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# AGEING & SOCIETY

THE INDIAN JOURNAL OF GERONTOLOGY



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# AGEING & SOCIETY : THE INDIAN JOURNAL OF GERONTOLOGY

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# GRANDPARENTS-GRANDCHILDREN RELATIONSHIP IN A RURAL COMMUNITY

R.HemaLakshmi\*  
R.Maruthakutti\*\*

## ABSTRACT

This paper examines the mutual contributions, relationships and the joint activities between grandparents and grand children. Data were collected by interview method using interview schedule from 104 young adults in the age group of 13-24 in Annamalaiputhur village of Tirunelveli district. Analysis shows that the grandparents contribute to their grandchildren mostly in terms of problem solving, advice and guidance, giving money and material help. Few of the grandchildren said that there was no contribution from their grandparents because of illness and disability. Most of the Grandchildren involve in such activities with their grandparents as watching television, cooking, discussion and shopping. The relationship between grandparents and grandchildren is mostly found to be affectionate. Affection is high when the grandchildren are young. It is also noteworthy that intimacy with grandparents is more among the granddaughters compared to the grandsons. Thus age and gender play a major role in the nature of relationship between grandparents and grandchildren.

**Key Words:** Grandparents, grandchildren, grandparental contribution, intergenerational relationship, joint activities.

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## INTRODUCTION

It is obvious that the elderly people have lot of life experiences. Along with such experiences they transfer their tradition to the next generations. Even after retirement, they continue to be great contributors in the family. In India traditionally the elderly were treated with great respect because it is part of our value system. However, now it is changing gradually. The relationship between grandparents and grand children has gone down because of new modern value system, taking on of western culture, and the changes in the family system.

Now the family system has undergone serious threats in rural areas. Joint family system is decreasing. There is no suitable care and support given to the elderly nowadays. Younger generation is migrating to other places due to education, occupation and marriage, which creates the gap between them and their family members. The relationship between grandparents with their grandchildren in particular has changed. They do not know the importance of the elder members in their family. Nowadays children have no time to talk and play with their grandparents. Joint engagement between the grandparents and grandchildren is the bridge to connect the generations. It also helps to transfer the traditions from one generation to another generation. It increases the intensity of the relationship among grandparents and the grandchildren.

Many of the elderly people think of old age as a burden to them, because they are not able to do work like when they were young. Many think that the elderly cannot contribute to their family because of decreasing ability to do work. However, they contribute to the family in many ways like taking care of grandchildren and pets, cleaning, shopping, and providing advice and emotional comfort. Familial conflicts are often buffered by the elderly in the family. Their knowledge of tradition and wisdom gained over years can be very valuable to the younger generation, albeit not recognized. Global

level changes in the political, economic and technological spheres certainly have their impact on social relations. Whether they have integrating or disintegrating effect on the bonds across generations, especially between grandparents and grandchildren, is open for research.

## Review of Literature

The adolescence and the adult stages are the developmental stage, and grandparents playing main roles that are giving care, developing play behaviors and stimulating them cognitively and emotionally (Clarke Stewart, 1978; Power and Parke 1982).

Grandchildren had established a close relationship with their grandparents during childhood then during adolescence that relationship would likely not change. Relationships between grandchildren and grandparents have been examined through frequency of contact, the length of the exchange, and the types of resources exchanged. Although these strategies of investigation are important for understanding relationships between grandchildren and grandparents (Matthews and Sprey, 1985).

Positive feelings about the grandparent-grandchild relationship do not increase or decrease as one moves through adolescence. Adolescents independently want to visit their grandparents while establishing a close relationship with them (Roberto, 1990).

From grandchildren's perspective, their grandparents influence them in various ways. Grandparents participate in providing support and care, giving them information about the world, they are role models, and they are a source of ideas and reflection about human life. Meanwhile, children are aware of the negative impact their grandparents can have when their attitudes are extremist (Tyszkowa, 1991).

Older grandparents participate in activities that do not require much physical force. Differences related to gender are also observed



such that grandmothers focused on family care activities, community activities and social activities, while grandfathers do more activities outdoors and more task-related activities. Furthermore, granddaughters tend to share more with their grandparents (Kennedy, 1992).

While grandchildren are growing, they spend time with their grandparents. The dyad does different recreational activities together that tend to develop affective links and generate satisfaction. This tends to improve the quality of their relationship and develop long-lasting ties for the duration of the grandparent's life as well as that of the grandchild (Fuentes and Fernandez, 2008; Kennedy 1992).

Sushma Batra and Kakali Baumik (2004) found that the majority of the elderly want to share their life with their children/grandchildren. The relationship between them is determined by the care given by the elder people. Further this study highlights that the relationship between generations is dependent upon the shared activities and the shared respect between them.

Archana KaushikPanda(2004),finding shows that grandmothers actively having shared activities with their grandchildren like storytelling, looking after them after school hours is helping in creating bond between grandchildren and grandmothers in particular.

Grandparents' involvement and joint activities create emotionally close and supportive relationships with grandchildren and enhance their well-being (Attar-Schwartz et al. 2009b; Buchanan 2008).

Brussoni and Boon (1998) have also found that older grandchildren maintain regular contact with their grandparents and that the grandchild/grandparent bond continues with surprising strength into adulthood.

Mueller and Elder 2003;Uhlenberg and Hammill (1998) found that

the distance grandparents live from grandchildren is closely associated with stronger grandchild–grandparent relationships and emotional closeness.

Keeping in mind the various findings given by various studies on the relationship between grandparents and grandchildren, the present paper takes into consideration the grandparental contribution to grandchildren from the view of the grandchildren. It explores the ways the elderly are helpful to their grandchildren and the joint activities normally carried out between grandparents and grandchildren.

### **Method**

The study was conducted in V.K pudhur Taluk, Annamalaiputhur, Oothumalai village, Tirunelveli district. It was decided that those who were in the age group of 13-24 be included in the study. There were 104 persons belonging to that age group in that village. All of them were taken for this study. Interview schedule was used to collect data from the respondents. By using frequencies and percentage, collected data were tabulated.

For measuring the level of joint activities, scores were assigned for activities according to the frequency of activities. The responses and their respective scores are: Always = 4, occasionally=3, Sometimes = 2, Never = 0. For each respondent the scores for the various items are added and the total score would refer to his or her score on joint activities. The lowest and the highest scores obtained were 0 and 11. This range is subdivided into three equal intervals in order to group the respondents into different levels of joint activities. Thus, those who obtained 0-3 were grouped as low; those obtained 4-7 were grouped as moderate; and those obtained 8-11 were grouped as high. To find significance between different groups of persons ANOVA test was used.

respondents get help from their grandparents while going to school. Grandmothers prepare regular food and other eatables for their grandchildren. Few grandchildren state that their grandparents are the reason why they did not sell their properties. The grandparents are acting as the links between the grandchildren and other relatives. More than one fifth (27.9%) of the respondents do not contribute anything because of their disability or distance. But grandchildren feel secure when their grandparents are at home, especially when their parents are away

### **Relationship**

Nearly three fourths (73.1%) of the grandparent's relationship with their grandchildren is marked by love and affection. 18.3 percent of the respondent's grandparents render help. They render help in the form of giving money for school fees, as pocket money, then offering materials such as clothes, jewels during occasions, books and then providing services when they are sick, and while taking bath and eating. Only very few of the grandparents are fault-finding and quarrelsome. More than half of the grandchildren approach their grandparents because their grandparents are taking care of them and loving them. About 67.3 percent of the respondents say that their grandparents are useful to them. For others, their grandparents are too old or sick or living away to provide any help to the grandchildren. Mostly the grandmothers are living in same house with their grandchildren compared with grandfathers. Compared with Paternal grandparents 62.5% of the grandchildren who are in regular contact with their paternal grandmothers. And 58.5% of them are in contact while during occasions like temple festival, family celebrations with their maternal grand fathers.

**Table II: Joint Activities**

Joint Activities	Never		Rarely		Occasionally		Often	
	F	%	F	%	F	%	F	%
Discussion	45	43.3	34	32.7	17	16.3	8	7.7
Watching T.V	30	28.8	12	11.5	28	26.9	34	32.7
Walking	84	80.8	7	6.7	7	6.7	6	5.8
Cooking	66	63.5	4	3.8	12	11.5	22	21.2
Shopping	68	65.4	4	3.8	24	23.1	8	7.7

Activities jointly engaged between the grandparents and grandchildren are walking, discussions, watching television, cooking, hearing stories and shopping. More than half (53.84%) of the respondents have low level joint activities with their grandparents. 34.62 percent of the respondents have moderate level of joint activities. Only 11.54% of the respondents have high level joint activities with their grandparents.

