Vol. XXX No.I & II

ISSN - 0971-8060

Edition: 2020

AGEING & SOCIETY

THE INDIAN JOURNAL OF GERONTOLOGY

PUBLISHED BY

CALCUTTA METROPOLITAN INSTITUTE
OF GERONTOLOGY

Vol. XXX No. I & II ISSN - 0971-8060

Edition 2020

AGEING & SOCIETY

THE INDIAN JOURNAL OF GERONTOLOGY

PUBLISHED BY

CALCUTTA METROPOLITAN INSTITUTE OF GERONTOLOGY

AGEING & SOCIETY OF GERONTOLOGY
THE INDIAN JOURNAL

ISSN - 0971-8060

SUBSCRIPTION RATES

Indian (₹):

Institutional - ₹100.00
Individual - ₹ 80.00

Foreign ($):

Institutional - $ 35.00
Individual - $ 35.00

Subscription should be sent to :

The Secretary
Calcutta Metropolitan Institute of Gerontology
E/1, Sopan Kutir, 53B, Dr. S. C. Banerjee Road, Kolkata - 700 010
Phone : 2370-1437, 23711437
e-mail : cmig@rediffmail.com
Web : www.cmig.in

Printed by	:	Dr. Indrani Chakravarty
Published by	:	Dr. Indrani Chakravarty
Name of Owner	:	Calcutta Metropolitan Institute of Gerontology
Name of Printer	:	Swanris, P-19, Raja Rajkrishna Street, Kolkata-700006
Published at	:	E-1, SOPAN KUTIR, 53B, DR. S. C. Banerjee Road, Kolkata-700 010

ISSN - 0971-8060

AGEING & SOCIETY

THE INDIAN JOURNAL OF GERONTOLOGY

Vol. XXX No. I & II Edition 2020

CONTENTS

THIS JOURNAL PUBLISHED REFERRED ARTICLES ONLY

AGEING & SOCIETY : THE INDIAN JOURNAL OF GERONTOLOGY

Editorial Board

This Journal will be devoted to papers on the following aspect of human ageing

- ★ Social Gerontology
- ★ Biology
- ★ Medicine
- ★ Behavioural Science

. K. B. Nayar

In addition we welcome Abstracts, Book reviews & Interviews with senior citizens

Disability and Ageing : A Social Gerontological Study

Saumitra Basu
Indrani Chakravarty*

Abstract

Disability is a functional disorder. For the aged it creates problems both socially and culturally. With the progression of chronological age these problems tend to create depression, ostracism and exclusiveness that percolates even in the daily lives of the gerons.

The present article is an attempt to understand disability and its effects on the elderly population of both urban and rural sector. The data show that in spite of disability a sizeable section of the aged population cope with the problems with much resilience. The results also show that much of these coping mechanisms can be supported within the family as well as externally by the state and the society at large.

** Calcutta Metropolitan Institute of Gerontology,*
E/1, Sopan Kutir, 53B, Dr. S. C. Banerjee Road, Kolkata - 700 010

** This documentative study on disabled aged was done by the research team of CMIG

Key Words*: Ageing, Disability, Coping mechanism*

Introduction

Disability in any form in the life span of a human being is a debilitating factor. To cope with it is a challenge that requires both mental and physical strength. However, in old age as is well-known, mental and physical strength decline. And inevitably old age is a certainty that no human being can escape until he or she dies. But inspite of that old age can also be a rewarding experience full of meaning and purpose (Burgess, 1960). But if needs to he under¬stood how far that can be rewarding to a disabled aged person. This requires critical introspection and in depth research, intact in the Indian context, culturally and socially even normal aged man or woman tends to be over looked in every sphere of life, not withstanding the exceptions. Within this ambit of social marginalization one may easily apprehend the plight of the disabled aged particularly if the person lacks social standing, physical ability along with worsening health.

Disability is also related to good health. With deterioration in health a disabled aged is susceptible to ailments and diseases just alike a normal aged being (House *et al*. 1990), In fact, the personal satisfaction reflects the person's quantum of mental and physical 'functioning irrespective of disability. True, such satisfaction becomes more complex due to the hypersensitive mindset of a disabled, which is not altogether uncommon (Wan, 1982). Thus for the disabled aged ones, a fragile physical health assumes a greater significance in relation to his or her behaviour. There are good many number of disabilities that not only shatter physical health, but also the cognitive function of the brain. This increases with arithmetic progression of ageing and therefore experts in this field tend to assume that 'ageing and disability are very often concomitant' (House *et.al*.1990).

The disabled aged do not form a homogenous group. The problems underneath such disability differ according to the social-cultural millieu. Thus, there exist significant differences in urban and rural, slum and non-slum, male and female disability syndrome. The issues of disability and ageing have not been understood on an all

India basis till date. This field is totally unexplored in eastern and northeastern India. It is our first attempt to make an in depth data based study on this particular aspect. Adequate tools for under standing several disability induced ageing problems are still lacking. Hence, more studies on this particular field are necessary to fill up the gaps. Problems of the disabled aged are multidimensional. It will be too ambitious to cover all the dimensions in a single study.

This study focuses on two important aspects of ageing associated with disability. These are namely - socio-cultural and behavioural. The present study aims to understand the issues of disability and ageing from a social gerontological perspective.

Disability in its Historical Perspective

The historical evidences found earlier with regard to rehabilitation of deformed persons are rather scarce and even somewhat difficult to interpret. But needless to say there were such disabled individuals even at the beginning of the human history, though to that extent them are no written evidences. Whatever interpretations have been done are basically from oral traditions that include poetries, lyrics, anecdotes, tells, artifacts and ruins of monuments. In fact the direct evidences are found from human skeletal. remains that only showed locornotor disability. The earliest anthropological evidence of surgery which can be found in the Smithsonian Institution that goes to show an amputee of 45,000 years of old partial human skeleton. It was an upper extremity amputee (Wilson 1978). Also in the cave paintings in Spain and France there are evidences dating back to 35,000 years, which show the negative imprint of a mutilated hand. These kinds of paintings were also found in New Mexico that suggest the practice of self-molestation in religious ceremonies for appeasing gods (Friedmann 1978).

In the Indian tradition the documentation of prosthesis is found in Rig-Veda, the earliest ancient Hindu scrlupture. The prostheses was done on the Queen Vishplai who lost her leg in the battle, and was

fitted with an artificial leg made of iron (Sanders 1986).

Two other notable references are the two mythological epics, namely, the 'Ramayana' and the 'Mahabharata'. In Ramayana,`Man - thara Queen Kaikeyi's favourite maid was a hunchback though having a considerable influence in the palace intrigues (Mahajan, 1060). And in Mahabharata, king Dhritarashtra could keep his royal status inspite of being blind from the birth (ibid, 1960).

During the Maurya Dynasty (322-299 BC), the position of the disabled people enjoyed some compassion and sympathy. Due to the emerging influence of Buddhism and Jainism ensuring non-vio - lence, charity and benevolence, the deformed and the disabled were offered some vocational rehabilitation. In Arthashastra, Kautilya, the prime Minister of Chandragupta Maurya, advised the state adminis- trators to employ dwarfs, the hunchbacks and otherwise deformed people as political spies as well as secret agents in the royal palaces (Mahajan, 1960).

In the same book we found that theft was punishable with the ampu - tation of a hand. In many of the ancient cultures such punishment - of amputation was meted out to the criminals who were found guilty of crime. The other notable features with regard to disability were religious ceremonies where organs were sacrificed to appease gods, to the high priest and to the kings and other leaders (Padula & Fried - man 1987). In Mahabharata, Ekeilehbya offered his right thumb to his teacher (Guru) Dronacharya (Bosu, 1388).

But the situation changed during the later period. Manu and his famous work (Manusmriti) written between 200 BC and AD 2 depict - ed disability in a seemingly contradictory manner. On the one hand he wanted the society to show compassion to the disabled by way of giving food, clothing and shelter and even urged the state to exempt these people from paying taxes. On the other hand, he formulated dictums by which the disabled were not to be granted social equality neither would be allowed to occupy any position of authority. They

were also disallowed inheritance. This was a period of die-hard Hindu conservatism. Manu went to the extent of equating the mental - ly and physically disabled, the women, the low caste and the aged at per with insects and dogs (Mahajan, 1 960). Interestingly even in the Muslim period including the Mughal era the castigation towards the disabled aged remained the same i. e. social marginalization and the stigma of “caste away”.

In the distant cultures such as Nile and Maya civilization was a fear- ful disposition and sometimes even feared more than death. Social attitudes towards disability remained more or less same in these days as it was in the past. It was believed that it not only affected the disabled person on earth but also in the life after death.

Therefore, from the historical records we find several examples of disability, specifically the physical disability. But we do not find any written records about the disability of old people. This is the historical backdrop, on which the present project with regard has taken up.

Demographic Overview

The Indian Census data of 2001 depict that among the major Indian states, the percentage of aged population in 1991 varied from six percent in West Bengal to about nine percent in Kerala. If we take the female proportion across the various states, it would appear that the women suffer the ageing process earlier as compared to men in two-thirds of the states. The Census data therefore clearly depict that not only is India's population ageing but its characteristics too is undergoing a radical change.

One must also remember that a large number of (about 500 million) world population is designated as disabled. This number is fast growing. In most countries, at least one person out of 10 is disabled either by physical, or by mental and sensory impairment, and at least 25% of any population is adversely affected by the presence of

Indian situation is not far from it. Latest report reveals that about 60 million people are suffering from one or other type of disability that includes multi-various kinds of disability (Ministry of Social Justice & Empowerment, 2000). India has about 16.15 million people suffering from at least one kind of physical disability (about 1.9% of the total population) and out of which 12.37% of the individuals are suffering from multiple physical disabilities. It has been observed that among the different type of disabled persons, the frequency of locomotor disability is highest in both rural and urban areas, followed by the number of persons with visual and hearing disability (NSSO, 1998). The enclosed table shows the data in this regard in a transparent form (Census of India, 2001).

Table.1 Disabled Population by Type of Disability, Age and Sex

Age Group	Total Disabled Population			Type of Disability in Seeing		
	P	M	F	P	M	F
Total	21906769	12605635	9301134	10634881	5732338	4902543
60-69	1918586	1016508	902078	999122	497322	501800
70-79	123462	644499	587963	643850	320885	322965
80-89	475605	235971	239634	242249	116490	125759
90+	146959	65511	81448	72053	31382	40671

Contd....

Age Group	In Speech			In Hearing		
	P	M	F	P	M	F
Total	1640868	942095	698773	1261722	673797	587925
60-69	71612	37968	33644	205691	98728	106963
70-79	35653	19332	16321	168018	84470	83548
80-89	11369	5887	5482	76394	38666	37728
90+	3561	1791	1770	23839	11033	12806

Contd....

Age Group	In Movement					
	P	M	F	P	M	F
Total	6105477	3902752	2202725	2263821	1354653	909168
60-69	532586	324547	208039	109575	57943	51632
70-79	334880	193657	141223	50061	26155	23906
80-89	129406	67023	62383	16187	7905	8282
90+	41638	18520	23118	5868	2785	3083

Source: Census of India 2001, Table C-20

Definition of Disability

There are a number of definitions of disability. For the present purpose, we have considered the universally accepted definition given by World Health Organization (WHO). The definition is as follows-

Disability is defined as “any restrictions or lack of ability (resulting from an impairment) to perform an activity in the manner or within the range considered normal for a human being" (WHO, 1980).

But, for the present contest we have also added some qualifica-tions to make this presentation more practical and situational. For exam-ple, though locomotor impairment has been taken as the basic crite-ria for considering a person 'disabled', we have concentrated on the kind of disabilities that tend to make an old person either practically immobile or incapable of doing any kind of job that may help him or her to fend their lives independently.

Conceptual Framework

The aim and focus of the present study is to look deeply and holisti-cally at the physical and mental positions of the disabled aged popu-lation within a selected location and topographical area. From ancient tirnes, the Indian tradition was to place a special value towards the elders of the society. This practice in letter and spirit has been followed till British colonial rule was established in India. The colonization of the country gave birth to urbanization and industrial-ization that resulted in a division in the population namely the urban and rural. This again in turn changed the value system, which was hitherto monolithic, and village oriented as well as based on typical agricultural societies. Due to this division, the elderlies began to be marginalized and were at many times deprived of their family rights and authorities. The situation continued till India achieved her inde-pendence. The post independence era saw an effective industrial-ization policy and the division between the urban and the rural deepened -

This was the time when the government as a state began to, look at the problems of the elderly in a more positive manner. But, as it appears, most of these policies particularly related to disability remained on paper only. However, it is not only the government, the civil society organizations and the NGOs also looked at the problems of the disabled elderly as if i-t is only a marginal issue.

The conceptual framework of the present study therefore need to be focused on these apathy towards disability and also intend to look

into the ways and means for ameliorating the problem as far as prac - ticable. The posse of literature put below is an attempt to understand the theories related to disability and rationalize them accordance to the demands of the present time.

The other important aspect of the concept is to find out a suitable methodology so that the problem of ageing and disability can be understood from micro level to macro level or in other words in a holistic manner. This methodology will include tools and practices currently in vogue in social sciences and also in gerontology. A suitable hypothesis is framed in keeping with the magnitude of the problem whereby the present researchers intend to look at the issues involving the disabled elderly irrespective of caste, gender, creed and financial position in a given study.

Context of the Present Study

Both the number and the proportion of the aged are increasing all over the world. India is no exception. Discovery of life saving drugs, improved sanitation and nutrition, modern immunization pro grammes have increased the longevity of the population. Longevity has not only increased the age but it has cumulatively added on to the problems of gerons in the form of disability. The joint family system, which was considered to be the best social security for the elderly, has almost withered away, aggravating the problem of disability of the aged further.

This being the context serious researchers need to scrutinize the problems of the disabled aged in a more systematic manner. More over to make the state vis-a-vis the government understand the enormity of the problems, a certain outline of ameliorative measures need to be chalked out with proper rationale and culture construct. The end result, we believe, will yield certain basic truths that may be empirical in nature. This will inter alia broaden the perspective for understanding the problems of disability and ageing both in micro and macro level.

Location of the Study

The city of Kolkata is one of the major metropolis of the eastern region. This is a city, which has been defined as a heterogeneous- one (Redfield & Singer, 1956), which means it has a network of pop-

ulation representing numerous communities, castes, creed and religions. Under these populations, the numbers of aged are on the rise and may be as matching as the Indian elderly population. In this city, the slums and high-rises literally co-exist. And added to this is a plethora of incoming migrants both from Bangladesh and neighbour - ing states. For the present study, Kolkata has been selected as a ideal venue where even in some modest ways a certain amount of ground work has been done by the NGOs and the OSOS (Civil Soci - ety Organizations) with regard to the problem of the disabled elderly. The disability found within these populations will definitely reflect a micro level data depicting the nature and coping mechanism followed by the disabled aged.

