aging at Tirupati, presents an overview of the Indian research. This review seems superficial and has provided his personal contribution in India over a period of four decades. Interestingly, he has not forgotten to mention his achievements in the area of aging by highlighting the same. Conspicuous absence of the mention of a very

early contribution in the field of Gerontology by the Indian Journal of Gerontology which has been publishing regularly the Indian Research on aging in the areas of Biological Sciences, Clinical medicine and Social sciences. I do not wish to denigrate the contribution of the author and the center but one should note that the ICSSR is now funding the publication of this Journal. This is strange for a serious researcher who is reviewing the research in historical context to ignore such contribution. The author's suggestions for the National Survey and Representative Research on Aging in India may be well taken and I am sure that Center for Research on Aging will take a lead to conduct such a survey.

The next section of the book deals with economics, health, and social networks. The first article by Vijay Kumar reports the security provisions available for the elderly in India. The information reported therein is significant. The author laments over the paucity of security measures available for the rural unorganized workers by and large are engaged in agriculture. One can add to the plight of these workers by following the rules and the conditions laid down by the market economy and the provisions of WTO. Thus changing economy of the country in the absence of adequate social security has added to the plight of the aged, in general, and of the rural peoples in particular. What is true for the social security in India is true for geriatric health services. As the author Vinod Kumar presented data from various studies and surveys to bring the point at home that Indian aged persons suffer mostly from the joint-problems, problems related to cough, blood pressure, heart disease, urinary problems piles and diabetes in that order both in rural and urban areas. Further he notes that most geriatric morbidities are preventable therefore, proper facilities are needed. However, "economic constraints, coupled with illiteracy, political insensitivity, and lack of public awareness, are significant impediments to adequate health care for both young and old." (p. 78). In fact there are no facilities available separately for geriatric care. Moreover the net work of primary health centers for rural population is not efficient to take health care even for the acute health problems. With the changing scenario the Indian Government could not sustain the hospitals which were providing health care free of cost. Increasing private hospitals in urban areas are costly and beyond the reach of lower economic class of the society. Alternate health care systems and traditional life style including Yoga are providing health care to the

elderly to some extent. There is a possibility of developing these systems in a scientific manner so that less expensive methods of treatment and prevention of health care can be provided.

In the next article of this section Indira Jay Prakash, has drawn our attention to a new dimension of aging, i.e., the aging disability and aging of disabled people. She lamented on the fact that Indian National policy on older people' aims at providing better quality of life for older persons but unfortunately, does not cover the concerns of the disabled growing older. The author very carefully presented the data and issues related to both the groups. A careful reading of this article is an eye opener for the gravity of the problems of disability in old age. The lucid presentation of this paper covers the vital statistics of disability due to health problems, mental morbidity, various types of disabilities, the gender issues including reproductive rights of disabled women and comments on the existing policies for the betterment of aged.

The section on Social and Familial Relations includes two papers. The first paper by Willigen and Chadha presents research and policy on social networks of old people in India. The paper after a brief presentation of the research on social networks contains arguments in favor of maintenance of robust social relationships and demands the Governmental policy to formulate such laws helping the social aging in general and of women in particular. The other paper by Jamuna of this section deals with issues of elder care and older abuse in the Indian context. The author examines the status of care giving for older persons in the sociocultural and demographic context. She notes that in the Indian families daughter-in-laws are the primary care givers. Hence care-givers are "often suffer from overload". Although majority of the elderly is living with their children only few are in old age homes. The author notes that the old age homes are at present used by aged who live alone, elderly couples without children and the persons who receive mistreatment in the families of their children. To highlight the elderly abuse the author has cited three case studies. By way of concluding the paper she observes that old age homes may only be treated as "supplements rather than easily available alternative care" (p. 138).

The section on current interventions include three papers to highlight the models of institutional care of Aged Indians, empirical

studies on old-age homes conducted and the role of Non Government Organizations. The first paper has covered the role played by Heritage Hospital at Hyderabad in providing Geriatric services. The author, Gangadharan presents the projections for increasing number of aged in India and non-availability of specialized hospitals to provide geriatric care facilities. It is in recent years that some of the non-government organizations have taken initiative to provide specialized treatment for aged. The author has mentioned such initiatives at Bangalore, Chennai, Mumbai, Pune and New Delhi. These few hospitals followed the model of western geriatric hospitals and need to take account of the sociocultural aspects of Indian life. Then the author goes on to describe the philosophy and practice of Heritage Hospital established in Hyderabad during 1994. In fact this effort has provided a model of commitment and perseverance in creating ultramodern geriatric care facilities in low cost. This is an excellent example of hospital management guided by a philosophy of care and adapted the strategies of motivating the reluctant physicians to participate in the geriatric care. Heritage Hospital not only provides the hospital treatment but also arranging training programs and has created a team of volunteers to help the aged during the treatment.