Only few of the respondents have discussions frequently with their grandparents. One fifth of the respondents have discussions occasionally. Out of 104 respondents, 32.7 percent of the respondents have discussions with their grandparents rarely. About 43.3 percent of the respondents do not have any discussions with their grandparents. 32.7 percent of the respondents watch

television with their grandparents often. 26.9 percent of the respondents are watching television with their grandparents occasionally. About 28.8 percent of the respondents do not have the habit of watching television with their grandparents. Most of the respondents do not have the habit of walking with their grandparents. One-fifth of the respondents often jointly engage in cooking with their grandparents often. Only few of the respondents go for shopping with their grandparents. Two-thirds of the respondents do not go for shopping with their grandparents.

The ANOVA results show that sex and the family size have significant relationship with joint activities between grandparents and grandchildren. Compared with grandsons, the intimacy with their grandparents is higher among granddaughters. The younger grandchildren that are up to 15 have relatively more intimacy with their grandparents. The older grandchildren in the age between 16 and 20 relatively have less intimacy compared with the younger ones (up to 15). Thus we see that when the age of the grandchildren increases, the intimacy between grandparents and grandchildren gets decreased. However the 'F' value is not significant for this difference is not significant. Those who are studying middle school have high intimacy compared with the higher school and college going grandchildren. Family type does not have any significant relationship with level of joint activities. It is found that when the family size increases the intimacy between grandchildren and grandparents also increases.

The relationship between grandchildren and grandparents is largely marked by love and affection. This affection is high when the grandchildren are young. It is also noteworthy that intimacy with grandparents is more among the granddaughters compared to the grandsons. Thus age and gender play a major role in the nature of relationship between grandparents and grandchildren.

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# PREVALENCE OF HYPERTENSION AMONG THE ELDERLY: AN EMPIRICAL STUDY IN CUTTACK, ODISHA.

Dr. Tanuja Mohapatra\*

## ABSTRACT

Ageing is a biological process and experienced by the mankind in all times. It is also a multi-dimensional process. Old age is the closing period of the life of an individual. A person's activities, attitude towards life, relationship to the family and the work, biological capacities and physical fitness are all conditioned by the position in the age structure of the particular society in which he lives. Rapid ageing trends present new challenges to government, families and the elderly themselves.

Geriatric health problem is a growing concern due to increase in absolute number of geriatric people and socio-demographic changes in community. As per the 1991 census the elderly population in India was 57 million as compared with 20 million in 1951. It has been projected that by the year 2050, the number of elderly people would rise to about 324 million. (Ingle GK, and Nath A:2008). India has already acquired the level of "An Ageing Nation" with 7.7% of its population at or over the age of 60 years (Census 2001) and it currently ranks 2<sup>nd</sup> among the countries of the world for the size of elderly population, next to China since the year 2000.

The elderly, by themselves are a vulnerable group and non-

**Keywords:** Prevalence, Hypertension, Diabetes, Body mass index, Risk factors, Cardio-vascular diseases.

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communicable diseases (NCDs) like diabetes and hypertension are clearly a major morbidity in this age group. Developing countries, like India, are likely to face an enormous burden of NCDs in future and of these diseases, hypertension is one of the most important treatable causes of mortality and morbidity in the elderly population. Further, high blood pressure (BP) is a modifiable risk factor for cardio-vascular disease (CVD).

Indians are genetically more prone to suffer from cardiovascular diseases and hypertension is already an established risk factor of it. Thus high prevalence of hypertension doubles the dilemma over ageing population. Early identification of chronic geriatric morbidities like diabetes and hypertension should be ensured through periodic screening and regular health checkups.

## INTRODUCTION

Every time the human heart beats, it pumps blood to the whole body through the arteries. Blood pressure is the force of blood pushing up against the blood vessel walls. The higher the pressure, the harder the heart has to pump. Hypertension referred to as high blood pressure, is a condition in which the arteries have persistently elevated blood pressure. Hypertension can lead to damaged organs, as well as several illnesses, such as renal failure (kidney failure), aneurysm, heart failure, stroke or heart attack.

According to Medilexicon's Medical Dictionary, hypertension means "*High blood pressure; transitory or sustained elevation of systemic arterial blood pressure to a level likely to induce cardiovascular damage or other adverse consequences.*"

The normal level for blood pressure is below 120/80, where 120 represents the systolic measurement (peak pressure in the arteries) and 80 represents the diastolic measurement (minimum pressure in the arteries). Blood pressure between 120/80 and 139/89 is called pre-hypertension (to denote increased risk of hypertension), and a blood pressure of 140/90 or above is considered hypertension.

Hypertension has been identified as a major risk factor for the development of diabetes. Patients with hypertension are at a 2-3 times higher risk of developing diabetes than patients with normal blood pressure. Hypertension by itself is, of course, a powerful risk factor for cardiovascular morbidity and mortality as established by data from the Framingham cohort more than three decades ago.

***Blood pressure, thus, has become a major public health problem for all age groups especially elderly people living in urban area and urban people are facing increased burden from hypertension being overweight or obese. (Aatif Qureshi I. et al. :2013)***

Prevalence of sustained hypertension is on the rise in urban area even in younger age groups. Blood pressure is frequently elevated in obese children as compared to lean subjects. This is possibly related to their sedentary lifestyle, altered eating habits, increased fat content of diet and decreased physical activities (Mohan et al., 2004).

Social health always remained a neglected part. Even the National Programme for the Health Care of the Elderly (NPHCE) has not given sufficient importance to this domain. But with the adoption of modern life style and rapid break down of traditional joint family culture of India the social health of elderly people is of immense importance in today's life. With change in lifestyle and evolvment of nuclear families, elderly people often have to live with their spouse only; the scenario becomes more critical if one of the partners passes away. The inability to do normal day to day work for self maintenance often indicates the inability of the person to live rest of his/ her life with at least minimum comfort.

Old age is not a disease in itself, but it makes the aged person vulnerable to various long term medical problems of insidious onset. Hypertension is one such disease. Others are cardiovascular illness, cerebro-vascular accidents, diabetes mellitus and obesity with all of which hypertension is strongly associated.

With the advancement of modern medicines, life expectancy has increased; but it has increased the number of elderly in the community. ***This has ultimately increased the burden of non communicable diseases( mainly diabetic mellitus and hypertension) in the society as a whole.*** These diseases pose immense economic burden on the nation. Hypertension is in the key position among all the non-communicable diseases. Early diagnosis and regular treatment of hypertension can cut down the prevalence of these diseases.

### **Review of related studies**

Hypertension and ageing of the population are two most important problems faced by public health and clinical medicine. Hypertension in the elderly serves as a major risk factor for several disease situations thus leading to a better survival for those with lower values of blood pressure (Strulov et al., 1990). Death and disability from cardiovascular disease are increasing rapidly in developing countries that they rank it as the number one cause of the global burden of disease by the year 2020. The single largest independent risk factor for cardio-vascular disease is elevated blood pressure (Mackay & Mensah, 2004).

Hypertension is a major cause of death among the elderly and probably the most important source of invalidism because of the damage caused in vital organs like brain, heart and kidneys. The detection and control of hypertension in elderly is particularly important to reduce the risk of cardiovascular disease. A cross-sectional survey was carried out in UK stressing the need of detection, treatment and control of hypertension in older British adults. Mortality and morbidity in hypertension are strongly related to the level of blood pressure. Higher the blood pressure, the worse the prognosis. Prevalence of hypertension is considerably higher in the elderly than in younger individuals and risk of cardiovascular disease increases with the age (Fries, 1980).

A study carried out in Spain among the people of 60 years and above showed higher mean blood pressure and greater frequency of hypertension among people of lower socio economic status and the role of education in hypertension prevalence was also assessed (Regidor et al., 2006).

Study conducted in Belgium states that a large number of older hypertensive men are treated with anti hypertensive drug in primary care. But the goal was not achieved in substantial number of patients due to under treatment. Patients with higher risk are

treated more frequently than patients at lower risk, blood pressure itself remains an important factor for the initiation of anti hypertensive drug therapy (Duprez et al., 2002).

The elderly, one of the fastest-growing segments of the US population have the highest prevalence of hypertension. In Framingham study, it has been stated that prevalence and severity of the hypertension increases with the advancement of age (Oparil, 2006.)