For understanding the issues of disability and ageing in a compre hensive manner, we also need to understand the effects of physical location on the issues of ageing within the framework of a rural set up. This led us to select Chakdha in the district of Nadia as the rural area of study. A study as similar as to the urban study in Kolkata will shade a great deal of light on the plight and condition of the disabled aged rural population existing in the area.

Chakdha also has a combination of population reflecting the rural and the suburb. And due to the proximity of its border to Bangladesh a sizeable section of incoming migrants and the elderlies therein are likely to come up for review in relation to disability of the elders.

Both set of data collected will thereafter be compared and matched so as to give us a comprehensive result reflecting the details of disability found within the elderly population in both locations.

Aim and Objectives of the Problem

The aim of the present study is to find out the impact of disability and how far that is impairing the process of adjustment of the aged to the conditions of ageing. In other words, it has to be assessed through this study the quality of life these aged people have attained or suffered. It is significant that no fruitful gerontological study had been hitherto undertaken on the captioned subject of disability. The present study therefore may go a long way to find out the actual state of affairs and

may also help to build a network of effective social measures that can mitigate the problems of the disabled aged in a better manner.

Specifically the study aims to understand the major social, economic and behavioural problems of the disabled aged with emphasis on difference between: three old age categories, gender and location, Emphasis will also be stressed on disabilities that are completely debilitizing. The following aspects therefore have been selected to fulfill the objective of this study.

Social aspect: This mainly deals with socio--demography, back ground characteristics, family life, civic amenities, status and role, family decision making, hobby and leisure, health status and care, network and contact maintenance.

Economic aspect: This includes earning status, source of livelihood, work participation, dependency status, monthly income and contri - bution to the family, source of income, daily and occasional econom - ic care, assets, debts and liabilities.

Behavioural aspect: Family interpersonal relationship, grievances for the lack of basic needs, nature of isolation in the family, loneliness, expectations, opinion and attitude of the younger generations towards the disabled aged and vice versa.

Disability Status: Nature of disability, how far it is affecting the life of the person, nature of social ostracism and the laws helping or regu - lating such disability.

In brief, this study is primarily situational in nature and attempts have been made to analyze the relationship between the attributes. From the actualization of the study a broad general hypotheses has been chalked out in the following manner.

Primarily there is a need to understand the social ambience both in

ence will also reflect the acceptance of the stakeholders in this project. Further, the data collected will lead to substantial understanding faced by the disabled gerons in both urban and rural set up. Thirdly, there is immense possibility of building up a geriatric center that will exclusively deal with the disability syndrome.

In view of the above hypotheses, the following objectives have been framed reflecting certain concrete actions. First of all it is to differenti - ate between normal age related disability and disability of special type that debars the sufferer from performing his or her normal daily routine both physically and mentally. In this context, the other special features that the present researchers intend to look into are the nature of geriatric care available to these crippling disabled aged persons extended by the family, by the neighbourhood and or by the state. The further objective of the study is to find out the alternative rehabilitation process that may be undertaken by the civil society organizations, NGOs and the state. The operative portions of these objectives are as follows:

To find out the types of disability(ies) and its causes

To find out the nature of care extended by the family to such disabled aged

Interpersonal relationship between progressive age and crippling disability

Nature of attention meted out by the neighbourhood, society and the state to the disabled aged

To find out the health care system available to these disabled aged

To formulate a guideline to be followed by the CSOs and the NGOs while dealing with disability of crippling nature.

In short, the answers are expected to reveal the types and causes of disability, health status, overall role and relationship in the family and life-satisfaction of the disabled aged population.

Methodology

Along with area selection a sizable number of disabled elderly persons (60 years and above) were selected by the Stratified Random Sampling (SRS) procedure. As the aged were not a homogenous population care had been taken for an appropriate representation of the following four markers namely: (a) different age group, (b) gender (c) location and (d) disability syndrome. Thus, the total size of the selected disabled aged population is two hundred elderly males and females from two different locations - urban and rural. However, special stress has been given on the disabled people with deformity making them practically cripple and unable to perform activities for daily living (ADL).

Different methods were utilized during the fieldwork for collection of the data on different aspects. Both qualitative and quantitative approaches were used to collect the data. Apart from canvassing a semi-structured questionnaire, other methods used were: reconnaissance, pilot surveys, participant observation, case study (some specific aspects of personal life taken only), focus group discussion and direct observation. The field inquiry was intermittent.

The collected data have been classified in various categories and subsequently coded for analysis except the case history Statistical Package for Social Sciences (SPSS) 10.0 Version was utilized for analysis of the data. Mostly descriptive analyses were made to understand the nature and trend of data.

The analyzed data arranged in different chapters and sub-chapters in this paper are organized as:

1. Socio-Demographic Background of the Disabled Aged
2. Economic Condition of the Disabled Aged
3. Health Condition of the Disabled Aged

4 Family Life of the Disabled Aged

Highlights

The present study as mentioned above had been taken in the metro city of Kolkata and also in the district of Nadia. Though the city of Kolkata pioneers in many walks of life, the studies in human, ageing and disability both in biological and social-cultural spheres are rather scanty. This inadequacy is also reflected in the literature review section. In this context the researchers felt the necessity to know about the changing social-cultural environment that have influenced the disabled aged people in their day to day activities vis-a-vis economic, living arrangements, status and role, decision making power, interpersonal relationships, time utilization, health condition and finally their level of adjustment within the life in the background of today's harsh, modern day living.

It is also to be noted that the current micro study within a limited population, examined some emerging social problems of ageing and disability in urban as well as rural milieu. Therefore, the observations in this study are quite space specific. However, in the Indian context any generalization of the ageing problems for future policy plans will be meaningful if one undertakes further studies on cultural and regional variations. This study creates more scope to understand the cultural role of city as far as problem of ageing and disability is concerned.

To sum up, the present research is to examine emerging situations of the disabled aged people of both genders living in rural and urban set ups. In doing so, the attempt is primarily to remain within a micro level and subsequent conclusions may be drawn thereafter in the macro level. The problems of disability and ageing have been looked into from different angles ranging from social, economic to behavioural. From the analysis of the data it is expected that an overall picture of the heterogeneous disabled aged population will come out in fruitful manner illuminating the future course for the general upliftment of the disabled aged and specially for the crippled aged persons.

Literature Review

The profile of disability can be multidimensional. Our intention is to look at this divergent aspect holistically. But sadly enough very little research work or scholarly papers have been published/presented in the Indian context. Disability, particularly of the aged remains till date an unexplored field of work with very few exceptions scattered here and there. On the other hand in the Western hemisphere, there exists a plethora of scholarly publications covering the subject of disability and ageing or/ and ageing and disability. The subtle difference in nomenclature in actuality means either disability due to ageing or born with disability that gradually curtails a person's mobili - ty / activity et.al with the onset of old age at a particular chronological age cross-roads. It inter alia requires certain basic assumptions regarding disability.

For our purpose we have accepted the postulations in this regard by "Fine & Asch"(1988) who framed certain assumptions admirably. These are related to problems by disabled aged, the feeling of victimization, the adverse group identity and the inadequacy of social support. The other important publication preceeding the above is by Trieschman (1987) where disability as a consequence of ageing has been succinctly described.

The perspective of fruitful employment of the disabled aged and the policy needs to be framed therein has been described elaborately by two scholars (Holland & Falvo, 1990). The paper helped us to under - stand the need assessment factor of the elderly disabled. Prior to this of course, with relation to fruitful employment of the disabled aged a discourse was published by Herbert et. al (1989) stressing the necessity of fruitful partnership with the employer for rehabilita tion and the role of the counse¬lors. Such need assessment of the rural disabled aged has been brilliantly done by Powel and Thorson (1990) and it helped us to understand the problems of disability of the aged in the rural set up of Chakdha, a venue of our research proj -

zation with regard to disability (Isacson, 1991). Along with this a mention must be made of a paper presented by Haveman et.al (1991) where employment pattern and job pattern normally preferred by the disabled have been described. This scholarly work helped us to understand the future feasibility of employment to such disabled elderlies in the Indian context. Another economic aspect of disability is the cost factor in relation to rehabilitation and social maintenance. How the society and the individual members can cope with such phenomena of economic scale is a topic of much importance particu - larly the for the disabled aged who otherwise faces the stigma of a cripple and wasted. A good referral work is done by Holden (2001) detailing the nuances of such public cost. The same author also deals with the effects of disability leading to economic constraints that require both social security measures and medical intervention (Holden, 2002). Though written in the context of 'disabled aged' in the United States it helps us to understand the macro level concepts of economic policy making in relation to disability.

The other prominent aspect is the importance of adjustment. Wheth - er rehabilitation, or employment or need assessment- the disabled aged need to adjust. The models and definitions of such adjustment is the focal point of a paper published in 'Vocational Evaluation and Work Adjustment Bulletin' (Couch *et.al*, 1992). This is an excellent dissertation on the pattern of adjustment in different socio-economic conditions. The models prescribed help us to understand how such adjustments can be made in the Indian family context and neigh bourhood.

Apart from the above, three encyclopedias have also been consulted concurrently to understand the nature of 'disability', 'the rehabilitation process followed in the developed countries', and 'care giving aspects' required for such rehabilitation.

‘Encyclopedia of Disability and Rehabilitation' (Ortodell *et al*, 1995) an excellent collection of papers for understanding the nature of disability and its rehabilitation process. The authors have argued that

disability maybe apparent or hidden. There are three distinct origin of disability. These are — (a) congenital, (b) developmental and (c) acquired. For the present paper 'the acquired syndrome of disability' is of special significance. With the progression of age our disabled elderlies have mostly been affected with in capacitation either through disease or through accident and or injury. In this magnum opus there also are exhaustive papers indicating rehabilitation of the disabled in the three perspectives of medical, legal and social jurisdiction. Though written in terms of general disability, the conclusions and indicative policies, we believe, are equally applicable to the disabled aged elderlies in the Indian context (ibid, 1995).

The Encyclopedia of Aging, Vol.I edited by David Ekerdt (2002) contains some meaningful write-ups with regard to social and economic cost of rehabilitation of the disabled aged in the developed countries. In fact it deals inter alia with political economy of ageing stressing on social productivity of the aged inclusive of the disabled elderlies irrespective of race, sex, ethnicity or religion. In this context another notable paper shows the inadequacy of progressive social movements in India for the rights and economic benefits of the disabled aged. There also does not exist any space with regard to the disabled aged in the political agenda of the country (Ghai, 2006). The same source (Encyclopedia of Disability, 2006) also contains articles on various issues of gender discrimination and disability. Disabled people generally are looked upon 'a-sexual creatures without gender'. They are mostly treated as 'freaks of nature'. The tendency intensifies with upward chronological age and disabled women elderlies thus become more passive, helpless and socio-economically dependent (ibid, 2006). The same author also points out that in contrast to the disabled elderly males, aged women are more in number with hidden or expressive impairments. The other important aspect in this regard is the propensity of these women having degenerative conditions while the elderly male became disabled through injury related events. The same source also points out that incapacitated aged women are less likely to be offered employment in comparison to their male counterparts or the non-disabled women. As a

result of which they will earn less and will be more dependent. Due to disability over all, the elderly women are likely to face neglect and social isolation resulting in depression, loss of self-dignity and stress. They are mostly confined within homebound activities and are gen erally deprived of public and outward looking opportunities (ibid, 2006).

‘Care Giving' is another vital aspect for the disabled aged. It is a two way process that requires patience, perseverance, adjustment and compassion. A care - giver must need to know the concepts of stress- management. The inputs and concepts of such stress-man agement have been discussed in detail in a paper published in the 'Gerontologist’. (Pearlin et.al, 1990). 'Developmental disability' is another crucial area related to ageing. How disability affects ageing and how does such affectation modulate the life course of an aged is discussed in a special issues of 'Journal of Disability, Policy Studies' (Kennedy, 2003). The other noteworthy paper in this regard has been published in 'Aging and Developmental Disability: Current Research Programming and Practice Research' (Hammel et.al, 2001). Jennie Keith et.al in their brilliant discourse 'Aging Experi ence' (1994) have discussed 'the meaning of life course and its impli - cations' in the life cycle of an aged person. Later a global perspective of such life course and disability has been discussed by British author (Priestly, 2001). Both discourses have been very illuminating to understand the Indian context in this regard.

The culture construct of disability need always to be mustered before framing coping strategies and rehabilitation programme, particularly for the disabled aged. It has been shown elsewhere in the historical genesis how the Indian mind set up was culturally bound while treat - ing disability. The disabled aged were no exception to this treatment. In fact the medical, social and legal perspectives even today remain the same due to culture tradition of the country. The entire global situation is changing very rapidly. In this changing world cultural construct and its locational value requires a fresh look vis-A-vis disability of the aged. A joint work on this by three British authors is quite significant (Snyder et.al, 2005).

Finally in this section we may also include the two acts passed by the USA and India respectively. On July 26th American Disability Act (ADA) (1990) was passed signifying a comprehensive declaration of the equality of the people with disabilities. It was first of its kind all over the world. The Indian parliament passed a similar act for per sons with disability in 1995 after a prolonged struggle. The act offers equal opportunities, protection of rights and full participation.

Both act, we believe, are significant achievements that may go a long way for rehabilitation of the disabled aged. But posterity only may say how the Indian Act is going to be implemented for such disabled aged who are till now a miniscule marginal section of the larger society.

In this context we may regretfully submit that very few studies on the disabled aged have been carried in the Indian context. Whatever has been written is fragmentary in nature lacking the perspective of social gerontology. However the books, journals. papers reviewed earlier are not exhaustive enough. Any omission thereof is unintentional.

Method of Study

In determining the method of study an expert committee has been formed consisting of geriatric specialists, orthopedic physician, phys - iotherapist, ophthalmologist, psycho-somatic specialist, ENT spe cialist, social gerontologist, cultural anthropologist and social worker. The idea is to assess a proper evaluation of disability before declar- ing an aged person a disabled one. On the recommendation of this committee we have included the number of disabled aged respon dents under this study.

Selection of the Area

This work has focused mainly two cultural settings namely, urban and rural.

For the operational convenience of the present research work, two areas, from urban and rural set up have been purposively chosen. The idea is to take a balanced view so as to offset any imbalance between urban and rural sectors. Ward No.88 (Kalighat and adjoining areas) of Kolkata Municipal Corporation (KMC) as urban and a rural locale of Chakdha, in the district of Nadia have been selected respectively to understand the issues of disability and ageing in a comprehensive manner. Ward no.88 has been selected for its cultural backdrop and atypical homogeneity of its Hindu population. On the other hand the locale in Chakdha is a combination of rural culture and some of the semi-urban characters that reflect both homogeneity and heterogeneity.

Unit of Observation

The respondents were randomly selected from some of the house holds from the above mentioned areas. All interactive sessions, interviews of the aged were done in their respective household, which were our unit of observation.