In the next paper of this section by one of the editor of this volume-Liebig has presented an empirical study of 48 old age homes in different parts of India. The author compared the old and new services provided by the old-age homes. He observed that traditionally these homes provided services for destitute and mostly run by Christian societies. Conducting study of old age homes needs lot of time and efforts to know in details the functioning of and experiences of the residents. Present study by the author could describe the facilities available in these homes. The pay homes are better in terms of the physical facilities as compared to free homes. Obviously such services need lot of money to maintain and provide health care facilities. The government grants are meager and that too involved bureaucratic intricacies. Because of this reason many of the Non-government Organizations do not apply for such grants. Many of these institutions run on donations and thus success depend on the ability and contact of the organizers to collect donations. The author has very aptly traces the societal and policy implications. He discusses value issues involved in providing old-age homes in Indian conditions. Because of paucity of funds many old age homes cannot be feasible

and then the Indian family system needs encouragement to look after the aged. Only in conditions of those who do not have any one to look after must have this facility. The author is very right to recommend the day care centres rather than old age homes in the Indian context.

Last article of this section by Sawhney reports the role of Non-Governmental organizations. Realizing the limitations of the efforts by Indian Government she highlights the role of NGO in participating in this arduous task which they are accomplishing successfully. Quite forcefully she examines the work of Help Age India to argue that voluntary organizations have made life of senior citizens comfortable. Help Age India is affiliated with Help Age International, which is functioning in Asia for the past several years. In its linkages with Governments and other policy framing bodies have provided an ideal model to be emulated by others for the benefits of aging India.

The last section of the book contains two articles on Advocacy and policy. The first paper by Nayar deals with the senior Grassroots Organizations in India. The author notes that the first institution for the care of the aged was established in Chennai in 1782. Similarly the first pensioners association was formed in 1934, and association of senior citizens was came in existence in 1950. However, these could not become popular, as population aging was not an issue. It is after 1982 the attention and action for elderly care has been taken off. The author has presented the historical developments of pensioners' associations, Ex-service Men's associations, Senior citizens' associations, and Indian Federation on Aging. In India these associations have limited role and fail to provide any mass base. One can hope that as the social security provisions are extended to non-service class of aged, perhaps, such associations will be effective to better care for elderly. The other paper is titled as "Towards policy for aging" contributed by Gokhale. This paper reviews the efforts for framing the National policy on older persons and critically examines the same. The British Government during the colonial period made the provision of old age security in terms of pension and provident fund to the employees of the Government. After Independence Adarkar Commission Report laid the basis for different retirement and welfare schemes. During 1980s and 1990s several efforts at international and national levels and changing demographic features pushed the Government of India to adopt The National Policy on Older Persons on August 15, 1999. The policy

seems to be quite ambitious and it contains the background, Policy statement and its implementation. The policy has received criticism from many corners and it is a long way to success. Some of the suggestions by the author include that the Policy should retain traditional values, economic security in old age and commitment for its effective implementation.

As a whole the book is very informative. The editors must be congratulated for the selection of the authors as contributors to the theme of aging in India, for each one of them is well known in the field. The book not only provides the status of aging population in India but also serves as a guide for the professionals and the academicians for initiating the help programs in India and programmed research in Universities and research organizations.

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FOR OUR READERS

ATTENTION PLEASE

Members of ***Indian Gerontological Association*** (IAG) are requested to send their ***Annual Membership Fee*** Rs. 250/- (Rupees Two hundred and fifty only) Life Membership fee is Rs. 1,000/- (Rs. One thousand only). Membership fee is accepted only by D.D. in favour of Secretary, Indian Gerontological Association or Editor, Indian Journal of Gerontology. Only Life members have right to vote for Association's executive committee.

REQUEST

Readers are invited to express their views about the content of the Journal and other problems of Senior citizens. Their views will be published in the Readers Column. Senior citizens can send any problem to us through our web site : www.gerontologyindia.com Their identity will not be disclosed. We have well qualified counsellors on our panel. Take the services of our counselling centre - RAHAT.

VISIT OUR WEBSITE : www.gerontologyindia.com

You may contact us on : klsvik@yahoo.com or klsvik@hotmail.com

ANNOUNCEMENT

SPECIAL ISSUE OF THE INDIAN JOURNAL OF GERONTOLOGY : ON PHYSICAL ACTIVITY AND OLD AGE

You are requested to send your articles by the end of December 2005 either to Dr. N.K.Chadha, Professor of Psychology, University of Delhi (who is the guest editor of this special issue) or to the Editor Indian Journal of Gerontology

CALL FOR PAPERS

National Conference on ***Ageing and Dying : Relevance of Indic Perspectives to End of Life Care.***

Dates : 4-6 November 2005

Venue : IIT Kharagpur

Web Page : <http://www.iitkgp.ac.in/ncad2005/>

E-mail : ncad2005@hijli.iitkgp.ac.in

NEW MEMBERS

(L stands for Life membership and A stands for Annual Membership)

514A. Dr. S.K. Vora, Department of Zoology, Shivaji University, Kolhapur 416 004 (Maharashtra)

515L. Mr. Rajvinder Singh, # 2570 Phase II, Urban Estate, Patiala 147 002 (Punjab)

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