***A. Chinese study conducted by Jia and others in 2002 has reported that with advancement of age, prevalence of overweight, obesity and its co-morbidities were all elevated. (Jia et al.,:2002).***

The prevalence of hyperglycaemia, hypertension and dyslipidemia was two to three times higher among the subjects who had higher Waist- Hip- Ratio (WHR) and Waist Circumference (WC) compared to those with a lower WC and WHR. About one third of the population were more than 60 years of age and higher Body Mass Index (BMI), WC and WHR were related with increased age (Jia et al.:2002).

Overweight and obesity are also the potential risk factors for hypertension and diabetes and different cross sectional studies have clearly shown the association of these factors with hypertension and diabetes. Obesity is a wide spread and growing problem in the world with significant medical, psycho-social, and economical consequences. The prevalence of obesity has been increasing since last few decades and this trend will continue both in developed and developing countries and the obesity has become a major public health problem (Chu, 2005).

Obesity is an important biological risk factor for cardiovascular disease both directly and increasing the risk for other biological risk factors such as high blood pressure, type 2 diabetes, high serum lipid levels. Obesity and low level of education are associated with

other risk factors for CVD ( Cardio-vascular diseases) such as high blood pressure and high cholesterol (Anderson et al., 2006).

Wilking et al. (1988) study report of US shows that isolated systemic hypertension is a highly prevalent disorder and its major determinants are: sex, increasing level of blood pressure and obesity in women. A study done on the elderly subjects in Boston has shown the relationship of physical inactivity and obesity in development of diabetes. Weight gain since 20 years and elevated adiposity may contribute significantly to the rise in blood pressure in normo-tensive individual and has emphasized the importance of weight control throughout adulthood (Yang et al., 2006).

The most important effects of overweight are non communicable diseases, non insulin dependent diabetes, cardiovascular disease and hypertension. The relative risk of these diseases increased with obesity is fairly constant throughout the world. However, data indicate that black people have a higher prevalence, particularly those with type 2 diabetes. (Alleyne & Point, 2004).

Family history and genetic factors are associated with both insulin dependent and non insulin dependent diabetes (Wyshak, 2002). A study done in India focusing to elder subject states that a history of hypertension was found to be an independent risk factor for having undiagnosed diabetes along with male sex and increased BMI. A cross sectional study done in urban area of India has shown the prevalence of hypertension 54.5% and associated factors recorded were higher body mass index and older age and an occupation also has some role in hypertension prevalence (Zachariah & Thankappan, 2003). Similarly, study carried out among the Punjabi Bhatia community has shown significant linear relationship of body mass index with the prevalence of hypertension and diabetes in India (Gupta et al., 2004).

Isolated systolic hypertension is the most common form of hypertension in the elderly and also an important predictor of cardio-vascular morbidity and mortality including coronary artery

disease, congestive heart failure and stroke as well as treatment of elderly hypertensive was found challenging due to its greater likelihood of other concomitant diseases (Lakatta et al., 1993).

A study reveals that only half of the patients with hypertension adhere to treatment and about one third only have controlled blood pressure shows the gravity of the problem and this has created the big challenge to the health care provider (Krousel-Wood et al., 2004). The study of Agyemang states that high blood pressure is an important public health problem in both rural and urban settings and effective public health measures are urgently needed to prevent high blood pressure from becoming another public health burden (Agyemang, 2006).

### **AIMS AND OBJECTIVES**

1. To study the prevalence of high blood pressure (Hypertension) among elderly in an urban setup.
2. To study the associated risk factors for hypertension among the elderly.

Inclusion criteria: Elderly of 60 years and above

### **MATERIALS AND METHODS**

Four health camps were organised at different places in Cuttack, Odisha during October 2011 and February 2015 organised by Rotary Club of Cuttack Mid-Town and Rotary Club of Cuttack Millennium. Door to door campaign was arranged and pamphlets were distributed for information of the public as regards to the arrangement of this health camps. The Doctor members of both the clubs were present and conducted the camps The pathological investigations were carried out by experienced technicians of M/S Satyam Diagnostics. Free medicines were also distributed to the needy and poor patients. About 420 elderly (aged  $\geq 60$  years) attended these camps.

The aged (60 and above) were randomly selected for this study.

The methodology comprised of interview, physical examination, clinical examination and laboratory investigations.

The researcher has attended all these health camps. Data on age, sex, educational status, occupation, family history, literacy status, marital status, personal habits, additional dietary salt intake etc. were collected by the researcher in a well formulated, well structured interview schedule. Also, the information on prevalence of diabetic mellitus, whether on medication or not etc. were collected by the researcher.

The additional dietary salt intake was defined as those individuals who ate more than two pinches of salt per meal excluding the previously added salt to meal during preparation. General physical examination including weight and height, and two Blood Pressure (BP) readings within a gap of 15 minutes was carried out by the physicians. BP was measured using a mercury sphygmomanometer by palpation and auscultation method in right arm in sitting position. Two readings were taken 15 min apart and the average of both the reading was taken for analysis.

Hypertension in this study is defined as systolic BP more than 140 and diastolic BP more than 90 mm of Hg. All subjects on anti hypertension medications or having a prescription of anti-hypertensive drugs were classified as Hypertensive (HT) irrespective of their current BP reading.

Person having systolic BP between 120-139 and / or diastolic BP between 80-89 was labelled to have pre-hypertension. Stage1 hypertension was taken as systolic BP between 140-159 and/ or diastolic BP between 90-99 mmHg. Stage 2 hypertension was taken as systolic BP > 160 and/ or diastolic BP > 100 mmHg. Awareness of hypertension was based on the subjects' report of a prior diagnosis of hypertension made by a health professional.



Current use of prescription medication for lowering elevated blood pressure among hypertensive subjects in the sample was considered as treatment of hypertension; those are under pharmacological treatment, including allopathic or any alternative medicine medications. A patient is in control of hypertension was considered if under pharmacological treatment it was found with an SBP <140 mmHg and a DBP <90 mmHg.

Weight was recorded (to an accuracy of 1 kg) & the height of each subject (to an accuracy of 1 cm.) were measured. Obesity was assessed by calculating Body Mass Index (BMI) using formula ( $\text{wt in kg} / \text{ht in m}^2$ ). Elderly with BMI  $\geq 25$  were classified as overweight.

Diabetes was diagnosed if the fasting blood glucose was  $\geq 126$  mg/dL after an overnight fast for at least 8 hours, or if the participant was taking treatment for diabetes. Impaired fasting blood glucose was diagnosed if fasting blood glucose was 110-125 mg/dL.

The awareness status regarding their own diabetes mellitus was defined as having diabetes diagnosed by a health professional with presence of a prescription, or anti-diabetic medicines possessed by the participant. The treatment status was defined as taking any pharmacological treatment for diabetes. Participants who were already diabetic and taking treatment were considered to have control if the fasting blood glucose was <126 mg/dL.

A normal fasting plasma glucose level is less than 110 mg per dL and normal 2hrPPG levels are less than 140 mg per dL. Blood glucose levels above the normal level but below the criterion established for diabetes mellitus indicate impaired glucose homeostasis. Persons with fasting plasma glucose levels ranging from 110 to 126 mg per dL are said to have impaired fasting glucose, while those with a 2hrPPG level between 140 mg per dL and 200 mg per dL are said to have impaired glucose tolerance. Both impaired fasting glucose and impaired glucose tolerance are associated with an increased risk of developing type 2 diabetes mellitus.

Data were analysed through SPSS package. Tests of significance, Pearson's Chi-square test were used to find out the results. P values <0.01 was considered significant for the identified risk factors and outcome variables.

## RESULTS

Table-1 shows the prevalence of hypertension among the study sample.

**TABLE - 1**

Distribution of study subjects according to Age & Sex (n=142)

Subjects	Male		Female		Total	
	NO.	%	NO.	%	NO.	%
Total Subjects	185	44.05	235	55.95	420	100
Known Hypertensive	29	6.90	39	9.29	68	16.19
Newly diagnosed Hypertensive	31	7.38	43	10.24	74	17.62
<b>Total Hypertensive respondents</b>	<b>60</b>	<b>14.29</b>	<b>82</b>	<b>19.52</b>	<b>142</b>	<b>33.81</b>

Out of 420 study elderly, 142 (33.81%) were hypertensive, and among them 60(14.29%) were males and 82 (19.52%) were females. It is also observed that 68 (16.2%) of respondents have been diagnosed to be hypertensive earlier and 74(17.62%) of respondents were freshly diagnosed to be hypertensive.