Unit of Study

Elderly persons of both sexes had been selected from the house holds of the above-mentioned areas separately. The cut-off age of the respondent was 60 years. Because, at this chronological age those who work in the organized sector take mandatory retirement from services due to superannuation. A total of 200,(m 100 f 100) elderly disabled persons in the respective areas were surveyed. These elderly persons represented both the white and blue colour workers. The workers belonged to either middle or lower, or the lowest economic tiers. In the present context, locomotor impairment' is the basic criterion for considering an aged person as 'disabled'. However, he or she may have some other impairments.

Considering the duration of the proposed survey and the variety of information to be collected, a total enumeration was carried out in the

respective localities. As a result, no such sampling frame was adopt - ed for the present survey. But, as the aged are not a homogenous group, care was taken for an appropriate representation of the following two markers namely; (a) different age groups and (b) gender to obtain a presentable number of elderly disabled persons.

Daily Output

Approximately five (5) respondents were interviewed on each day.

Interviewee

Those disabled aged persons who completed their 60th birthday and more were included as respondent in this survey.

Place of Interview

All disabled aged persons both male and female, were interviewed face to face within their respective residences.

Duration of Field work

Field enquiries were made on all working days. In more than one occasion recall visits to respondents were useful to complete the enquiry on the basis of a structured schedule prepared for the purpose.

Most Sundays and holidays were utilized for scrutiny of the field data collected during the previous week.

Rapport

Establishing rapport with respondent is an integral part in any kind of sociological survey. Full co-operation was received throughout the period of data collection. The purpose of data collection and clarification — were received well by the respondents with a spirit of co-operation.

Data Collection

For the present survey all enquiries were made by a semi-strиc tured interview schedule. Before going to start the survey work, a pilot survey was conducted to get an idea about the responses of disabled aged.

Data were collected by face-to-face interview, direct observation and case study methods. In order to understand the general interpersonal behaviour with the disabled aged, observation method was very useful. This enabled the researchers to take note of the type of respects or neglect extended to the aged by their family members and especially the nature of care extended to the deformed or crippled old people irrespective of gender.

Types of Data
Profile
Respondent
1) 'Socio-Demographic profile' covered by the age, gender, marital status, religion and education level.
2) 'Economic profile' covered by earning status, property ownership, types of home, nature of house, and economic problems faced by the referral groups.
3) 'Health profile' covered by the - nature of health problems, nature of disability including physical deformity and nature of treatment and care giving received by the elderly respondents.
4) 'Civic-amenities' include - water supply, drainage system, ventilation, sanitary fittings and bathroom facilities available to the disabled senior citizens.
5) 'Family Trails' covered by the - living arrangements, availability of separate room, food habits, nature of activities in the household, social activities and also the nature of social problems including the status of deformity faced in their day-to-day life.

II. **Expectation**

i) expectation of disabled older generation from the younger generation.
ii) expectation of disabled older generation from their own age cohort.

Data Processing

The respondents were free to answer without reservation all questions put to them, and also to express their opinion and attitude

regarding the socio-demographic, economic, civic amenities, health problems family life and expectations (both younger and older) as well as their need fulfillment. The information thus collected have been codified for classification into categories and these coded data subsequently have been used for analyses. The confidentiality of individual informant had been strictly maintained.

Analysis

Both manual, computer data processing and analyses were used. And lastly to analyze the data we have used SPSS 9.0 version (Statistical Package for Social Sciences) package.

Major Findings

Socio-Demographic Background of the Disabled Aged

General Background of the Aged

All over the word, the ageing of population is an inevitable conse quence. In the recent times there is adeclining trend of fertility and due to advancement of medicine and also consciousness among the people, mortality rate has declined. As a result of which, the term population ageing has derived a special connotation in demo - graphic aspect of ageing. The present chapter is an attempt to understand some socio-demographic characteristics such as, age, sex, marital status, level of education, religious amd caste affili-a- tion, place of birth, and duration of stay in the present location of the disabled aged respondents in a systematic manner. The above variables have been dealt in the present study as the background material of the disabled aged persons for understanding their day-to-day life both in urban and rural set up. Before detailing the analysis, some of the criteria are given below. These are all physi - cal and socio-economic characteristics dealt with separately.

Ward Boundary and its People

Kolkata Municipal Corporation Ward 88: Kalighat and Adjoining Areas

East - Shyama Prasad Mukherjee Road
West - Tolly's Nullah
North - Rash Behari Avenue
South - The Eastern Railway

The People

The Ward KMC 88 is situated at the heart of South Kolkata. It is not only important for its location; but also its close association with the Hindu temple, Kalighat, which gives the Ward an important position. According to 1991 Census of Kolkata the total population of the Wards is 28,378. Though males are higher in number (14695) in comparision to the females (13,686), the difference in number between the sexes is merely 1012. The total aged population is 3,694 which is approximately thirteen percent of the ward inhabitants. Here also the aged males are numerically superior (1948) than that of the females (1746). The total number of household is 6,119 according to the 1991 Census.

The population of the KMC 88 is more or less homogennous in nature. The dominant group consists of the Hindus. It contains Bengali, Hindi, Tamil and Telugu speaking pupulations. The Bengali population represents different caste groups namely, Brahaman, Kayastha, Baidya, Teli, Tili, Subarnabanik, Sadgop, Napit, Mahisya, Shankhabanik. A major portion of the migrants are from Bangladesh and the rest have come from Uttar Pradesh, TamilNadu, Karnataka, Orissa and Gujarat.

According to 1991 Cemsus, the total number of literates is 20,218. The level of education is higher among the males (11,409) than the females (8,809).

Regarding the occupation of the persons in the Ward, both the males and females are mainly engaged in different types of services. Males are also engaged in business. According to 1991 Census, the occupational pattern of the inhabitants is as follows

Nature of Occupation	Population	Male	Female
Total Main Workers	9578	7950	1628
Cultivators	2	2	-
Agricultural Labourers	8	8	-
Live Stock / Forestry / Fishery / Hunting / Plant Orchard & allied	51	48	3
Mining & Quarrying	14	13	1
Manufacturing / Process / Servicing / Repairing in home Industries	85	71	14
Process / Service in other home Industries	2164	2035	129
Construction	474	470	4
Trade & Commerce	2473	2265	208
Transport / Storage	1042	999	43
Communication			
Other Services	3265	2039	1226
Marginal Workers	105	64	41
Non-Workers	18695	6681	12014

Source : Census of India, 1991

The Ward is connected through surface transport or can be negotiat - ed by the underground Metro Railway. Three Government hospitals namely - Seth Suklal Karnani Medical (SSKM) Hospital, Shambhu Nath Pandit Hospital and Bangur Hospital where the inhabitants mainly fo for treatments. Beside, several nursing homes are situat - ed in the surrounding area. The nearby post office in Kalighat which is not far from the Ward. One cremation ground, Sahanagar Crematorium (Kaoratala Mahasasan) is situated within the Ward doundary. A number of primary, higher secondary and high schools except the Sahanagar High School which is located within, are situated outside the Ward but they are not far away. The Wars is under Tollygunge Police Station.

Age-Sex Distribution

Before an analysis is undertaken with regard to age-sex distribution, it may be mentioned that the cut-off age for the disabled elderly has been taken as 60 years, which incidentally is the retirement age in the organized sectors when the study has been undertaken. Taking that as the parameter, such aged are divided into three age groups, namely, 60-70 years, 71-80 years and 81 years and above.

Table 1.1 Age Sex Distribution

Age Group and Gender	Gender		Total
	Male	Female	
URBAN			
60-70	30(50.0)	30(50.0)	60
71-80	15(53.6)	15(46.4)	28
81+	5(41.6)	7(58.3)	12
S.T.	50(50.0)	50(50.0)	100
RURAL			
60-70	24(46.1)	28(53.9)	52
71-80	16(50.0)	16(50.0)	32
81+	6(37.5)	10(62.5)	16
S.T.	54(54.0)	51(51.0)	100

In the context of population ageing, in most parts of the world, elderly females generally outnumber their male counterparts due to higher life expectancy. India is said to be one of the few countries of the world where this phenomenon is not reflected in its entirety (Gulati & Rajan, 1999). In fact, in the present study, the proportion of displayed aged female preponderance has not been uniformly reflected. Both in the urban and rural centext, in KMC Ward 88 and also in Chakdha respectively, the disabled aged males outnumber their female counterparts both in mumber and percentage in the lower age groups that is 60-70 years. But with the propression of age, the percentage of such aged females increase. However in both areas, these elderly females are marginally more in percentage in the age group of 81 years and above. Inspite of disability, this trend is similar to the national and international perspectives.

Marital Status

Marriage is an essential factor from emotional and social health for both sexes (Khan, 1997). This is significantly true for the disabled elderlies. Marriage after all an institution that begets social status, enhancement of role performances and establishing of a family. For the disabled aged it also ensures health care, economic security and a traditional bound cultural ambience. It is believed that with progres - sion of age, the old, particularly the married disabled fare much better than their single counterparts irrespective of gender (Myers, 1986). The data shown below (Table 1.2 & 1.3) are a reflection of marital status of the disabled elderlies.

The first prominent fact is the higher percentage of disabled elderly widow (urban-46.0 and rural- 70.4 percent) amongst the respon dents. The higher percentages of widows reflect the normal trend of longer longevity of the women. Secondly, the age at marriage of the

Table 1.2 Marital Status

Age Group and Gender	Marital Status and Location : Urban				Total
	Unmarried	Married	Widowed	Divorced / Separated	
Male					
60-70	4(13.4)	23(76.7)	2(6.6)	1(3.3)	30
71-80	3(20.0)	12(80.0)	-	-	15
81+	1(20.0)	4(80.0)	-	-	5
S.T.	8(16.0)	39(78.0)	2(4.0)	1(2.0)	50
Female					
60-70	4(13.4)	16(53.3)	9(30.0)	1(3.3)	30
71-80	2(15.4)	4(30.7)	7(53.9)	-	13
81+	-	-	7(100.0)	-	7
S.T.	6(12.0)	20(40.0)	23(46.0)	1(20.0)	50

women generally is less than their spouse in India. In case of the per - centage of the disabled married males, about nine percent are in the age group of 60-70 years (both areas combined). In urban area, the number of confirmed disabled bachelor (never married) is sixteen percent among the males. And it is twelve percent in females having such disorder who remain spinsters in the urban area. The corre- sponding percentage of aged bachelors with disability is only eight percent in the rural area. There are no spinsters in the same sector.

Statistics, it is said, does not always reveal the true reality. Our data show a distinct prepondence of widowhood among the female respondents of the referral group partcularly with the progression of age. Interpreted rationally, it means these widow disabled aged needs substantial family support for their up keeping and survival. It also reflects a rising dependency syndrome creating more pressure on the family resource. Then again the spinster or the bachelor aged suffering from disablity, need to build their own coping mechanism, which in the Indian context is an uphill task. Our case studies may

Table 1.3 Marital Status

Age Group and Gender	Marital Status and Location : Rural				Total
	Unmarried	Married	Widowed	Divorced / Separated	
Male					
60-70	-	20(83.3)	4(16.7)	-	24
71-80	4(25.0)	4(25.0)	8(50.0)	-	16
81+	-	6(100.0)	-	-	6
S.T.	4(8.7)	30(65.3)	12(26.0)	-	46
Female					
60-70	-	8(28.6)	20(71.4)	-	28
71-80	-	8(50.0)	8(50.0)	-	16
81+	-	-	10(100.0)	-	10
S.T.	-	16(29.6)	38(70.4)	-	54

reveal the true nature of both paradigms i.e, family support and individual coping mechanism.

Education

Education is the hallmark of social development. People who are deprived of education are generally also deprived of economic upliftment. Granaham (1972) pointed out that the well being of the elderly is intimately linked with their education. Longevity also has a strong association with education as literacy levels and life expectancy at birth are highly corelated. It is generally assumed that education directly contributed to personality development. Further more, a common onservation says that the educated elderly have a larger adjustive efficiency than those who are not literate or less educated (Khan, 1997). By looking at the educational background of the disabled senior citizens, one is likely to gain much insight into their present situation. This is what makes literacy and education as strong indicators in the context of thepresent study.

Table 1.4 Level of Education

Age Group and Gender	Level of Education and Location : Urban							Total
	Not Literate	Can Sign only	Primary	Upper Primary	Secondary	Higher Secondary	Graduate & Above	
Male								
60-70	1(3.3)	3(10.0)	11(36.7)	12(40.0)	2(6.7)	1(3.3)	-	30
71-80	-	3(20.0)	3(20.0)	5(33.4)	1(6.6)	1(6.6)	2(13.4)	15
81+	-	2(40.0)	1(20.0)	2(40.0)	-	-	-	5
S.T.	1(2.0)	8(16.0)	15(30.0)	19(38.0)	3(6.0)	3(4.0)	2(4.0)	50
Female								
60-70	3(10.0)	8(26.7)	17(56.7)	2(6.6)	-	-	-	30
71-80	2(15.5)	1(7.6)	9(69.3)	1(7.6)	-	-	-	13
81+	1(14.3)	5(71.4)	1(14.3)	-	-	-	-	7
S.T.	6(12.0)	14(28.0)	27(54.0)	3(6.0)	-	-	-	50

Table 1.5 Level of Education

Age Group and Gender	Level of Education and Location : Rural							Total
	Not Literate	Can Sign only	Primary	Upper Primary	Secondary	Higher Secondary	Graduate & Above	
Male								
60-70	-	6(25.0)	14(58.3)	-	4(16.7)	-	-	24
71-80	4(25.0)	3(18.7)	9(56.2)	-	-	-	-	16
81+	-	5(83.3)	1(16.7)	-	-	-	-	5
S.T.	4(8.6)	14(30.5)	24(52.3)	-	4(8.6)	-	-	46
Female								
60-70	10(35.7)	16(57.1)	2(7.1)	-	-	-	-	28
71-80	2(12.5)	4(25.0	10(62.5)	-	-	-	-	16
81+	2(20.0)	2(20.0)	6(60.0)	-	-	-	-	10
S.T.	14(25.9)	22(40.7)	18(33.4)	-	-	-	-	54

Both tables (1.4&1.5) indicate a rather dismal picture in relation to education level and disability. Though there is hardly any material linkage between the two, there definitely exist gender discrimination particularly in the rural area where non-literate disabled female elderlies are almost twenty five percent of the respondents. In contrast, the urban disabled elderly women fare much- better.Hardly fourteen percent of them are non-literate; whereas eighty four percent of them have completed their primaly education. Of the males in the same sector the position is somewhat improved. Eighty four percent of the disabled males in the urban area have reached the upper primary level. On the other hand in the rural milieu, both for males and females, the education level is limlted to the primary level (male-82%, female-74%).

However, in both areas, the higher education level is quite insignif - icant. Only fourteen percent of the disabled elderlies have crossed the barrier of secondary education and there are only two male graduates (only 4%) among the respondents. Both in urban and rural sector none of the women have gone beyond their primary level of education.