**TABLE - 2**  
**Distribution of hypertensive subjects according to**  
**Epidemiological Factors (N=142)**

Epidemiological Factors	M		F		Total	
	No.		No.		No.	
<b>Religion</b>						
Hindu	53	37.32	75	52.82	128	90.14
Muslim	7	4.93	7	4.93	14	9.86
<b>Marital status</b>						
Married	49	34.51	71	50.00	120	84.51
Widower/Widow	11	7.75	11	7.75	22	15.49
<b>Literacy</b>						
Illiterate	23	16.20	61	42.96	84	59.15
Literate	37	26.06	21	14.79	58	40.85
<b>Occupation</b>						
Working	27	19.01	21	14.79	48	33.80
Non-Working	33	23.24	61	42.96	94	66.20
<b>Family Type</b>						
Nuclear	38	26.76	51	35.92	89	62.68
Joint	11	7.75	22	15.49	33	23.24
Joint Extended	11	7.75	9	6.34	20	14.08
<b>Economic Dependency</b>						
Dependent	39	27.46	73	51.41	112	78.87
Independent	21	14.79	9	6.34	30	21.13
<b>*SES</b>						
Upper	2	1.41	5	3.52	7	4.93
Upper Middle	4	2.82	3	2.11	7	4.93
Middle	14	9.86	32	22.54	46	32.39
Lower Middle	21	14.79	17	11.97	38	26.76
Lower	19	13.38	25	17.61	44	30.99
<b>†BMI</b>						
Under weight	4	2.82	1	0.70	5	3.52
Normal weight	18	12.68	31	21.83	49	34.51
Over weight	38	26.76	50	35.21	88	61.97
<b>Substance Abuse</b>						
Yes	6	4.23	1	0.70	7	4.93
No	54	38.03	81	57.04	135	95.07
<b>Diet</b>						
Veg.	14	9.86	19	13.38	33	23.24
Non-Veg.	46	32.39	63	44.37	109	76.76
<b>Exercise</b>						
Routine	3	2.11	3	2.11	6	4.23
Occasional	13	9.15	12	8.45	25	17.61
No	44	30.99	67	47.18	111	78.17
<b>Physical Activity</b>						

*SES- Socio-economic status,	†BMI- Body mass index
(Upper class : Income per month: > Rs 25000.00	
Upper middle : Income per month: > Rs 15000.00 and < Rs 25,000.00	
Middle : Income per month: > Rs10, 000.00 and < Rs 15,000.00	
Lower middle : Income per month: > Rs5, 000.00 and < Rs 10,000.00	
Lower :Income per month: < Rs 5, 00.00)	

From Table-2, it is observed that the majority of hypertensive elderly were female (57.74%), Hindu (90.14), married (84.51%), Illiterate (59.15%), non-working occupation (66.2%), from nuclear family set up (62.68%), economically dependent (78.87%), with middle class of socioeconomic status (32.39%) and with over weight (61.97%).

As regards to life style profile of hypertensive elderly, it is observed that the majority of them were non substance abuser (95.07%), non-vegetarian (76.76%), having sedentary life style (72.54%) and living without any physical exercise (72.54%).

**TABLE - 3:**  
**Association of risk factors with Hypertension**

Risk factors	Hypertensive (N=142)	Normotensive	Chi-Squire	P- Value
<b>Sex</b>				
Male	60	125	0.146	0.706
Female	82	153		
<b>Age</b>				
60-69 yrs.	103	233	4.681*	0.033
70 -79	33	41		
80 and above	7	3		
<b>Literacy</b>				
Illiterate	90	145	1.39	0.238
Literate	52	133		
<b>Diabetic</b>				
Yes	121	23	18.398*	<0.001
No	21	255		
<b>Family history of Hypertension</b>				
Yes	50	17	2.86	0.302
No	92	261		
<b>(Obesity)BMI</b>				
---	88	23	14.684*	<0.001
Normal(BMI < 25 )	54	315		
<b>Sedentary Habit</b>				
Yes	103	129	12.734*	<0.001
No	39	109		
<b>Daily Exercise</b>				
Yes	51	63	9.58*	<0.001
No	91	215		
<b>Diet</b>				
Non-Vegetarian	99	205	8.38*	<0.001
Vegetarian	43	73		
<b>Additional salt intake</b>				
Yes	123	21	10.14	<0.001
No	19	257		

The risk factors found in the study are diabetic, lack of daily exercise, Non-veg diet, sedentary life style, additional dietary salt intake in daily diet and overweight. All of these factors found statistically significant. Sex, education and family history were found not to be statistically significant.

It is also observed that 85.21 % hypertensive respondents also had diabetes mellitus and among normotensive respondents, the prevalence of diabetes mellitus was only 8.27 %. Also, it is observed that hypertension and diabetes mellitus are co-morbid conditions; (chi square =18.398, d.f. =1,  $p < 0.001$ ).

TABLE - 4:

Factors related with usage of antihypertensive medication (n=68)

Study variables	On medication		Not taking medicines		Chi square	P value
	No.	%	No.	%		
<b>Literacy</b>						
Illiterate	9	39%	31	86%	31.07	<0.001
Literate	23	72%	5	14%		
<b>Socio-Economic Status</b>						
Lower Income Group	16	43%	29	94%	41.23	<0.001
Higher Income Group	21	57%	2	6%		

The above table shows the factors related with usage of antihypertensive medication among the respondents those have been earlier diagnosed as hypertensive.

As regards to the practice of taking anti-hypertensive medicine, a significant difference was observed among the lower and higher income groups. It was significantly less among lower income group (Chi square=41.23, d.f.=1,  $p < 0.001$ ). As high as 52.9% of hypertensive patients were not taking any sort of medications. Among these category 86% are illiterate and rest 14% are literate people. The practice of taking medication was significantly higher among literate persons. Low awareness among illiterates indicates

the need for behavioural change and advice as regards to complications associated with hypertension..

Another finding is that about 94% of persons from lower income group were not taking hypertensive medicines in contrast to 6% from higher income group. Thus, not only lack of awareness, financial weakness is also hampering the treatment of hypertension particularly of dependent elderly population.

## DISCUSSION

Out of total 420 respondents, 235 (55.95%) were female. Majority were between 60-69 years (336, 80%) and 10 respondents (2.38%) were at or above the age of 80 years. Out of total respondents, 142, 33.81% of the respondents were hypertensive. This is much higher than 16.34% as reported by Gurav RB, & Kartikeyan S. (2002) and little lower than 37.5% found by Khokkar A. et al. (2001). This finding is in lower side than 58% reported by Parray et al (2008) and Swami et al (2002) and 48% by Prakash et al (2004). Similarly, the study conducted by Datta P.P. et al (2012) reported prevalence of hypertension 53.5% is much higher than the present finding.

It is known that prevalence of hypertension increases with age (20). My study also found the same result. (Chi square=4.681, d.f.=1, p=0.033). Increasing trend of prevalence was observed in the higher age group of 60 years and above in the study population. Higher prevalence of hypertension was also observed in females in the age group 70-79 years in comparison to males probably due to hormonal interaction and associated organic disease.

There was no significant variation in prevalence of hypertension according to sex (Chi square=0.146, d.f.=1, p=0.706). The study by Prakash et al (2004) and Datta P.P. et al (2012) supports this finding.

The difference of prevalence of hypertension among illiterate with that of literate was not significant (Chi square=1.39, d.f.=1, p=0.238). But the use of medication among hypertensive was

significantly higher among literate persons as compared with their illiterate counterpart (Chi square=31.07, d.f.=1,  $p<0.001$ ).

It is also observed that hypertension and diabetes mellitus are co-morbid conditions; (chi square=18.398, d.f.=1,  $p<0.001$ ). Severity of hypertension associated with ageing can be realised from a published report by Indian Council of Medical Research wherein it was stated that nine million out of 63 million older people in the Country are at risk of hypertension. (Shah B, Prabhakar A.K. :1997)

Prevalence of hypertension was significantly more common among obese elderly (chi square=14.684,  $p<0.001$ ) has been observed in my study. The relationship between high BMI and hypertension in the elderly in the current study was in conformity with a number of previous reports. (Singh RB, :1997). High prevalence of hypertension in elderly persons having higher BMI associated with family history has been reported in a recent study conducted in Tainan City. (Lu FH, :2000)

Similarly, sedentary life style, absence of daily exercise, Non-Veg diet, extra salt intake in daily diet were also found to be risk factors for hyper tension and are statistically significant with (chi square; 12.734, 9.58. 8.38 and 10.14 respectively at  $p<0.001$ ). Earlier study reported that the higher the extra salt intake, the greater the incidence of stroke. (Perry IJ, :1992).