The gender bias found in the data may have been a reflection of the Indian traditional frowning upon women education and being disabled that made these women more exclusive and marginalized in terms of literacy and education In later life. But being deprived of such social right, It made these disabled women more vulnerable in terms of social security, liveihood and coping mechanism entitlement. (Holden; 2001, 2002)This ofcourse is also partially applicable to those male disabled elderlies who being without proper education are likely to face discrete discrimination in the job market and may have to toil hard for meeting their both ends. For acquired disability with the progression of chronological age ill-ed - ucated or non-llterate elderties thus face a stigma of deprivation in their old age for which they may not be held socially responsible.

Religion and Caste Affiliation

According to Malinowski (1958), Creen (1977) and Rowels (1986), religions a sociological phenomenon that regulates the thought process of an individual and it also moulds his/her mode of action and socio-cultural behaviour. Religion thus assumes significance while analyzing the lives and behaviours of the disabled elderly. Such respondents in our study all belong to Hindu religion irrespective of caste, creed and gender. This brings us to the notion of case. Which is still very stringent and operates prominently within the social system in a tradition alway. Disabiity in this caste frame acquires a negative significance as has been pointed out in the 'historical perspective' section. Both Kautilaya's 'Arthrasastra' and Manu's 'Manusmriti' are a testaments to that.To be disabled means one is castigated and for the lower caste it is curse inflicted upon for sins in the previous birth. This traditional outlook is still vogue, may be in a concealed manner. We may now look at the caste patterns in the two study areas.

Table 1.6 Caste Affliations

Location & Gender	Caste Affiliations			Total
	Upper	Other Backward Class (OBC)	Scheduled Caste	
URBAN				
Male	36(72.0)	11(22.0)	3(6.0)	50
Female	32(64.0)	16(32.0)	2(4.0)	50
S.T.	68(68.0)	27(27.0)	5(5.0)	100
URBAN				
Male	30(65.3)	12(26.0)	4(8.6)	46
Female	28(51.9)	22(40.7)	4(7.4)	54
S.T.	58(58.0)	34(34.0)	8(8.0)	100

In both the areas, it may be seen that there are three categories of Hindu Castes. These are Hindu caste (Brahman, Kayastha, Baidya), Scheduled Caste (Bagdi, Dom, Keot, Namasudra, Rajbanshi, Dhoba, Jalia Kaibarta) and other Backward Class (OBC) (Goala, Sadgopa, Satchasi, Teli, Karmakar, Kumar, Sankhakar, Swarnakar, Tambuli, Tili) (Mondol Commission Report of B.C.C. 1991).

Thus in KMC 88, there are sixty eight percent disabled aged who belong to Hindu upper caste. Then twenty seven percent fall within the category of Other Backward Class. The remaining five percent are affiliated to Scheduled caste. On the other hand, in CHakdha, it is also seen that fifty eight percent of the disabled aged belong to Hindu upper caste, eight percent are affiliated as Schedule caste, and the rest thirty four percent belong to Other Backward Calss.

The data reveal the predominance of upper caste disabled elderlies in both areas of study.. In other words these respondents are likely to follow certain common social practices in terms of food, clothing, personal hygiene and even religion. But whether these practices have made them more resilent in terms of disability or the caste restrictions have madethem docile and submissive need to be looked into while analyzing the behaviour pattern of their daily lives.

For the lower caste disabled, in addition to the above, there can also be discrimination and marginalization and a tendency to look down upon them by the larger civil society on both counts of disability and low caste.

Place of Birth

Place of birth has been an important cultural attribute for identifica tion of a person’s habit, ideas, beliefs etc. This phenomenon is all the more true for the disabled aged elderlies in the two areas.

In both venues, there are a number of disabled aged persons who have migrated from their place of birth for various reasons, such as livelihood, marriage, partition and parent’s occupation.

Table 1.7 Place of Birth

Gender & Age Group	Place of Birth and Location: Urban				Total
	Within Kolkata	Outside Kolkata	Other States	Outside India	
Male					
60-70	2(6.6)	20(66.6)	2(6.6)	6(20.0)	30
71-80	-	9(60.0)	-	6(40.0)	15
81+	1(20.0)	3(60.0)	1(20.0)	-	5
S.T.	3(6.0)	32(64.0)	3(6.0)	12(24.0)	50
Female					
60-70	1(3.3)	15(50.0)	2(6.6)	12(40.0)	30
71-80	-	10(76.9)	-	3(23.1)	13
81+	-	4(57.1)	-	3(42.9)	7
S.T.	1(2.0)	29(58.0)	2(4.0)	18(36.0)	50

In terms of place of birth of disabled aged males and females in the KMC 88, it may be seen that sixty four percent of the males and fifty eight percent of the females are born within the state of West Bengal but outside the city of Kolkata. These means this disabled elderlies had to adjust with urben culture of Kolkata. Six percent males and four percent females are from other states and the rest are from the neighbouring country Bangladesh. In this context it may be observed that more percentage of females have migrated from Bangladesh than their male counterparts. For these Bangladeshi male and female disabled elderlies the adjustment factor probably have become severe.

In Chakdha, it is seen that about seventy percent of the respondents both male and female are the original dwellers of Chakdha. Twenty six percent of males and twenty nine percent of females have migrat - ed from the neighbouring country, Bangladesh. No respondents are found who have migrated from other states of India.

Table 1.8 Place of Birth

Gender & Age Group	Place of Birth and Location: Rural				Total
	Within Kolkata	Outside Kolkata	Other States	Outside India	
Male					
60-70	-	12(50.0)	-	12(50.0)	24
71-80	-	16(100.0)	-	-	16
81+	-	6(100.0)	-	-	6
S.T.	-	34(73.9)	-	12(26.1)	46
Female					
60-70	-	24(85.7)	-	4(14.3)	28
71-80	-	8(50.0)	-	8(50.0)	16
81+	-	6(60.0)	-	4(40.0)	10
S.T.	-	38(70.4)	-	16(29.6)	54

This may be attributed to a direct fall out of partition of Bangal at the time of independence. Thus in both areas; there are migrants, rehabilitated persons and local population that indicate a typical characterestic of India.

Duration of Stay

Duration of stay for a long period in a particular area generally influences the person's overall social behaviour. This is all the more true and likely in case of the aged disabled. With regard to duration of stay data have been furnished to indicate the period of stay by such aged in both areas under study.

Table 1.9 Duration of Stay

Gender & Age Group	Duration of Stay and Location: Urban						Total
	Less than 5 Yrs.	5-10 Yrs.	10-15 Yrs.	15-20 Yrs	20-25 .Yrs.	25+ Yrs.	
Male							
60-70	-	-	-	18(60.0)	12(40.0)	-	30
71-80	-	-	-	6(40.0)	7(46.6)	2(13.4)	15
81+	-	-	-	3(60.0)	-	2(40.0)	5
S.T.	-	-	-	27(54.0)	19(38.0)	4(8.0)	50
Female							
60-70	-	-	-	12(40.0)	18(60.0)	-	30
71-80	1(7.6)	1(7.6)	-	5(38.6)	6(46.2)	-	13
81+	-	-	-	-	4(57.1)	3(42.9)	7
S.T.	1(2.0)	1(2.0)	-	17(34.0)	28(56.0)	3(6.0)	50

Table 1.10 Duration of Stay

Gender & Age Group	Duration of Stay and Location: Rural						Total
	Less than 5 Yrs.	5-10 Yrs.	10-15 Yrs.	15-20 Yrs	20-25 .Yrs.	25+ Yrs.	
Male							
60-70	-	-	-	-	-	24(100.0)	24
71-80	-	-	-	-	-	16(100.0)	16
81+	-	-	-	-	-	6(100.0)	6
S.T.	-	-	-	-	-	46(100.0)	46
Female							
60-70	-	-	-	-	4(14.3)	24(85.7)	28
71-80	-	-	-	-	-	16(100.0)	16
81+	-	-	-	-	6(60.0)	4(40.0)	10
S.T.	-	-	-	-	10(18.5)	44(81.6)	54

In Chakdha, majority of the aged irrespective of gender have practically made this place their permanent home. Only eighteen percent of the females are found to be staying at Chakdha for the last twenty / twenty five years.

Like its rural counter part, in the KMC Ward 88, it is seen that about ninety percent (combining 15-25 years+) of the respondents both male and female are staying in the present location for a long time. Eight perrcent of males and two percent of females are staying here for the last five years.

Just like place of birth, duration of stay is also a functioning area where social ambience may play a significant role. The disabled aged themselves have a tendency to become insular but a long association in the neighbourhood sometimes helps to break this insularity syndrome. It will be our endeavour to understand this degree of insulation while analyzing the behaviour patterns of the disabled aged respondents under study.

Highlights

In the previous sections, the component indicators comprise of age-sex distribution, marital status, level of education, religious and caste affilation, place of birth, and duration of stay. The essential idea behind these factors is to bring out in details a significant profile of the disabled aged persons and to understand the problems of disability, ageing and its manifestation in proper perspective. The resultant onservations enumeraeted below have given the researchers an insight within the life framework of the disabled aged. It will go a long way to help to understand the problem of disability in an orderly fashion. The profile componnts are also likely to give the researchers a physical, mental and cultural insight that may go a long way in building certian ameliorative processes to help these disabled elderlies help themselves.

Salient Observations

A sizeable number of male and female are found within the age group of disabled young old i.e 60-65 years.

From the marital status, it has been observed that the disabled married males are predominance in all the age groups. With the onset of ageing the disabled aged females, appear to be outnumbering their male counterpart. Single unmarried male or spinsters with disability are quite few in number.

In terms of level of education in the urban area, there appears to be adequate participation in the primary level. But in thethe realm of secondary or higher education the picture is quite grim.

In the rural areas the functional quality is almost meager be it in the primary level. This regression in education added with acquired disability in later age may cause a irreparable damage to the livelihoods of the respondents.

The level of female education both in the urban and rural area appears to be inconsequential. There is a distinct gender discrimination added with disability.

Caste divisions both in urban and rural areas are quite discrete and dominant. The Hindu upper caste with dsability outnumbers the percentage of such schedule caste and the OBCs.

Majority portion of the disabled aged population are born and domiciled within the state of West Bengal.

Migration from neighbouring country of Bangladesh is quite high and the majority of the disabled migrants belong to the female categor.

In terms of dwelling, majority of the respondents have been staying within the state of West Bengal for a long period. They are expected to adopt the cultural tradition of this state.

Economic Condition of the Disabled Aged

Any enquiry about the financial condition of the aged, be it income, expenditure or savings, forms an important aspect of study of them (Gurumurthy, 1998). Economic aspects with regard to the aged people reflect their condition of survival particularly in an Indian soci - ety where economic disparity is very often rampant (Fernandez, 1982). The present section deals with the economic conditions of the aged with this background in mind. Thus an effort has been maded to understand the financial situation of a disabled aged in terms of changing occupational status, income, earning status, financial dependence, dept, assets, economic care and liability. In analyzing these factors care has also been taken to understand the role and importance of the family in economic matters.

Changing Occupational Status

Change is inevitable in every human life. As people become older they tend to change their previous occupation. Activity status of the aged persons after sixty years of age has been recorded. On many occasions, it has been experienced that with the onset of old age activity status of an individual changes. During fieldwork, three types of situations are observed in both areas.

i) no change in the activity.
ii) change from mobile to sedentary activity.
iii) change from sedentary to mobile activity.

In Chakdha, disabled aged males were engaged either in service or business or in labour activities. After retirement, the service holders utilize their time more in household activities. Whereas, disabled aged who were in business or wage labour, have continued their activties. but after the age of sevety, they gradually have withdrawn themselves fromtheir previous activities. It is primarily by compulsion and occasionally by choice.

But among the disabled elderly females, virtually no change is observed in their activity pattern before and after sixty years of age.

All of them have continued their housekeeping role even in their highest age point. Similar incidence is also observed in the Ward KMC 88. During fieldwork, one interesting point has been observed that service holders after thier mandatory retirement think them selves as aged and mostly restrict themselves in domestic activities. But the business or labour persons even after their sixty years of age tries to continue their previous activities themselves as aged just after sixty years.

Table 2.1 Job Status of the disabled aged
Current and before 60 years of age : Urban

Gender & Age Group	Job Status same as before 60 Years of Age	Different	Total
Male			
60-70	12(40.0)	18(60.0)	30
71-80	--	15(100.0)	15
81+	--	5(100.0)	5
S.T.	12(24.0)	38(76.0)	50
Female			
60-70	28(93.0)	2(7.0)	30
71-80	13(100.0)	--	13
81+	5(71.0)	2(29.0)	7
S.T.	46(92.0)	4(8.0)	50

Table 2.2 Job Status of the disabled aged
Current and before 60 years of age : Rural

Gender & Age Group	Job Status same as before 50 Years of Age	Different	Total
Male			
60-70	7(29.0)	17(71.0)	24
71-80	4(25.0)	12(75.0)	16
81+	--	6(100.0)	6
S.T.	11(23.9)	35(76.1)	46
Female			
60-70	28(100.0)	--	28
71-80	16(100.0)	--	16
81+	5(50.0)	5(50.0)	10
S.T.	49(90.8)	5(9.2)	54

Economic Status

The single most important indicator of a person's economic status is his/her disposable income (Smeeding, 1990). In the present section, the economic status of the disabled aged has been analysed in terms o present source of livelihood, earning status, monthly income and monthly contribution to the family. In passing, it may also be mentioned that the source of livelihood is also an associated factor in terms of income generation.

Table 2.3 Present Source of Livelihood of the Disabled Aged: URBAN

Gender & Age Group	Present Source of Livelihood								Total
Male	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
60-70	3(10.0)	2(6.0)	7(24.0)	--	4(13.0)	10(33.0)	1(3.0)	3(10.0)	30
71-80	--	--	--	--	3(20.0)	9(60.0)	--	3(20	15
81+	--	--	--	--	--	--	--	5(100.0)	5
S.T.	3(6.0)	2(4.0)	7(14.0)	--	7(14.0)	19(38.0)	1(2.0)	11(20.0)	50
Female									
60-70	--	--	--	5(18.0)	2(6.0)	21(70.0)	--	2(6.0)	30
71-80	--	--	--	1(8.0)	2(16.0)	10(76.0)	--	--	13
81+	--	--	--	--	--	5(71.0)	--	2(29.0)	7
S.T.	--	--	--	6(12.0)	4(8.0)	36(72.0)	--	4(8.0)	50

Note: 1-Service, 2-Business, 3-Wage labour, 4-Maid/Cook, 5-Rentier/Pensioner, 6-Household activities, 7-Seeking job, 8-Don't work

Table 2.4 Present Source of Livelihood of the Disabled Aged: RURAL

Gender & Age Group	Present Source of Livelihood								Total
Male	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
60-70	3(13.0)	2(8.0)	2(8.0)	--	2(8.0)	15(63.0)	--	--	24
71-80	--	3(19.0)	1(6.0)	--	2(13.0)	10(62.0)	--	--	16
81+	--	--	--	--	1(17.0)	3(50.0)	--	2(33.0)	6
S.T.	3(6.6)	5(10.8)	3(6.5)	--	5(10.8)	28(60.9)	--	2(4.4)	46
Female									
60-70	--	--	--	--	3(11.0)	25(89.0)	--	--	28
71-80	--	--	--	--	4(25.0)	12(75.0)	--	--	16
81+	--	--	--	--	1(10.0)	4(40.0)	--	5(50.0)	10
S.T.	--	--	--	--	8(14.8)	41(75.9)	--	5(9.3)	54

Note: 1-Service, 2-Business, 3-Wage labour, 4-Maid/Cook, 5-Rentier/Pensioner, 6-Household activities, 7-Seeking job, 8-Don't work

It was found that the disabled elderly individuals under study earn their livelihood from different sources. These are service, business, wage earning, rent and pension. However, a large section of the respondents both male and female has been doing household chores and may be said to have no source of livelihood. Of these population mostly are in the age bracket of 60 to 80 and women are predominant in these numbers.

Therefore, the source of livelihood is available only for a very small popu - lation irrespective of gender. Almost all of these populations barring a single male derive to work further. The overall situations in this urban milieu with regard to sources of livelihood are practically negligible.

Table 2.5 Earning Status of the Disabled Aged: URBAN

Gender & Age Group	Earning Status		Total
Male	**Earner**	**Non - earner**	
60-70	16 (53.4)	14 (46.6)	30
71-80	3(20.0)	12 (80.0)	15
81+	--	5 (100.0)	5
S.T.	19 (38.0)	31 (62.0)	50
Female			
60-70	7 (23.3)	23 (76.7)	30
71-80	3 (23.1)	10 (76.9)	13
81+	--	7 (100.0)	7
S.T.	10 (20.0)	40 (80.0)	50

The situation in the rural area in the same vein is no better. Here also the majority of the disabled population is involved in household activi ties where the women far outnumber their male counterparts. These activities may include sweeping, cooking, cleaning etc. Here the age group is also spread over from 60 to 80 years and a very negligible sec - tion is above 80. No disabled female has an independent source of livelihood and a small section of the disabled males are engaged in service, business or wage labour. The overall situation in the rural area with regard to livelihood is concerned may be described as dismal.

Table 2.6 Earning Status of the Disabled Aged: RURAL

Gender & Age Group	Earning Status		Total
Male	**Earner**	**Non - earner**	
60-70	9 (37.5)	15 (62.5)	24
71-80	6 (37.5)	10 ((62.5)	16
81+	1 (16.6)	5 (83.7)	6
S.T.	16(34.8)	30 (65.2)	46
Female			
60-70	3 (10.7)	25 (89.3)	28
71-80	4 (25.0)	12 (75.0)	16
81+	1 (10.0)	9 (90.0)	10
S.T.	8 (14.8)	46 (85.2)	54

The change in status of activity particularly after 60 years is an indicator of basically stability or performance in daily domestic life. In the urban mileu, it has been found that overwhelming majorities of the male respondents between an age group of 60 to 80 have switched their previous activity status to some other new modifications, which are quite different in nature. However, in case of females, the picture is opposite. Here the majority of the women have stuck to their activities and switching to different sphere of activities is practically absent.

The picture in terms of rural population bears the same trend as found in the urban respondents. Majority disabled males switched their activity zones and majority of such females retained their previous activity.

Therefore, in both sections of the urban and rural disabled aged population, the females tend to follow a status queue ante, whereas the males prefer to opt for differentiation in their activities.

Economic Care

It may be reiterated that care and concern are integral with ambiance in family. Bulk of the needs of older people are met within the family itself, therefore family makes primary support system to the aged (Mintern and Lambert, 1964).

Table 2.7 Dependency Status of the Disabled Aged : URBAN

Gender & Age Group	Dependency Status			Total
Male	**Independent**	**Partial Dependent**	**Full Dependent**	
60-70	12 (40.0)	4 (13.0)	14 (47.0)	30
71-80	--	3 (20.0)	12 (80.0)	15
81+	--	--	5 (100.0)	5
S.T.	12 (24.0)	7 (14.0)	31 (62.0)	50
Female				
60-70	--	7 (23.0)	23 (77.0)	30
71-80	--	3 (23.0)	10 (77.0)	13
81+	--	--	7 (100.0)	7
S.T.	--	10 (20.0)	40 (80.0)	50

Table 2.8 Dependency Status of the Disabled Aged : RURAL

Gender & Age Group	Dependency Status			Total
Male	**Independent**	**Partial Dependent**	**Full Dependent**	
60-70	7 (29.0)	2 (8.0)	15 (63.0)	24
71-80	3 (19.0)	3 (19.0)	10 (62.0)	16
81+	--	--	6 (100.0)	6
S.T.	10 (21.8)	5 (10.8)	31 (67.4)	46
Female				
60-70	--	3 (11.0)	25 (89.0)	28
71-80	--	4 (25.0)	12 (75.0)	16
81+	--	1 (10.0)	9 (90.0)	10
S.T.	--	8 (14.8)	46 (85.2)	54

In other words family is the main pitter on which the disabled aged are primarily dependent. The tables (2.7 & 2.8) clearly demonstrate the nature of dependency. Daily and occasional economic needs of the disabled aged were thoroughly observed during fieldwork. Daily and occasional economic need may be understood as Financial expenditures that are incurred daily, such as, pocket money expens - es required for daily habits, buying medicines, money for ritual per-

formances and miscellaneous other expenses including such other periodical expenditures like tours, sudden medical crisis and family occasions, gift etc. The entire support system generally falls on the family where no reciprocation has been observed (Basu, 2006). But looking at the dysfunctional status of the aged reciprocation appears to be a wishful thinking.

Table 2.9 Daily Economic Care Giver of the Disabled Aged : URBAN

Gender & Age Group	Details of Relations Provide Daily Economic Care (Only Partial and Full Dependent)							Total
Male	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
60-70	2(11.1)	13(72.3)	--	--	2(11.1)	1(5.5)	--	18
71-80	--	10(66.6)	--	2(13.3)	1(6.7)	1(6.7)	1(6.7)	15
81+	--	3(60.0)	--	1(20.0)	--	--	1(20.0)	5
S.T.	2(5.3)	26(68.5)	1(2.6)	2(5.2)	3(7.8)	2(5.3)	2(5.3)	38
Female								
60-70	7(23.4)	16(53.4)	--	2(6.6)	3(10.0)	2(6.0)	--	30
71-80	--	8(61.6)	1(7.6)	2(15..4)	2(15.4)	--	--	13
81+	--	4(57.1)	--	1(14.3)	1(14.3)	--	1(14.3)	7
S.T.	7(14.0)	28(56.0)	1(2.0)	5(10.0)	6(12.0)	2(4.0)	1(2.0)	50

Note : 1-Spouse, 2-Son, 3-Son's wife, 4-Unmarried daughter, 5- Married daughter, 6- Grand Son, 7- Neighbour

Table 2.10 Daily Economic Care Giver of the Disabled Aged : RURAL

Gender & Age Group	Details of Relations Provide Daily Economic Care (Only Partial and Full Dependent)							Total
Male	**1**	**2**	**3**	**4**	**5**	**6**	**7**	
60-70	--	12(70.6)	--	--	1(5.8)	4(23.6)	--	17
71-80	2(15.4)	8(61.5)	--	1(7.7)	1(7.7)	1(7.7)	--	13
81+	--	3(50.0)	--	1(16.6)	--	--	1(16.6)	5
S.T.	2(5.6)	23(63.8)	1(2.8)	1(2.8)	2(5.6)	6(16.6)	1(2.8)	36
Female								
60-70	3(10.7)	17(60.8)	1(3.6)	2(7.1)	3(10.0)	2(7.1)	--	28
71-80	--	10(62.6)	--	2(12.5)	3(18.7)	--	1(6.2)	15
81+	--	6(60.0)	--	1(10.0)	1(10.0)	2(20.0)	--	10
S.T.	3(5.5)	33(61.2)	1(1.8)	5(9.3)	7(12.9)	4(7.5)	1(1.8)	54

Note : 1-Spouse, 2-Son, 3-Son's wife, 4-Unmarried daughter, 5- Married daughter, 6- Grand Son, 7- Neighbour

Satisfaction with Monthly Expenses

The Phenomenon of dependence on others and its implications are closely associated with aged person's capacity to earn. For the disabled aged this is all the more true. As a consequence of this phe - nomenon, the issues of satisfaction or dissatisfaction related to per- sonal monthly expenses become obvious. In fact, the level of satis faction is not independently gained. Rather in most of the instances, this satisfaction appears to be concocted. On the other hand, the dissatisfaction level shows distinct loss of power and effort. Thus, we may say that the cost of dissatisfaction is much higher than the rewards associated with satisfaction (Basu, ibid). This syndrome of imbalance is more pronounced even amongst the disabled aged who are earning something or other by way of pension, rent and interest on savings.

Assets, Indebtedness and Liability of the Disabled Aged.

The other aspects of financial condition are the asset, indebtedness and liability of the aged under study Asset, movable or immovable, however insignificant, is a resource that can always be converted into money income in time of emergency (Schultz, 1980).

Table 2.11 Assets of the Disabled Aged

Area & Gender	Nature of Asset						
Urban	House	Land	Cash	Jewellery	Insurance	Utensils	No Asset
Male (n=50)	13(26.0)	3(6.0)	7(14.0)	--	9(18.0)	--	18(36.0)
Female (n=50)	2(4.0)	1(2.0)	1(20.)	7(14.0)	--	5(10.0)	34(68.0)
Male (n=46)	17(36.9)	9(19.6)	--	--	2(4.3)	5(10.8)	13(28.4)
Female (n=54)	3(5.6)	5(9.2)	--	4(7.4)	1(1.8)	11(20.4)	30(55.6)

Indebtedness

The nature of indebtedness amongst the disabled aged has an indirect relationship with the previously noted asset ownership as well as the nature of liabilities. The latter will be discussed at the end of the section. It is observed that very few of the disabled aged have taken loan from bank or employer or are indebted to friends, neighbours and kin. Such indebtedness was due to reasons like domestic matters including family maintenance, daughter's marriage, medical expenses and also business purposes. However, this kind of indebtedness has been found in general among the disabled aged who may be termed as financially deprived. The situation in both the areas irrespective of gender is identical. The other noted feature about indebtedness is the absolute necessity where family support is practically absent and the disabled aged respondents are somewhat forced to fall into a debt-trap perhaps in spite of his or her unwillingness. Here also we may refer the situation of these aged disables as nothing but to urgent incidences of situation beyond their control.

Table 2.12 Indebtedness of the Disabled Aged

Age Group and Gender	Gender wise Indebtedness					
	Male		Sub Total	**Female**		Sub Total
	In Debt	No Debt		In Debt	No Debt	
Urban						
60-70	10(33.3)	20(66.7)	30	7(23.3)	1(3.3)	30
71-80	5(33.3)	10(66.7)	15	3(23.0)	-	13
81+	--	5(100.7)	5	--	-	7
S.T.	15(30.0)	35(70.0)	50	10(20.0)	1(2.0)	50
Rural						
60-70	5(20.8)	19(79.2)	24	7(25.0)	21(75.0)	28
71-80	3(18.7)	13(81.3)	16	2(12.5)	14(87.5)	16
81+	--	6(100.6)	6	--	10(100.0)	10
S.T.	8(17.4)	38(82.6)	46	9(16.6)	45(83.4)	54

Liability

In spite of economic dependence and Indebtedness, an elderly person very often has to bear some kind of liability(ies) even at their twilight years. Very often, he/she has to bear these liabilities by com - pulsion. Once more the disabled elderlies irrespective of gender are no exception to this. In comparison to indebtedness, liability appears to be much more in dimension in both the areas under study, For transparency and lucidity, the liabilities have been divided into three broad categories, namely, socio-economic, health and assorted liabilities of various natures. Of these, the socio-economic liabilities comprise of unfulfilled education of children, daughter's marriage, maintenance of widow/widower parents and widow daughters; health and assorted liabilities of various nature. The situation is common and similar in both the areas and is commensurate with the Indian family tradition. The elderly male aged in spite of his disability is supposed to bear the burden of these socio-economic liabilities and here his old role model of family mentor remains unchanged. Need less to say, such continuity of role does not reflect his old authority and in a sense, this continuity is rather paradoxical (Basu, ibid).

The other interesting feature is the gradual decline of these liabilities with upward progression of age and this social gerontological obser - vation is also applicable to the disabled aged under study. It is quite logical because of two factors. The major factor is the loss of role importance that is headship of the family, which very often occurs to an aged specially to the disabled one who has crossed the threshold of old-old age (70 years and above). The second factor is the natural ageing infirmity more pronounced due to disability, which also is an inevitable fact with the progression of chronological age.

The three subsections of assets, indebtedness and liability in an amalgamated manner reflect the other side of the financial aspect wherein one may understand the pecuniary conditions and -con straints of a disabled aged person particularly in the Indian traditional family background. The extra-ordinary situation is the fact that even having assets a disabled aged cannot behave as he/she could have

in his/her younger days. Neither he/she can avoid or shrug off liabilities nor he/she can have the freedom of taking loans whenever personal contingencies arise. Such artificial role models do not signify a better position of these disabled aged within the family ambience. The income and expenditure pattern shown earlier in this chapter therefore sometimes looks contradictory in relation to asset, indebtedness and liability. But at a closer look, it may be observed that this is quite in keeping with the Indian family tradition where elderlies even with disability are supposed to sacrifice for the sake of the next generation. In fact the old Indian concept of 'Activity Theory' consisting of the 'Chaturashram' where a person is supposed to give away all his assets once he attains the age that is reflective of 'Banaprastha' (Radhakrishnan, 1996) which in the present parlance means the beginning of 'old-old' age. It would have been interesting to know how these old-old people with disability did manage to survive. Alas, there is no written record of that.

Highlights

The salient observations from this chapter are as follows:
Economic dependency gradually increases with the onset of old age. For the disabled aged, particularly for the women, the dependency is more pronounced because of the marginalization their status. But there is a sharp of difference between the two Wards. The disabled gerons of both sexes in KMC88 have a comparatively better economic status than the rural areas under Chakdha.

The rate of old age dependency inclusive of disability is very high in both the areas.

Both regular and occasional costs of economic care are borne by sons in general. But such care by spouse, grandchildren, married daughters and in few cases by charity are rather negligible.

The disabled elderly males earn their livelihood from several sources, namely, pension, savings, or from son/daughter's help. Such elderly females on the other hand depend more on sons and daugh-

ters (both married and unmarried) in the two areas.

The source of income of the disabled elderly persons, particularly of the males in the two areas, is basically their current occupations. In case females, son or daughter's help is their only source of earning. In spite of their insignificant income, disabled aged men and women in both areas contribute mostly a paltry amount to their respective family for maintenance.

Very few of the disabled aged in both areas have some kind of debt, which were incurred due to family maintenance, daughter's marriage and for medical expenses.

A large number of disabled male and female aged do have some kind of assets in both the areas irrespective of gender. But they neither have direct access nor do they have the control over these assets.