A community based cross sectional study was conducted at municipal area of Tarakeswar town, Hooghly district, West Bengal, India during 2012 by Datta, P.P. and others and reported that 53.5% respondents were hypertensive. Prevalence of hypertension was significantly more among higher age group. Hypertension was also associated with Diabetes mellitus ( $p<0.001$ ), cardiovascular diseases ( $p<0.001$ ), cerebrovascular accidents ( $p<0.001$ ) and obesity ( $p<0.001$ ). 38.46% hypertensives were not under medication. Practice of taking antihypertensive medicines was significantly lower in lower income group (30.8% versus 80.6%;



$p < 0.001$ ) and illiterates (34.0% versus 74.8%;  $p < 0.001$ ). Activities of daily living for self-maintenance and level of satisfaction over life were significantly lower among hypertensives. This study supports my findings as regards to use of medicines to control the hypertension and diabetes as one of the risk factors.

Similarly, another community based cross-sectional study was carried out in urban and rural areas of Hyderabad and surrounding villages during 2013 by Aatif Qureshi I and others. They have reported the prevalence of hypertension as high as 39.6% among the elderly. In general, the prevalence of hypertension and overweight/obesity was significantly higher among the subjects with sedentary physical activity and those residing in urban areas. Adiposity in terms of BMI and WC was significantly higher in elderly with hypertension as compared to non-hypertensives. This study supports my findings as regards overweight/obesity and sedentary life as the other risk factors for hypertension.

## CONCLUSION

Old age is not a disease in itself, but it makes the aged person vulnerable to various long term medical problems of insidious onset. Hypertension is one such disease. Others are cardiovascular illness, cerebro-vascular accidents, diabetes mellitus and obesity with all of which hypertension is strongly associated. With the advancement of modern medicine life expectancy has increased, but it has increased the number of elderly in the community. This has ultimately increased the burden of non communicable diseases in the society as a whole. These diseases pose immense economic burden on the nation. Hypertension is in the key position among all the non-communicable diseases. Early diagnosis and regular treatment of hypertension can cut down the prevalence of these diseases.

Measures should be taken to diagnose hypertension and prevent or postpone its complications in this age group. NGOs like Rotary International and Lions International should arrange frequent

geriatric health check up camps in rural areas and provide free medicines to the aged. Government should take steps for supply of cheap life saving drugs.

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# LAPSE OF DIGNITY IN CARE IN THE HOSPITALISED ELDERLY: A FIELD STUDY FROM NAGPUR CITY.

Poorvaali Sur \*

## ABSTRACT

A Study on lapse in dignity of care of elderly in a hospitalised Indian setting was conducted.

Total of four case studies were selected after performing abbreviated mental test score on them to rule out cognitive impairment.

In one case both patient and relatives gave narrations. This study was only one of its kinds, as no Indian studies were found in this direction.

Study also revealed, lack of a structured geriatric care in India, including lack of a political/organisational will in the direction, and the lack of in house protocols for elder care.

The study also points to suggest further studies, in this direction to find out what is undignified to our elder population and the need for more carer versions studies and analysis to make and support robust elder care bundles and deliver them in a dignified manner.

The domains selected for conducting the study as being most closely appropriated to the Indian setting were, eating and nutrition, autonomy, privacy, confidentiality, personal hygiene, communication, pain, physical restraint and manual handling.

**Keywords:** Lapse, elderly, ageism, abbreviated, mental test score and indicators.

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## INTRODUCTION

Over the years of medical practice by the author, it is experienced that a careless attitude is shown towards the dignity of both in patient & outpatient elderly in Indian context.

Undignified care is that which depersonalizes and render a person humiliating, narrowly focused and cause disempowerment of the individual.

During the survey of literature, author could not see any study in this direction focussed on Indian scenario. Thus, a comparison is made of the domains selected with elements of control picked up from overseas Studies & sharpens them to suit Indian cultural and work setting from personal judgement & experience



	Hospital or Indian Study Indicators	Interview
Eating & Nutrition [1]-[2]	Not available	Presentation, Help with eating & Wiping, Choice of Menu.
Personal Hygiene [1]-[2]	Not available	Choice of Sponging or Shower, standard of help (gentle, crude), temperature of water, frequency of bath. Help with toileting
Privacy	Not available	Curtain pulled to ensure Privacy, Sharing of cubicle with person of Opposite Sex. Seeking permission before others not directly responsible is present. Protection of modesty.
Communication [1]-[3]	Not available	Body language, way spoken with, rude staff, touch in appropriate or not .
Autonomy [1],[4],[5],[6]	Not available	Opportunity to express wish, involve in decision making, balance between independent and interdependent, Choice of interacting with any staff on the Floor.
Confidentiality [1]	Not available	Respected at all time or not
Pain [1],[2],[5]	Not available	Dr asked about pain or not. Was it dealt with effectively?
Physical Restraint & manual handling [1]	Not available	Appropriate, applied after explanation and consent or not.

In India aged population will exceed 19 % by 2050. It is the aged sector that often lacks dignity in care. Unless dignity in care indicators is setup, respect for dignity will be a neglected area. Geriatric care is going to be a major requirement in the immediate future as per various reports of social research in India.

Ageism [1] in the attitude of all age group in our societies is firmly embedded. Hence, it is essentially found and reflected in staff attitude at health care establishments. Illness, Isolation, Economic Dependency, Frailty, disability, & lack of Social Security System render many old people vulnerable and less able to press for their right to be respected. There are also heavy pressure on staff working in health concerns that are both times bound and under financial pressures & struggling with inadequate resources. This affects delivery of dignity in care of the elderly.

Minimum standard of care need to be established where they do not exist. Researchers abroad who have conducted studies on this issues feel that failure in maintaining dignity could be because priority was given to target & budget. And ageism is another factor. It comes to light that the Government and bodies governing hospital & Care setting must demonstrate a strong commitment to social care. Proper funding is also required.

Indicators to measure dignity that include common element for any setting as well as indicators specific to a particular setting emerged as a important requirement.[1],[5 ] However the implementation of the indicator must be parallel to maintaining dignity of the staff in the front line. Without addressing this it will be impossible to ensure delivery. Another U.K. Study reported four themes.

- 1) Whose interest matters?
- 2) Right Place Wrong Patient
- 3) Seeing Person
- 4) Influences on dignified care

Above noted Study showed that majority of staff was motivated to represent patient interest. But these were frequently compromised by systemic and organizational factor. A perceived culture of blame, high bed occupancy rate, managing secondary risk and increase specialization and rationalization can all impact on care of older people. Resulting in them being continuing to move in the system.

Also within the observed ward local culture have developed, often in the contest of untenable staffing level and strictly demarcated and hierarchical division of labour. These factors can result in failure to provide continuity of care and care that promote an individual's dignity.

Right Place Wrong Patient refer to the view expressed by all participating staff in the study ,that acute hospital is not the right place for all people.

Upon exploring it is found that the prevalence of this view frequently result is in physical environment, staff skills & education and the organizational processes frequently acting as barriers to delivering dignified care to older people.

Many staff while doing their best are often ill equipped in term of knowledge & Skill to care for older people. Whose Sickness is often compounded by physical & mental co-morbidities? The atmosphere in these wards is very busy with little chance to individual. Also they are often short staffed due to lack of funding. This attitude also perhaps suggests an underline ageism.

The study found that care provision is variable. In no ward care was totally dignified or undignified and variability occurred from ward to ward and within the same ward indifferent shifts at different times of the day.

Care is largely task based and reactive to patient request for help which can result in low self esteem by reducing patient to a state of

dependence. Key element of dignified care include respectful communication, respect for privacy, promote autonomy, [1],[5] and sense of control. Addressing basic human needs, personal hygiene need respectfully promoting a sense of participation, by giving adequate information to help decision making. Promoting a sense of Identity, Focusing on the individual and recognizing were basic human rights.

Also the degree to which staff feels respected by their colleagues, manager, patient & carer is also variable. Role of the floor Manager in promoting respectful work environment is critical. Staffs get demoralized due to organizational factors affecting their own dignity.

In addition, in patient, environment barriers included disempowering nature of acute wards that add to disorientation. Loss of communal spaces leads to boredom, confusion. Also lack of attention paid to care need of older people in educational programmes and lack of training in relation to provision of dignified care are factor

In terms of organizational processes the perpetual movement of older people within hospital was also a contributing factor.