A small number of the disabled gerons do have some liability, such as, unmarried daughter's marriage, care to ailing spouse or handicapped member. Both the sexes are forced to bear these liabilities, though the number of disabled aged females in this respect including the ever-dependent ones are rather less.

Health Condition of Disabled Aged

There are variables of disability and also a number of definitions. However before we define disability one has to understand whether 'disability and old age' is synonymous or disability in itself generates old age even in a premature stage. In our opinion, both are partially true and our case studies have proved it in a purposeful manner. For the present, we will accept the fact that disability by and large is a direct product of senescence.

Disability

For defining kinds of disability for the present purpose, we have followed the specific criteria of National Sample Survey Organization

(NSSO). The criteria includes, vision, hearing, locomotor, speech and memory failures.

Visual disability - For the present survey, visual disabled include (a) those who do not have any light perception (both the eyes taken together), (b) those who have light perception but cannot correctly count fingers of a hand (with spectacles / contact lenses in the case of those who are normally using these) from a distance of 3 meters (or 10 feet) in good day light with both eyes open. Add to this the colour perception changes and cataracts (Mahajan, 1987) develop.

In the applied fields of Kolkata and rural Chakdha, it has been found that disability regarding vision is not at all severe. However, the disability is affecting the women more than their male disabled counterparts.

Speech disability - This refers to person's inability to speak properly. Speech of a person is judged to be disordered if the person's speech is not understand by the listeners, draws attention to the manner in which he speaks and is aesthetically unpleasant. Persons with speech disability include those who cannot speak, those who peak only a limited number of words and those with loss of voice. It also includes those having speech but defects in speech such as stammering, nasal voice, hoarse voice, discordant voice and articulation defects.

In both fields of application, it has been found that the distortion in speech is proportionately upward with the advent of advancement of age. In other words, the speaking ability of the old prople gradually gets thickened, sometimes stammered and sometimes blurred. This has been generally found in all disabled aged population under study.

Hearing disability - This refers to persons' inability to hear properly. Hearing disability is to be judged taking into consideration disability of the better ear but without taking into consideration the use of hear - ing aids (i.e. noting the position obtaining for the person without the aids that may be used).

Severe hearing disability may begin to occur from early old age

(60-70 years) and then can rise upward in the middle (71-80) and late old ages (81+). In fact loss of hearing in the Indian society is also a matter of stigma and ridicule.

From the data, it has been found that in Kolkata hearing disorder is found amongst seventy five percent disabled aged persons irrespec - tive of gender. Whereas in rural Chakdha, this percentage is roughly eighty percent. It seems that the rural disabled aged population is suffering from hearing disability syndrome marginally more than that of the urban counterpart. This is somewhat surprising if we take note of the fact that noise pollution is more rampant in the city of Kolkata than that in the rural Chakdha.

Locomotor disability - Persons having locomotor disability are (a) Those with loss pr absence or inactivity of whole or part of hand or leg or both due to amputation, paralysis, deformity and dysfunction of joints and (b) those with physical deformities in the body (other than limbs) which do not affect normal movement such as hunch back, deformed spine etc.

Data show that the locomotor disability is more pronounced among the female respondents tha their male counterparts. Just the hearing disability, locomotor disability also begins at the early old age and is aggressively compounded as the chronological age progresses.

Memory disability - There are two types of memory. one is working or recent memory and another id past memory. If a person loses either or both of these, then he or she may be termed as disabled in memory.

In our field study again it has been found that loss of memory is more aggressive and pronounced in the late old age than that of its occur - rence in the early old age. This is true for both the rural and urban set up. Here also a marginal gender differentiation has been observed. Elderly disabled women are more prone to memory loss than the disabled old men. Percentage sometime stands at eighty percent of the total respondents irrespective of gender.

Table 3.1 Nature of Disability

Location Gender and Age Group	Nature of Disability - Rural				
	Visual	Speech	Hearing	Locomotor	Loss of Memory
Male					
60-70 (n=24)	65.0	20.0	67.0	60.0	30.0
71-80 (n=16)	80.0	30.0	80.0	65.0	35.0
81+ (n=6)	100.0	45.0	100.0	70.0	50.0
Female					
60-70 (n=28)	60.0	25.0	60.0	70.0	25.0
71-80 (n=16)	85.0	30.0	65.0	90.0	35.0
81+ (n=10)	90.0	40.0	75.0	100.0	55.0

In rural Chakdha, it has been found that both sexes at early old age (60-65 years) are affected by vision and locomotor problems. The loss of memory generally occurs at a later age and the hearing prob - lem has been found t a very late age. Thus, the problem of hearing is rather less in all the age groups, irrespective of gender. Similarly, in KMC88, vision and locomotor impairments generally have occurred amongst both the sexes in their early old age. There is a gender difference, which is quite marginal, and one may observe that the disabled elderly females suffer more with regard to these two impairments than their male counterparts.

Table 3.2 Nature of Disability

Location Gender and Age Group	Nature of Disability - Urban				
	Visual	Speech	Hearing	Locomotor	Loss of Memory
Male					
60-70 (n=30)	60.0	25.0	58.0	40.0	20.0
71-80 (n=15)	75.0	31.0	63.0	55.0	45.0
81+ (n=5)	100.0	40.0	77.0	72.0	75.0
Female					
60-70 (n=30)	62.0	15.0	52.0	65.0	25.0
71-80 (n=13)	70.0	25.0	65.0	80.0	55.0
81+ (n=7)	100.0	32.0	80.0	100.0	80.0

The same gender difference is also found with regard to loss of memory. Elderly disabled females suffer more from loss of memory but that too old age. The loss of hearing is also found much less in this Ward, that is, KMC88, which is also the phenomenon in rural Chakdha. All five impairments occur to the aged disabled elderly irre - spective of their gender and age group. All impairments tend to rise proportionately with the advancement of chronological age.

Health is an important aspect in every stage of human life. For sev- eral reasons, health needs of older adults are different from others. This is all the more applicable to the aged disabled under study. The physical and mental conditions of these people do not remain what these used to be in their earlier life. Infact, with the progress of age the ailments they suffer began to be more complex due to the hyper - sensitive nature of the disabled aged with regard to personal health and well being (Wan, 1982). Keeping this background in mind the present researchers have taken a special care while studying the health aspect of the aged disabled. Besides health status, health care is also a major area of concern for the elderly people. In a wel- fare state like India, there are no separate health care services for the aged and particularly for the disabled ones who get very scanty social support from the government and the civil society. However, the absolute number of the elderly persons (60 years and above) in the country is increasing day by day. Such being the fact it is now high time that the elderly in India should also be provided with neces - sary social security benefits, which also must include general health care for the aged disabled. Thus, in this section, an attempt has been made to understand the present health status, number of ailments, nature of minor and major health problems, nature of impairments, nature of chronic diseases, type of treatment, place of treatment, regular health care, care during illness and lastly medical expenses of the population under study. These information will lead us to understand the health status of the disabled aged in a better per spective and definitely throw enough light for formulating the right kind of ameliorative measures for the care of the disabled senior citizens in general.

Present Health Condition

Good health is an indicator of happy and satisfied life irrespective of age. But for the old persons, to remain in good health is all the more necessary for their survival in life. This is true in general but is an absolute necessity for the disabled aged.

Table 3.3 Present Health Condition

Gender & Age Group	Present Health Condition - Rural			Total
	On the Whole Good	Minor Problem	Major Problem	
Male				
60-70	16(66.7)	5(20.8)	3(12.5)	24
71-80	6(37.5)	4(25.0)	6(37.5)	16
81+	1(16.6)	2(33.3)	3(50.0)	6
S.T.	23(50.0)	11(23.9)	12(26.1)	46
Female				
60-70	11(39.3)	13(46.4)	4(14.3)	28
71-80	-	6(37.5)	10(162.5)	16
81+	-	2(20.0)	8(80.0)	10
S.T.	11(20.4)	21(38.9)	22(40.7)	54

In rural area of Chakdha, it may be seen that about fifty percent of the disabled aged male population (23 out of 46) are suffering from either minor or major health problems. In fact, such aged males are suffering more from major ailments in comparison to minor ones. The rest of the disabled aged males are on the whole have better health condition. In comparison to this, the same area, thirty eight percent and forty percent of the disabled aged females are suffering from minor and major ailments respectively. The rest of the disabled aged females appear to be in good health.

Table 3.4 Present Health Condition

Gender & Age Group	Present Health Condition - Urban			Total
	On the Whole Good	Minor Problem	Major Problem	
Male				
60-70	18(60.0)	7(23.3)	5(16.7)	30
71-80	--	7(46.6)	8(53.4)	15
81+	--	--	5(100.0)	5
S.T.	18(36.0)	14(28.0)	18(36.0)	50
Female				
60-70	12(40.0)	10(33.3)	8(26.7)	30
71-80	--	5(38.5)	861.5)	13
81+	--	--	7(100.0)	7
S.T.	12(24.0)	15(30.0)	23(46.0)	50

In comparison to rural area, in KMC88, twenty eight percent and thirty six percent of the disabled aged males are suffering from health problems. In case of disabled aged females, about thirty percent and forty six percent are suffering from minor and major health problems as in the case of their disabled aged male counterpart. Thus, thirty six percent of the aged disabled males and twenty four percent aged disabled females are having comparatively better health condition. In spite of proportional differences within and between age groups and gender, it is evident that the aged disabled females are suffering more from various ailments than the aged disabled males. It is obvious that the reason behind this is the traditional nature of Indian society where the females are supposed to eat less, work more, and to suffer more from income disparity and dependence (Basu, 2006). Thus, the factors behind having good health may have some significant relationship with marital status and income stability. From the field observation, it has been found that marital status has little significance in maintaining good health condition of a geron. but income status as a factor is quite valid for keeping one in good health particularly for an elderly disabled who is still earning his own maintenance.

Ailment

With the advancement of age, it is generally found that the physical and mental health of a person gradually declines. On the physical side, both ailments and diseases so-exist with the elderlies. Age and ailments therefore sometimes are described as concomitant (House et al, 1990). In the present section, an effort has been made to understand the nature of ailment of the disabled aged. The collected data reflect that in both the areas irrespective of gender and age group the numbers of major ailments are more than the minor ones. It can also be mentioned that the municipality of ailments (both minor and major) increase with the advancement of age irrespective of gender as a natural process. In terms of minor diseases both male and female disabled aged are suffering from various minor ailments such as arthritis, digestive disorder, cough and cold, insomnia, weakness, constipation, vertigo with swelling of limbs, hypertension. In passing it may be mentioned that the frequency of minor diseases and the period of sufferings have been taken as not more than three months.

Arthritis, asthma, cardiac problems, digestive disorder, diabetes, genitourinary problems, dementia etc, are the main types of major ailments found in two areas irrespective of gender. Here also the term major diseases mean the duration of sufferance is more than three months in a year. Apart from this, there are also a number of chronic ailments such as, cough and cold, piles problems of joints limbs, blood pressure etc,, which are found amongst the disabled aged in both the areas irrespective of gender.,

Table 3.5 Major Health Problems

Location Gender and Age Group	Major Health Problems - Rural						
	1	2	3	4	5	6	7
Male							
60-70 (n=3)	60.5	40.8	85.5	60.9	80.4	50.8	52.2
71-80 (n=6)	70.3	58.2	87.9	73.8	90.3	75.2	31.2
81+ (n=3)	81.5	72.1	90.2	85.9	95.2	78.9	90.2
Female							
60-70 (n=4)	60.8	45.7	80.2	50.5	60.6	90.7	52.5
71-80 (n=10)	78.3	61.1	90.8	65.1	84.7	95.7	65.2
81+ (n=8)	82.9	70.5	95.3	75.4	92.6	100.0	71.7

Note: 1- Problems related to ENT, 2- Related to Blood, 3- Gastrointestinal, 4- Respiratory tract infection, 5- Cardio-Vascular, 6- Musculo-Skeletal, 7- Uro-Genitary

In rural areas of Chakdha, the ailments of Joints/limbs and blood pressure are two of the several chronic problems that very often affect the aged disabled. The undifferentiated cough is another frequent chronic ailment of the disabled aged males. The disabled aged female of all ages tend to suffer more than the aged disabled male from those two problems. Both diabetes and urinary problems as chronic diseases are less frequent among the aged females and more among the elderly males.

Table 3.6 Major Health Problems

Location Gender and Age Group	Major Health Problems - Urban						
	1	2	3	4	5	6	7
Male							
60-70 (n=5)	64.7	37.8	87.5	61.9	84.4	44.8	66.2
71-80 (n=8)	63.6	68.2	90.9	75.8	90.5	78.2	86.3
81+ (n=5)	81.5	73.1	91.2	86.9	96.1	76.9	92.3
Female							
60-70 (n=8)	59.8	41.7	81.2	49.5	62.3	93.7	43.7
71-80 (n=8)	80.3	61.1	92.8	68.1	85.7	95.6	60.9
81+ (n=7)	81.9	67.6	95.7	71.4	93.6	100.0	65.7

Note: 1- Problems related to ENT, 2- Related to Blood, 3- Gastrointestinal, 4- Respiratory tract infection, 5- Cardio-Vascular, 6- Musculo-Skeletal, 7- Uro-Genitary

On the other hand, in KMC88, the two chronic ailment namely, prob - lems of joint/limbs and cough, very often afflict the aged. But the aged disabled females suffer more in joint/limbs problem than their male counterpart, which is an obvious phenomenon after meno pause. Both diabetes and urinary problems as chronic diseases are more frequent among the elderly disabled aged males. However, the proportion of sufferance amongst the elderlies of both areas increas - es with the advancement of age. in this regard, it may also be men- tioned that these chronic diseases are found concomitantly in a disabled elderly individual irrespective of gender and age group. The other notable point in this regard is the municipality of these diseases (minor, major and chronic) wherein an elderly male or female disabled has been found to be suffering from more than one of the above mentioned diseases as his/her chronological age progresses

Treatment

Ailments in old age, as have been seen, are an inevitable part in the lives of the aged people. But in all civilized countries all over the world these ailments are not combated with according to the infrastructural facilities available in a particular country. The following section is an effort to understand the kind of treatment that is available to the disabled aged people in the two areas.

In rural Chadha, it has been found that for minor ailments the aged disabled elderly males prefer allopathic treatment. However, their female counterparts appear to prefer self-medication along with Unani/Hakimi treatments. This ostensible choice is perhaps due to an understanding that minor ailments for the disabled aged females do not have to be given much importance and hence there is no need to spend money or time for the cure of such ailments particularly for the aged women. But on the other hand, in KMC88, the entire stress has been given on self-medication for the treatment of minor illness irrespective of gender. The contrast in these two areas with regard to the treatment of minor diseases appear to be a perceptional difference in attitude arising out of location, education, cultural background and habitual practices. The other factor perhaps is the lack of infrastructural facility that is quite common in Kolkata and KMC 88 is no exception to that.

However, this attitudinal difference is completely absent in both the areas, when the ailments are major and chronic ones. For all kind of such diseases the disabled elderly respondents prefer to consult allopathic physicians irrespective of age group and gender. The disabled aged believe the greater effectiveness of allopathic medicines resulting in early cures.

Apart from type of treatment, place of treatment for the disabled elderlies is of utmost importance. This is an important part of infrastructural facilities particularly for geriatric treatment. For minor ailment and treatment, as has been pointed out earlier, the disabled elderly males of rural Chakdha prefer to visit a health care centre or hospital while their female counterparts remain within the precinct of their residences. But in KMC 88, as mentioned earlier, high percentage of disabled elderly males and females prefer to undergo self medication for minor ailments at their own residences.

For major and chronic illness, the disabled elderly respondents of both areas irrespective of gender go to health care centre for their treatment of major and chronic ailments. There of course also is a marginal proportion of respondents who go to nursing homes for such kind of treatment and the underlying reason for such low incidence is the high cost factor of treatment in these private nursing homes. Then there are also nineteen disabled elderly respondents who are unable to undertake any kind of treatment for their major and chronic disease. This is primarily due to economic distress combining with sheer family neglect. Thus the overall geriatric health care scenario in these two areas may be described as quite appalling and extremely inadequate . The community or the powers to be do not feel the necessity of this kind of a treatment and therefore such infrastructural facility as that of a geriatric hospital or even a geriatric ward run either by the government or by a private agency is yet to materialize.

Care giving

Old age is associated with degeneration in health and vigour. But to keep the body fit and maintain optimal performance of body organs exercise is important. Daily activities provide this fitness. Thus daily activities of an aged includes – bathing, washing and spreading clothes, standing and sitting, easing. To perform these activities they also need help from others. In this regard, the present researchers have divided this family care into two parts. One is daily care and the other is occasional means of care during illness.

It is observed that in both areas disabled aged have performed different types of daily activities. But with the progression of age, they need help from other family members. This is common for both genders. It also observed that the daily care providers are spouse, son, and son's wife, unmarried daughter. In absence of these relations, a kind-hearted neighbour provides this. But here the gender difference is quite pronounced. Except few, the disabled elderly females never get the opportunity to take help from their spouse. In brief, it may be observed that daily family care giving is mostly a female function.

Concept of care giving during illness is a trading of the Indian society. Which even today is found in many of the families, particularly in the families, which still follow the norms of extended families (Brody, 1985; Doty, 1986). But due to the pressure of modernization, urbanization and even

globalization, such extended families are gradually phasing out. As a result of which care giving, particularly for the gradually phasing out. As a result of which care giving, particularly for the elderlies, have also undergone too many changes. In the present section an attempt has been made to understand the concept of care giving in this context.

In both areas the disabled aged males are nursed during illness at home by their spouses either individually or by spouse along with other family members or by other able bodied family members. But in case of disabled aged females, it has been found in both areas that such care giving are not undertaken by their spouses and in general when these ladies fall ill, some of the able bodied members of the family and in most cases the female members offer such care, respite and help. During close interaction and in-depth interviews the nature and relationship of the caregiver other than the spouse within the periphery of the family has been observed. In fact, care giving to the old appears to be a female function, which is quite commensurate with the Indian concept of extended family tradition.

The two other components of care giving are time and money. In both areas irrespective of age a sizeable section of the disabled elderly males are able to bear their own medical expenditure during illness. But with the progression of age, in spite of their economic ability, they have to depend on other family members. Whereas, among the disabled elderly females, due to their permanent dependence most of their expenditure are borne by other family members. Another important feature is that except five percent females in KMC88, no elderly females are found whose expenditures are borne by their spouses. Herein comes the importance and roles of other able bodied members and relations who step forward and extend their helping hand for the management, expenditure and care of the old. Apart from the sons, the other relations, such as, grandchildren, son-in-law, brother, brother's sons, unmarried daughters, even the next door neighbours extend their helping hand both in terms of money and time. This is empirically true for both the areas notwithstanding the gender difference.

Whatever may be the nature of health condition, with the advancement of age, disabled elderly persons expect attention from the other family members. In a tradition based society like India, where family is an institution that provides support (both physical and mental) and care to their

senior members in their senior members in their daily life as well as in the situation when they fall ill it is all the more true. In recent times, rapid socioeconomic changes have altered this time-honoured tradition and various types of external help is required. As a result, disabled aged are very often placed in a vulnerable condition where they helplessly watch and mutely tolerate their sufferings.

Dissatisfaction

The indisposed disabled elderly expects attention of several kinds namely proper treatment, medicine administration, home nursing, sick diet from other family members. They would also in many occasions desire outside visitors (Kin, friends and neighbours) to share their pains during indisposition. An enquiry about the arrangements made of these cares for the disabled elderly by other family members bring out several areas of dissatisfaction of high to very high proportions.

In rural Chakdha, between the two genders disabled elderly females are relatively more dissatisfied than their male counterparts. Except treatment and medicine administered, all other care arrangements fall short of their desired expectations leading to dissatisfaction. Whereas in KMC88 disabled elderly males are more dissatisfied than their female counterparts due to self-achievement oriented outlook. But whatever be the proportional differences, dissatisfaction about cares during illness gradually comes into surface with advancement of age.

Highlights

Briefly the salient points of this chapter are:

• In this section of present health condition, it has been found that the respondents under study irrespective of gender have both minor and major ailments. In both areas the disabled aged females suffer more than their male counterparts. This is generally due to overwhelming economic dependence on the part of the females who suffer from malnutrition, ill health and under-treatment due to such economic deprivation.

• For nature of treatment, allopathy is preferred in both the the areas though in ward 88, the disabled aged respondents prefer self medication for minor ailments.

• The place of treatment for disabled aged males and females, are health care centres, hospitals, nursing homes and even charitable dispensaries, though none of these can be said to possess any kind of geriatric health care.

• In terms of family care during illness, it has been found that the family, particularly the extended type, is the best of all care giving.

Family Life of the Disabled Aged

The family has generally been considered the traditional primary source of social, economic, psychological and physical support for the elderly people (Bali, 1997). This is equally true for the disabled old who need such support more than anyone else.

Family is the smallest and most universal of all forms of institution. In India, as in other oriental and developing countries, the family has been a well-nit social institution, which met the social, economic and emotional needs of its members (Karve, 1965). Sterib and Thompson (1960) opined that neither the behaviour nor an adjustment by the individual is more important than the family and this is particularly true of the old people, since in the later years of their life active participation is limited within the precinct of the family. Rosen (1960) indicated that family is of significance to the gerontologists as family is the determinant of the social behaviour of the aged and it affects social organization and action. He also added that family environment is also important to an aged because it influences the mental performance of the former. According to Bali (1999), it is within the domain of the family that the elderly people seek care, espe cially for emotional, social, economic and health support. Thus family is not only supportive by nature but also contributes to the social integration of the aged. On the other hand, Shanas and Hauser (1974) hopes that the family is still important to the aged person and will continue to be so for the next decade or two, even if a zero population growth is achieved in the 21st century. In other words, the older persons may ultimately have to depend upon a welfare state sans the family. In this context, Shanas (1980) expresses that family remains to be the safe haven for the aged. But in spite of granting all importance to the family, the modern theorists (Goode, 1963; Cowgill and Holmes, 1972) believe that several crucial aspects of urbanization and industrialization have impinged the growth of

family system and thereby hampered the well being of the elderly. On hindsight, it may now be argued that social changes such as – urbanization, industrialization, modernization and even globalization have made an adverse impact on the family system, particularly in its care giving role for the elderly. As a corollary, the social scientists often feel that in such a changing context the condition of the aged in the Indian society has worsened. The aged are compelled to relinquish their traditional role and status, which in other way make them feel redundant and stressful. The elderly therefore beings to face new problems, which are beyond their control, and is a net result of the emerging modern industrial culture. Since India is making quick strides towards a modern society based on achievement, the elderly have also began to face less attention from the family which is no longer fulfills many of their needs – physical, material, economic, emotional and such cares are not sought after from the so-called institutional agencies. But still studies conducted on the family life of the retired Government employees of Calcutta (Chattopadhyay, 1988) Bombay (Desai & Naik, 1971), Lucknow (Sudan,1975), Udaipur (Bhatia, 1983), Chandigarh (Mishra, 1987) revealed that the older persons still would like the scope to secure the tender healing touch from the members of the family and might lead a peaceful life even in urban areas given such scope.

At the outset we have already mentioned that this study is focused on the problems of the disabled old people who have become crippled due to their various ailments. For these people the central question of family care is sharper and requires a close analysis of the family care they would have expected to get. All our case studies vividly show that a disabled crippled old expects the family to understand his / her disability in a sympathetic and careful manner. In this connection, it may be mentioned that according to the Gerontologists family care can be divided into three basic categories. For example, such care of the elderly is considered a moral obligation. And according to the Hindu tradition the young members of a family are supposed to take care of the elderlies or otherwise they may face ridicule and social disgrace. The assumption is today's caregivers are potential care sickers of tomorrow (Bali. Ibid). In this context, family care for the elderly is empirically believed to be culturally determined and socially reinforced (Kalache, 1990) Ideally speaking when physical frailty occurs older persons expect their family to serve them food, shelter, personal care and companionship. This proposition is all the more important for a disabled crippled who may be either mentally

or physically incapable of getting all the components mentioned earlier.

Secondly, according to customs prevailing in most of the societies of the world, elderlies generally spend their income and bestow their property to their offsprings even sacrificing their personal comfort and subsistence (Hemilingway, 1941).

In fact, the above postulations have clarified the role of family as the basic caregiver to the elderlies. However, even such care giving by the family cannot fulfil the expectations of a disabled old for the simple fact that a disabled old requires an extra bit of support be it of logistical nature or of mental assurance. Moreover, family care as we understand is a combination of mental state and perhaps even abstract in nature. The case study method that we have adopted is a true reflection of this.

Case Study I: In Case study I it has been found that the old man, aged about 78 years is currently suffering from partial paralysis due to severe heart attack. Economically he is more or less self-sufficient since he draws a monthly pension. However due to physical disability he doesn't have control or access to his monthly income. He has a family consisting of two sons, daughter-in-law, grandchildren. The sons are quite well off and our protagonist is provided with an external attendant who is supposed to help him in all his physical needs. However, the person concerned is suffering from isolation, depression and loneliness. He expects his family members to give him some solace and sympathy for his miserable plight. The gentle man also suffers due to the sad demise of his spouse and is waiting for death night after night.

This is an extreme case of negligence and indifference for which the person concerned is not at all responsible. Had he been physically able perhaps he would have spent his last days in a better mental frame.

Case Study II : Case study II deals with an elderly disabled lady aged about 87 years. She lost her husband some 10 years back. She has three sons of which two are married and dwell separately. She lives with her youngest son who is a day labour with an insignificant income. Our lady is practically blind due to glaucoma and is also suffering from severe arthritis. She is therefore neither able to move freely or see things in proper perspective. But even with these severe infirmities she tries to do household chores along cooking her own food. The youngest son

being a day labour has to leave house early in the morning and when he comes back, being physically exhaustively tired cannot help his mother in any way. The only support that the old lady gets from her son is a little bit of money, which for her is an inadequate sum. For any external help this woman has to fall back on neighbours who though sympathetic but are not always available neither they are able to help her with medicine or other necessities of life. She is leading a miserable and deplorable life and all day long she prays to the God for an immediate relief i.e. death.

The second study shows how even within a family ambience an old person feels herself helpless and neglected.

Both studies show the role of family in an adverse manner. While in the first instance show there is a family but the behavioural pattern of the members are not at all conducive to the relief of the protagonist expected. On the other hand, in the second instance, there is a semblance of family but it is circumstantially ineffective and the care-giving role is by and large absent. Both instances prove that disability has rendered the protagonists effectively immoblile. They require somewhat a different attention and the nature of care giving should be such that it can inspire the affected to live their life in a more hopeful manner.

Both studies cited above somewhat reflect a process of reductionism in family care. In other words, we get a negative picture and thwarted aspirations of the disabled old. To understand the needs of the disabled we conducted further studies and two more examples are cited below for a comprehensive understanding of such needs.

Case Study III : Once more, here is the life story of an old managed about 72 years having a family consisting of spouse, a son, daughter-in-law and grandchildren. The man also has a daughter given away in marriage. Three years ago he had a fall in the bathroom resulting in major surgery in the knees, which was unsuccessful. He is now practically wheel chair bound and almost a cripple who is unable to perform his daily chores. But his family members including the spouse, son and daughter-in-law are helping him to overcome his physical malady. The depth of care has practically made the man forget his immovality. He enjoys the status of family headship and all decisions regarding the family are taken up after his consent. The man in his professional years used to head and manages a large number of labours and employees. He held a big posi-

tion in his office. In his post retirement period, he used to suffer from a loss of role. But the present family care has even managed to complement his earlier role loss. The man has now a post retirement life that is full of joy and hope.

The entire episode shows the proper importance of family care for a person who is virtually immobile. The crippling effect does not show any bitterness and the care givers have performed their duties in an exemplary manner.

Case Study IV. In this study the main protagonist is a woman aged about 69 years. She is widow and has four sons all of whom live separately and individually. All four sons are married. The woman herself by rotation dwells with a son every three months. At the time of study, she was living with her youngest son. Her main malady is deafness, which developed in her old age. All four sons respect their mother and take special care of her disease. Due to deafness, she has now become touchy and a little bit fussy. The daughter–in-laws are aware of this fact and take a special care to make her forget the disability. Due to the same fact, the sons are a bit extra protective and do not like their mother to go out of the house unescorted. The lady in her professional status was a teacher and therefore would not like to be chaproned. The family members also know this fact and therefore they help their mother in a very courteous manner without hurting her emotions.

Case Study IV shows the nature of adjustment expected by the disabled. Deafness is a social stigma. But the family members do understand this problem and they have in their own manner tried to make the old disabled persons homely and comfortable without being unnecessarily harsh.

From the four Case studies, it is quite apparent that the old disabled persons with crippling ailments needs special family care and a sympathetic attitude to minimize the pangs of their disability. The type of disabled we are discussing makes an older person significantly sensitive irrespective of their position in the social life. It is in this context, the concept of family care requires to be suitably adjusted. The extra special care shown to these kinds of disabled persons should not at all be mercy oriented; rather the caregivers must understand that the sufferer is also a member of the larger society. He or she will like to lead a normal life available to the other members of the society. The role of family as we men-

tioned earliest should now have a fourth dimension- a dimension that will treat the disabled in an equal footing. Unfortunately, in the present industrial consumer society such dimension is in the wane. Gerontologists working in this field should therefore look into this problem in a more incisive manner and studies in this regard should have more empirical data so as to frame a code of conduct suitable for such disabled aged persons.

Highlights

Family is still an important ingredient of support for the aged and particularly for the disabled aged. Observations made during the research work may be listed as follows:

• Family has a special role in supporting the disabled aged.
• The caregivers within the family must understand their role and evaluate the degree of disability of the concerned disabled aged before handing over geriatric care.
• The interpersonal relationship within the family should be such as to make the disabled aged comfortable and confident.
• The disabled aged need special mental care and would like to share the joys and sorrows of his or her family in spite of the concurrent disability. A family must take note of this and act accordingly.