### **Enabling factors of dignified care**

Include need of elder people in educational programmes.

Due attention to age friendly physical environment with safe walking areas and communal areas to improve social interaction.

Gender Specific washing & toilet areas.

Appropriate staffing level.

Sensitive delivery of care that respect patient need for privacy.

Use of Sign board to prevent entry into patient spaces when intimate care is undertaken.

Individual bed curtaining

Polite Communication.

Respectful staff attitude.

Floor Manager who promote integration

Use of Volunteers to assist Staff.

Patient centred organizational policy.

Separate elderly care ward.

To identify realistic indicators for dignity in care from the perspectives of the elderly hospitalized patients,

### **OBJECTIVE**

To identify realistic indicators for dignity in care from the perspectives of the elderly hospitalized patients,

### **METHOD**

This study is based on the case study method. Total four cases have been studied from the different nongovernmental hospitals in Nagpur in between September to October 2014. AMT test has been conducted for the purpose of excluding acute confusing state and dementia.

The name of the patients and the hospitals has been changed for preserving the confidentiality.

Eight domains were randomly identified viz. privacy, use of physical restraints, communication, personal hygiene, confidentiality, autonomy, eating & nutrition and pain.

An electronic Search of several research & study literature was made to identify studies that exposed the elderly perception of dignify of care in hospitals. Narrative accounts were taken & compared with data from some of these studies as measure. In this studies home care, critical care setting were excluded. This is due to

confidentiality issues.

Elderly patient with chronic morbidities, who were hospitalized between September 2014 & October 2014 were asked to answer the questions to measure & reflect the dignity in care that they received.

A case unit of four elderly above 65 years were identified to partake in the study. Abbreviated mental test was carried out in each case to rule out acute confusing state & dementia. A case study method was used.

### **CASE STUDIES**

**Case study1 Background:** Elderly lady, a Dr, 80 years of age, admitted with c/o breathlessness, for evaluation and treatment. She has history of Ischemic heart disease, diabetes mellitus and osteoarthritis with COPD.

#### **Description:**

She lives by herself in a flat, which she owns and leads a retired life. She used to serve in the Govt medical college.

Her only social and emotional supports are equally ailing elderly friends, and fond memories of a bygone era. She feels it was a more humanistic era, where work in hospitals was less mechanical and there was more respect for the sick and the elderly.

An AMT score of 8/10 was found. I then noted her case history of her experience in the hospital against the parameters identified.

Dr Wagh came by ambulance to the hospital. The ambulance staff forgot to put the brakes on the chair and she almost fell in the transfer process. In the casualty, she was changed into hospital clothes, in a shared cubicle with another male patient hurriedly. She had no breath left to protest. Without warning a nurse tied a tight rubber tube on her arm to draw blood and cannulated her without any warning. Another nurse, dug a needle into her radial artery to

draw blood on the opposite arm for ABG Studies. This is a painful procedure.

Her Blood sugar was high, but she did not see a dietician until two days later. Till then she was put on IV fluids containing dextrose, which further increased her blood sugar and resulted in multiple insulin administrations.

She was diagnosed with pneumonia and lay in hospital without sponging for three days. She had to wear diapers for toileting, due to lack of staff. This made her feel, that her dignity was badly hampered. In the night, she overheard, two nurses discussing her spinsterhood status that could easily be heard by others. This made her feel very vulnerable.

**Case Study 2 Background:** Mira a 76, year old lady was admitted in hospital, with c/o fall for evaluation. She has h/o high blood pressure and high lipid profile, for which she takes regular medications. She lives with the daughter and her husband in a house. This was her first ever fall and has left her very shaken.

**Description:**

An AMT examination scored 9/10. I proceeded to take her history. On examination of her case history, I found the following.

In the hospital, at first contact, she laid on bed with her chest exposed to have an ECG, and noticed an older man staring at her breasts through a gap in the curtains. She was given food, which contained hair, and kept fasting overnight into the morning with no counselling that it was for a test in the morning, to be performed fasting. She was glad she had eaten well in the night before. She also had bloods taken and injection given, without prior counselling. Privacy was an issue and manual handling was satisfactory.

She had her sinuses palpated clinically, by a doctor in the morning, without consideration for the pain she had, due to the fall.. She felt her Dr had no time for reassuring her or feeling for her shaken state.

She trusted her medical details would be kept confidential by the doctor but unsure of any staff at a different level, after the lack of sensitivity she observed.

**Case study 3 Background:** Anika, a 76 year old lady, had a fall with loss of speech and unilateral weakness and was admitted for evaluation. She has Dyslipidemia and no other co-morbidities. She is widowed and lives with her unmarried son.

**Description:**

Anika scored 10 in the AMT. Thus was not cognitively impaired. She recovered her speech and weakness within 24 hours. She was told she had a mini stroke, which made her feel very scared. She was given salt less food and sugarless tea and started feeling very weak. Her requests for salted food and sugared tea were brushed aside by the floor manager and nurses, saying these were not used in food at the hospital. Her Dr never asked about her diet. She started feeling very weak. She told them she normally has low BP. And salt would be useful. She finally got her son to get salted food for her, and immediately felt better after.

She felt very cold in the AC and was asked to use the just used blanket of the neighbour who had just been discharged. She felt the hospital had no infection control policy and the blankets were never washed!

**Case Study 4 Background:** Dr Bashir a 65 year old gentleman, widowed an year ago, lives with his daughter and her son. He is diabetic and hypertensive. AMT 9/10

Bashir was admitted following a urine infection, with severe sepsis. He gradually became restless, in hospital, as the oxygen saturation went down..His hands were tied tightly to the bed and he was uncomfortable.. He didn't remember being sponged for days and felt he was not wiped down well after defecation. He felt it was due to no mask being provided to the ward carer.



He felt the oxygen mask was thrust on his face without being asked and a RT tube thrust down his throat, with no counselling prior.

He felt the nurses were loud and everyone ignored the pain from the injections at the cannula site. The daughter tried to intervene, but the in charge nurse was rude and scared her off.

She felt she enjoyed no autonomy, when she was warned off from approaching the floor manager. The hospital had run out of feedback leaflets.

Issues arising from the case studies.

Parameters Issues	Case Study
Eating and Nutrition	Study 1,2,3.
Privacy	Study1&2
Pain	Study 2,4.
Communication	All
Autonomy	Study 4
Physical Restraint& Manual handling	Study 1,4.
Confidentiality	study 1,2
Personal Hygiene	Study2,3,4.

An examination of the case notes revealed no falls assessment sheet in three of the case note. Abbreviated mental test, Examination had been done only in one case note on admission. Implying a lack of structured geriatric care. On analyses of the four case studies, against the parameters for dignity laid out above revealed that the dignity aspect of care was an ignored area.

## CONCLUSION

It is not clear whether this aspect of care is dealt with in the hospital protocols and ignored or it is completely neglected even from there. This could be due to goal related issues, so hospitals are more concerned on faster turnover of patients to keep their earning at a certain level.

The need to explain any procedure before it is performed, to ask about pain, before touching a patient, talk of poor training at induction perhaps coupled with lack of politeness.

The policy of giving salt less and sugarless food to the patient, that too an elderly, without medical input could result in serious deterioration in health of the patient, in cases of low BP or in a diabetic who may be prone to hypoglycaemia, which speaks of neglect and serious lack of communication between the doctors and the floor staff as well as between the patient and hospital carers, who ignore patients factual statements and show lack of concern. The loud discussions about the single status of the elderly patient, make them more vulnerable, and speak of breach of confidentiality in a routine manner suggested by the callousness, and an ageist attitude. The short curtains speak of a careless attitude.

The Major challenge in this study was the access to access more patients & Protocols in place in the number of hospitals approached. It seemed that even the rich corporate hospitals were aware but chose to ignore dignity issues. And hence refuse to take part in the study for fear of being quoted & its implications. This study points to suggest further studies in this direction.

The in hospital experiences of carers is not included in my study. Also, the unit size is small & the vulnerable group and non acute care setting like care home are not included. Also cognitively impaired person are not included.

The elderly are the more vulnerable of our society and in most cases

unable to fight for their rights. They often live alone and lack care even in homes where they live with the family.

Their frailty and vulnerability can be effectively addressed with the hospital as the first point of contact and effective social service network to takeover from there wherever required, whether it is to protect their interests or other wellbeing in their dwellings. This will go a long way in achieving health for all and addressing the overall wellbeing and security of our elderly.

Separate elderly care bundles suited to the Indian setting must be introduced, in addition to separate elderly care wards. Indian studies in this direction will make a much needed beginning.

Insurance of dignity must be taken up as the governments mandate and all acute and non acute care setting should be included.

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- 7 Dignity in care in the clinical setting

# TECHNOLOGY INTERVENTION TO STUDY THE MOBILITY ISSUES OF THE ELDERLY

Sayantani Kayal\*

## ABSTRACT

This initiative is intended for designing a healthcare model for the elderly living alone with the help of tri-axial accelerometer. With age motor functions of human body declines, causing mobility problems. This causes difficulties in the performance of the Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL). The measure of wellness depends on how much independent the elderly are in the performance of ADL & IADL.

In this project tri-axial accelerometer is used to measure the performance of ADL & IADL equated to certain scientific parameters in the bio-mechanics of the body.

With the help of Bluetooth, accelerometer uploads the data in Personal computer. One program has been developed to capture the data and relay it to the care giver (May be a professional, Son, Daughter or any friend).

With several trials, threshold value of bio-mechanical data is defined. If the relayed data exceeds the threshold value, care giver extends medical intervention to the elderly person under observation.

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### Origin of the problem

In the 21<sup>st</sup> century, traditional society in India witnesses rapid disintegration of the family system. In the current scenario, economy is not strong enough to provide matching social security to meet the growing volume of the problems of the elderly. India has around 90 million elderly and by 2050, the number is expected to increase to 315 million, constituting 20 percent of total population. Around three fourth of the elderly are women and 55 percent of them are widows, who are economically poor. Ageing in place is a magnifying compulsion. Pilot study made during this study in a target group of 35 elderly widows in the age group 65-70 reveals the following results, Fall is very common

- i) 1 in 50 fall incidences are fatal
- ii) 1 in 10 incidences of fall is injurious to cause restrictions in mobility and performing ADL and IADL
- iii) Although a few falls have a single cause, the majority of results are caused by impaired postural stability, gait speed variability, decreased muscle strength and greater delay in response time to perform a task.

One of the major forces of morbidity is injury due to fall. This can happen any time, for postural instability is one of the markers of aging. Biological changes occurring with age cannot be averted, but surely something can be done at the behavioral level, we can solidify our claim that behavioral response to a variety of tasks can be improved even when psychosomatic degradation has occurred, by observing the fact that there is very little one-to-one correspondence between measured and observed cognitive status in everyday life. Our survey has shown that there has been an increase in the number of fall prone elderly over the recent past. The standardized tests (TUG and BBS) have been conducted over participants in our lab which have shown poor stance postures control in the subjects. Our participants have also mentioned having difficulties in carrying

out ADL and IADL.

### **Objective**

With time a number of elderly living alone is increasing at rapid rate. In contrast, family care is dwindling. Although, professional care givers are emerging in the market – called Geriatric Animators. But having one Geriatric Animator round the clock for the care of an elderly is a very costly proposition. A more comfortable proposition is time sharing by one Geriatric Animator for N number of elderly. This transpires that remote monitoring of the data on the physical activities / movements is necessary. In the task accomplished during the project, one health care model is developed for the comfort of care givers to elderly person. Attempts are made to collect remotely the data on elderly person posture, energy expenditure per step & movements. By trials, threshold values on the energy expenditure is assessed with the objective is to use this threshold value to measure the excess energy expenditure of the elderly in ADL & IADL and to generate the urgency signal for the care giver for necessary intervention.

## LITERATURE REVIEW

In the Indian scenario, there is no published material. However, elsewhere in the world, there are scholarly publication; some of which are appended below.

The not-so-close relationship between biological aging and age-associated pathologies in humans has been dealt by Hayflick, L (2004) in *THE JOURNALS OF GERONTOLOGY: Series A BIOLOGICAL SCIENCES AND MEDICAL SCIENCES* 59 (6): B547–B550. doi:10.1093/gerona/59.6.B547. PMID 15215261[1].

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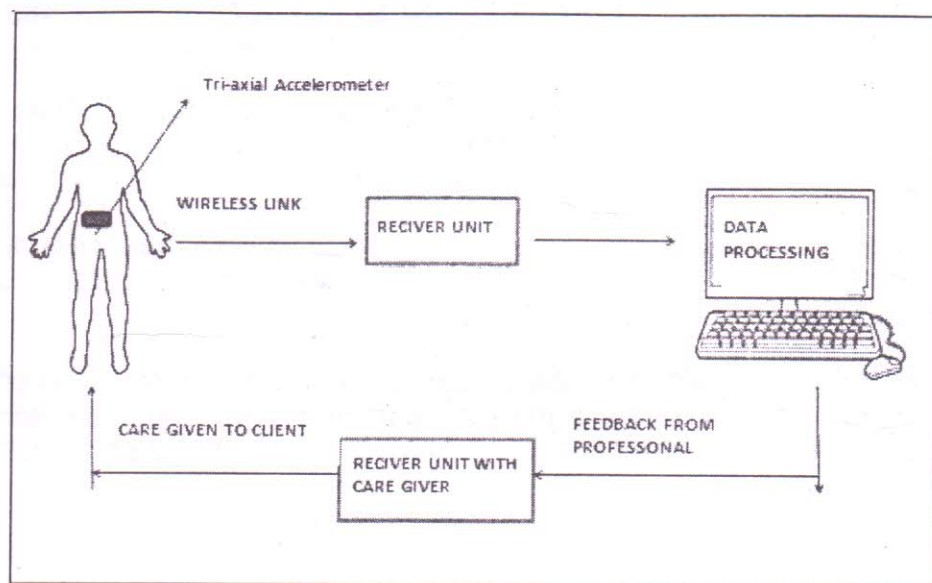
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Roy JE and Cullen KE. have lucidly narrated selective processing of vestibular reafference during self-generated head motion. J Neurosci 21: 2131-2142, 2001[10].

Roy JE and Cullen KE have made comprehensive discussion on vestibuloocular reflex signal modulation during voluntary and passive head movements. J Neurophysiol 87: 2337-2357, 2002[11].

## EXPERIMENTAL SETUP



**Figure.1:** The accelerometer Monitoring System

The accelerometer monitoring system offers different monitors to suit different lifestyles, Fig 1.

It keeps a constant check on the calories, how much fat burned or just see how many steps a person made. Even a simple step counter gives a sense of achievement and motivates to increase daily activity. Thus the problems of performing ADL & IADL are reflected by the parameters of burnt calories.

Accelerometer fits easily into a person's pocket or handbag so it can be use anytime, anywhere. And it's really easy to use with a large display giving all sorts of additional information, including how far a person gone and how many steps he/she has taken. In our initiative, the same to the Care taker.

As the accelerometer device is to be worn for extended periods, ease of use and comfort. It must be simple to put on and can be easily attached to pocket

The accelerometer data were transmitted via wireless link to a personal computer for analysis. Fig 1 shows a block diagram of the system. The data is transmitted from personal computer to the caregiver to take necessary action. One software in Visual basic (VB) with EXCEL has been developed to capture the data and relay the same to the Care Giver.

## METHODOLOGY

Repeated trails are made purposively on 10 senior citizens of different age groups and gender. Age Groups are 60 - 65, 66 - 70, 71- 75, 76-80 and above 80. Out of ten 6 were male and 5 are female having different height, weight and strides. All the participants agreed to be a part of this trail and allowed repeated trials.

Energy expenditure per step is the indicator of the wellness in performance of ADL & IADL.

## RESULT

Respondents Number	Respondents Name	Gender	Age Group
1	Sayantani Kayal	Female	20-29
2	Samar Kumar Chakravarty	Male	60-65
3	Srimoyee Das	Female	20-29
4	Aparna Bannerjee	Female	60-65
5	Jaydeep Karmakar	Male	66-70
6	Anuva Dey	Female	71-75
7	Sapan Bannerjee	Male	71-75
8	Arnav Dutta	Male	60-65
9	Deepika Sen	Female	76-80
10	Krutika Jana	Female	71-75

**Table1:** Responders Details

Respondent Number	Respondent Name	Gender	Age Group	Steps Taken	Distance Walked	Calories Burned	Fat Burned	Calories Burned Per Step
1	Syantani Kayal	F	20-29	8892	3.8	154	9.2	0.002852
2	Samar Kumar Chakravarty	M	60-65	2997	1.0	35	1.9	0.018768
3	Srimoyee Das	F	20-29	547	0.1	6	0.3	0.072943
4	Aparna Bannerjee	F	60-65	4081	2.2	92	5.2	0.005586
5	Jaydeep Karmakar	M	66-70	259	1.2	4	0.2	0.143050
6	Anuva Dey	F	71-75	770	0.2	12	0.6	0.031090
7	Sapan Bannerjee	M	71-75	1363	0.4	24	1.3	0.02300
8	Arnav Dutta	M	60-65	492	3.1	20	3.2	0.045182
9	Deepika Sen	F	76-80	2591	2.5	29	1.8	0.017599
10	Krutika Jana	F	71-75	2360	2.2	21	10.9	0.016182

Table2: Respondents Activity Details

## **WELLNESS – PARAMETERS**

### **Threshold Value**

Wellness Parameters (Threshold Value) is the mean value of 25 trials of healthy persons in the age group 20 to 30 years. All the respondents are healthy and without any records of chronic illness.

In the analysis threshold value of energy burnt per step in performing ADL and IADL is **0.017 calories**.

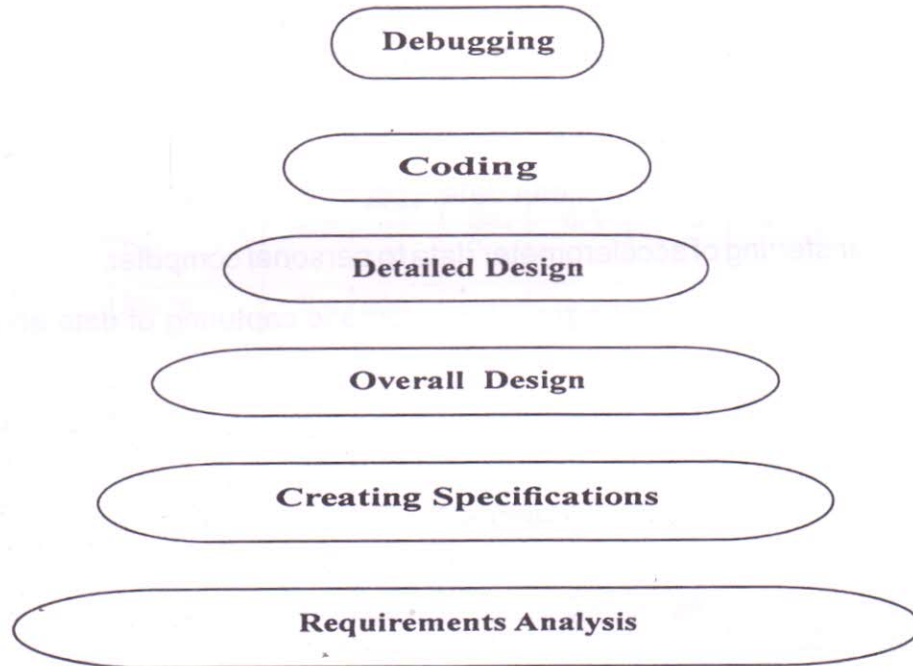
### **Sequence of Work Done**

1. Collection of accelerometer data.
2. Transferring of accelerometer data to personal computer.
3. Development of a program for automatic capturing of data and transmitting same to the care giver.
4. Assessment of the threshold value for generating urgency signal to alert the care giver for medical intervention.
5. Threshold Value for initiating action by Care Giver.

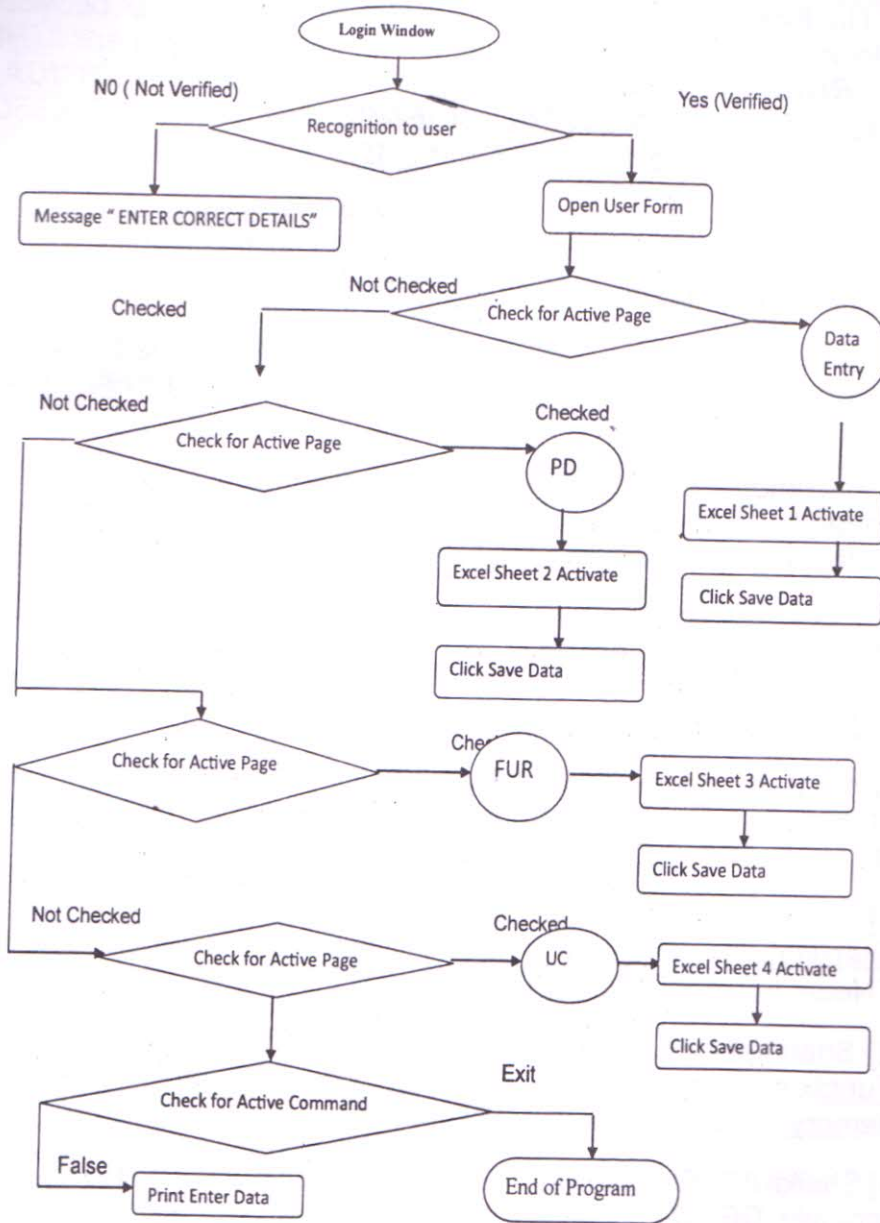
## SOFTWARE DEVELOPED

The analysis part of this dissertation is based on a software developed in **Visual Basic 6.0** in excel platform.

Visual Basic is a windows Programming Software, the programming techniques that make robust, easily Debugged Programs.



# Flow Chart of the system Developed



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## NOTES FOR CONTRIBUTORS

All Contributions and correspondence should be sent to Dr. Indrani Chakravarty, Calcutta Metropolitan Institute of Gerontology, E-1, Sopan Kutir, 53B, Dr. S. C. Banerjee Road, Kolkata-700 010. Contributors are requested to conform to the following norms and those articles that do not conform may not be considered.

Journal articles that deal with the biological, medical, psychosocial, service or other aspects of ageing are welcome.

Articles should be original contributions. Redundancy is discouraged. The articles should be written in English and free of grammatical, spelling errors, repetitions etc.

Articles shall contain: A brief introduction (reflecting the context, the review of relevant work and why the present study was planned) : relevant details of plan methodology, sample, (including standardization properties of tools) etc., the results or findings and their discussion and conclusions arrived at. At the beginning of the article the title and names of authors shall be mentioned. (Their affiliation may be given at the bottom of the page). This shall be followed by a brief abstract of the article (not exceeding 100 words) in single space, bold and set off the margins (inset by two spaces). Two or three key words of the article should also be provided at the end of the abstract separately.

Articles may be computer generated. Two hard copies, double spaced in A4 size (one side only) with wide margin may be sent. The articles would be adjudicated by referees and the result would be communicated. When the article is accepted contributors are requested to send 2 corrected versions of the article (hard copies) and the same in an electronic version in CD, press ready.

(a) References as below in international style (e.g. journal of Gerontology) arranged in alphabetical order in the Text : (Altekar, 1973,

Birren, 1959, Tyson 1983 ....). End list of references:

Baltes, P. B. (1987). Theoretical propositions of life-span