Behavioural Pattern of the Disabled Aged

'Behavioural pattern of the disabled aged' is a multifarious manifestation of an old person's attitude, desires and adaptabilities. In the following section, we have attempted to understand this pattern in a holistic manner. We therefore wish to deal with family interpersonal relations, grievances about basic needs, and attitude towards family members towards the disabled aged to conceptualize the behavioural aspect in a wider perspective. For attaining a qualitative outcome, we have followed case study method instead of any quantification. This yielded an excellent result for understanding the universe of the disabled aged with regard to their hopes, wishes, dismay, anger, satisfaction/dissatisfaction et al.

Aspects of Behaviour

Man is always and has been a social being (MacIver & Page, 1952). The

old people are no exception to this. Even in old age man is governed by social and functional relationships. This is more reflected within the family because of the behavioural adjustments which the older people have to make very often due to ageing. Thus to understand the behavioural pattern of the disabled aged, it is necessary to look into the intricacies of the type and form of the family. In the Indian context such family consists of various members beginning with the spouse, son, daughter-in-law, grandchildren and at times even the grandparents (Folsom & Morgan, 1937, Landis 1942, & Kunkel, 2002). Each one of these people has his/her own status and subsequent roles (De' Souza, 1982) that form the essence of the family. If one now adds the needs of the aged to this functional role, one may expect to get into the inner core of behavioural differentiation and understand the process of ageing more fruitfully. Normally, an aged individual passes through the stages of life with bitter-sweet experiences which are likely to mould and share the self both in positive and negative manner (Hussain, 1997). This experience may be divided into social, economic and cultural aspects. In summation it may also be defined as socio-psychological changes that affect the old people physically, mentally and emotionally. In fact, these changes reflect in the aged person's attitude towards his/her family, environment, neighbours, close associates, even relationship with state and society albeit the world at large (Pratt & Norris, 1994). One may now look into these relationships more closely for better understanding of the behavioural patterns of a disabled aged person.

Interpersonal Relationship

The interpersonal relationship within the family is often very complex. To be precise, the family relationships are governed by socially constructed, culturally based rules and values, showing the nature of relationship between the members within the family and without (Silverstein & Bengtson, 1997). These cultural norms may be categorized in the following manners – a) specific to particular role – relationship, b) the relationship dependent on economic status, c) health status and family hierarchy and d) psychometric problems.

For specific to particular role – relationship, let us now look into the family interpersonal relationship of the disabled aged with their spouses, sons, daughter-in-law, unmarried daughter, grandchildren and his/her close off-kins. Again, this interpersonal relationship can be divided into three distinct dimensions. First, the above mentioned relationships with the

respective aged, secondly, relationship before and after the so called beginning of old age, that is 60 years and lastly, the underlying reasons for the changes whatsoever in the relationship mentioned above keeping in mind the problems of disability in particular.

Of the interpersonal relationship within the family, the most important one is the relation between the disabled aged and his/her spouse. Universally it is observed that there are two categories of aged, a) husband and wife living together all by themselves, b) such couple living with the son's family or with others including the close off kin. But whatever may be the living arrangements, in both areas that is KMC 88 and rural Chakdha, a high percentage of elderly males have a lasting conjugal life in spite of the observed disability in comparison to their female counterparts.

Case V: An excellent example of lasting conjugal life has been observed in Ward no. 88 of KMC. Our respondent is a Hindu male aged about 85 years. His spouse is 79 years old. The gentleman is suffering from a post stroke paralysis of right limbs and has difficulty in movement and per forming daily chores. But the lady concerned aptly covers her husband's disability and there is no grievance against the sons and daughters who are living separately and perhaps not so enthusiastic to bail out the old mother.

This is the case of a remarkable couple who have adjusted with disability without aspersion, malice and expectation.

However, these lasting conjugal lives do not reflect a condition of lasting happiness. In fact, the interpersonal relationship between the husband and the wife is not always the pattern of above example. Rather from our observation we have also seen a fourfold pattern covering economic dependence, volatile interference in family matters, a perennial syn drome of suspicion, and physical inability that requires more care and financial assistance. The economic dependence mentioned is due to the lack of funds available to the aged couple. And for a female aged particu larly in the context of Indian society such paucity of funds is a kind of curse for which she generally blames the husband. This financial ability both for the male and female, brings in more dependence on the other family members and leads to a conflict and tension between the husband the wife and vice-versa. The field data have categorically reflected this situation and the above mentioned economic dependence has made both the disabled aged husband and wife powerless, even in the petty matters of the family. The other two factors such as the suspicion syn-

drome and physical invalidity are kind of socio-cultural factors, which in terms of social gerontology may be defined as old age irregularities (Hoey man and Kiyak, 2007). The syndrome of suspicion is generally found in females after menopause, and they begin to think themselves as infertile and wasted while the effect of physical inability is generally found amongst the males who are unable to look after their spouses themselves due to this inevitable health disorder. Both symptoms create a rift between the aged and make their life miserable.

Next to spouse, son becomes the nodal point in so far as relationships are concerned with regard to the aged people. The disabled aged being no exception to that. Traditionally, in the Indian context, every parent wants to live their last life in the company of their son and his family members (Gurumurthy, 1998). But in reality, what has been found in these two areas is somewhat opposite to this tradition. Most of the aged people in these two places are facing rather uncongenial behaviour particularly from their sons irrespective of caste and creed.

Case VI An adverse interpersonal relationship jeopardizing the social and family belonging has been observed in the rural area under study. The aged couple of which the female member is aged about 67 years and is practically bedridden due to femur bone fracture by an earlier accident. The husband aged about 80 years generally looks after his spouse. The couple has three sons, all married though the eldest one doesn't live in the family. But in consonance with Hindu traditional hierarchy the eldest son has been bestowed with the larger portion of the family property. This has created enormous tension in the family and as a result of which the wives of the other two sons have been behaving with the couple as if they are unwanted outsiders. The rift thus created has become unbridgeable and the couple now are living almost isolated even within the small periphery of the family.

This is a typical example of social ostracism and there are five factors that are mainly responsible for such unpleasant relationships between the son and his aged parents. These five factors or causes are namely – financial dependence, disposition of family headship, loss of role function, harsh and/or misbehaviour, and lastly physical disability. Of the five, the first two are clearly the symbols of loss of financial freedom due to retirement from jobs and subsequent dearth of cash money in hand. The old parents normally try to keep their position in the family as it were even if the aged male retires from the job. Due to less financial contribution and

control over the family, both parents are not given their previous position of respect and power and it invariably leads to family conflict, quarrel and tension. This has been adequately reflected in our observations where by it may be seen that the disabled aged males and females are suffering from such 'abuse syndromes' irrespective of their social standing.

The same is also observed in terms of role functions. No longer are the aged couple allowed to perform their roles as family models and there is a consistent tussle between the son and the father in so far as the different family roles are concerned. The elder disabled males along with their spouses feel alienated, isolated and mostly neglected. The extreme corollary of this is the harsh as well as the rude behaviour, which is invariably meted out to the aged parents consciously or unconsciously. In fact some times all five factors mentioned above cause quick ageing giving rise to physical disability that debars the old to perform their own necessary duties admirably.

Again, in the Indian context, next to the son, the daughter-in-law holds a significant position in the maintenance of family peace and cohesion. Traditionally she is the emblem of the caregiver. In other words, she is a repository of love, trust, affection, compassion and tenderness (Vatuk, 1975). However this is an expected role which has undergone many changed due to the pressure of time, commitment to children and a tendency to look at the old in-laws as if they are disposable baggage and a source of material drainage of financial sources. Needless to say, this attitude in itself creates tension and yields to misbehaviour on either side. During fieldwork, it is observed that loss of care giving and occurrence of misbehaviour particularly between the aged mother-in-law and the upcoming daughter-in-law generally creates a rift that has a deeper impression on the disabled aged in laws. The intensity of this bitter relationship between the aged in-laws and the daughters'-in-law becomes more aggressive once the male family head crosses the age of sixty and retires from active work participation. Both the aged-in-laws hanker after care, love, affection, etc. and both get a sort of maltreatment from their respective daughters-in-law. The loss of such emotional relationship hurts deeply the elderly women and she feels deserted and deprived of her due family status.

Case VII: An adverse emotional relationship has been observed in the following field experience. The couple concerned has two sons both working. The gentlemen aged 67 years is a retired school teacher and his

spouse aged 61 years is suffering from hypertension and chronic diabetes. Due to the ailment, she is now unable to perform her household chores, as she would have liked to do. As a consequence of which she is deprived of many of the earlier family positions by her two daughters-in-law. Due to such situation, there is a constant tussle going within the family and our lady concerned is suffering from depression and has become rather a difficult personality to handle with. The husband is unable to provide adequate solace and sometimes has become a victim of the conflict between the mother-in-law and the two daughters-in-law.

Apart from the above two reasons, there are other three factors that cause a bitter interpersonal relationship between the daughter-in-law and the aged-in-laws. These are generation gap, selfishness and psychometric cause like mania.

Generation gap in effect is a social factor that is inevitable and the conflict between generations is quite universal. One is inclined to believe it as self-explanatory and is generally applicable to the younger people who are loathe to the concept of ageing. Again, along with generation gap, the second factor of selfishness is a modern trend and a reflection of the growing consumerism culture. Only mental balance or mania as a cause is an exception. But this also has a relation with the culture of the older people who are sometimes conspicuously biased in so far as their religious belief and domestic practices are concerned. Interestingly enough all these three factors have been cited by the aged male and female of the present study as being the causes of their bitter interpersonal relationships with their daughters-in-law. Following is a good example of maniac depression suffered by a crippled old woman.

Case VIII: The protagonist in this case is an aged woman of 73 years. She is married and had three children all well established. She is now living with her youngest son's family and her spouse. She had an inborn disability affecting her right limbs and after a cerebral attack, she now has become almost a bedridden cripple. All the family members including her spouse now take good care of her. However, due to the crippling physical disadvantage she is suffering from acute mental depression, irritation and is having a mental disposition of a 'doubting thomas'. Due to this maniac syndrome, she distastes her husband and does to appreciate the cordial relationship between the daughter-in-law and the father-in-law. This is a classical example of maniac depression and required close counselling.

The unmarried daughters in a family can basically perform a care-giving

role wherever there is absence of daughters-in-law (Stone and Kemper, 1989). It is observed that in the two areas, the unmarried daughters have not always fulfilled this role as is expected of them. In reality very few aged in these two areas, have unmarried daughters and those who do have do not enjoy a cordial relationship particularly after attaining the age of sixty years, that is retirement. At a closer observation, it has been found that there are three reasons, namely, generation gap, misbehaviour and uncordial care giving. Out of these, according to the aged, uncordial care giving is the most important factor, which in chain relation has further generated the factors of misbehaviour and enhanced the generation gap. Except some proportional differences, the situation in both areas in this regard is more or less identical.

Grandchildren to the elderly people in a traditional Indian society are considered to be the emblem of love-warmth and companionship (Ara, 1994). In general, seldom there are grandparents who are economically dependent on their grandchildren. In both areas, very few of the aged have grandchildren who are capable of bestowing love, affection, companionship, etc. however, from the observed data, it may be seen that about sixty percent of the elderly who do have such grandchildren, also enjoy a pleasant relationship with them. But there also are instances, where such relationships have turned bitter. The main reason behind this is the economic dependence of the aged on their grandchildren who think their presence in the family burdensome. In those cases, the aged ones very often find they are unwanted and are not given due respect.

In addition to the aforementioned relationships, the aged persons also have to come across living together with their next off-kin that exclude son, daughter-in-law and grandchildren. Once again in this kind of relationship, the aged are forced to live with their off-kin primarily due to economic dependence and absence of close family members. In an Indian Society the age old traditions have always encouraged this kind of living together with the off-kin who considered such association to be a duty on their part. However, the interpersonal relationships in these conditions were earlier pleasant and tolerable. But with the passage of time the situation has changed and such relationships are now considered as unpleasant and burdensome (Ishwaran, 1966). In the present study though the number of aged in this regard, that is those living with the off-kin, are very few in number, but the trend of feeling neglected and isolated is quite unmistakable and need to be understood as quite identical with the current social thinking.

This section may now be summed up with the observation that the overall interpersonal relationships are quite complex and multidimensional. The factors affecting this interpersonal relationship can either be singly or in multiplicity have differentiated impacts on the disabled aged with variable degrees. However, such impacts are not necessarily negative in nature. In some of the instances, the disabled aged do have a usefulness with regard to their role performances which inter alia is a kind of social usefulness and may go a long way in making social adjustments in today's available social frame.

Grievances

With the passage of time the disabled elders tend to be moretouchy in rela - tion to their daily necessities and habitual comforts. This may be differentiated and analysed according to the normative aspects of social, economic and psychological factors. Translated into ground realities it means a disabled aged would like to have basic necessities such as, food, clothing and shelter without much hindrance and hassle. In other words, the fulfilments of these basic necessities make them feel dignified and enhance their self-esteemed. All these together have a cumulative effect that boosts their morale and contributes positively towards building a healthy ageing in spite of disability.

This background is necessary to understand the grievances that are frequently expressed by the disabled aged in a traditional Indian society. Thus it also helps one to understand the grievances of these aged not only relations to his/her personal needs, it has also, helped the present researchers to understand the macro level grievances that includes the complaints of the disabled aged in relation to his/her neighbours as well as the state and the society in which he/she normally resides. Grievances in that sense are also a marker and reflection of the behavioural twists and turns of the aged, which are conditioned, precisely both the rural-urban milieu as is found in the two areas.

The basic needs of disabled gerons are generally related to food, clothing, shelter, amenities, healthcare, respect and role performances (Cavan et. al 1949 &Pollak, 1948). In the present research work the data have been collected in relation to all the seven factors. In each of these factors the both disabled men women have grievances and there is a distinct gender discrimination that makes the women more vulnerable than their male counterparts.

Food

This is an item, which not only reflects the material side of the food; it also reflects the family economic condition, the interpersonal relationship within the family and the mental state of the disabled aged. Due to physical reasons many a time the aged are not allowed to take the food as they desire. But the individual fulfilment of these items often influences the mental make up the old. In both areas, disabled aged people have strong grievances which regard to food. This is all the more visible when we look at the food available to aged male and female where a distinct discriminatory attitude is generally found to be doled out to the elderly women by the corresponding. Such gender discrimination is not unusual if one considers the pattern of Indian Society, which was generally male dominated, and wherein discrimination of food and eating it by women at last had been custom throughout the ages. This tradition has been reflected in our present study too. Moreover, it has been found that five reasons are behind the grievances with regard to availability of food and discriminatory eating patterns. These are -- less quantum, not properly tasty, qualitatively bad, negligence towards the disabled old by other family members and inadequate family finances. Of these reasons the unsympathetic behaviour of the other family members have hurt the disabled aged most and the same has been reflected in their grievances towards food. This also is an indirect reflection of the adverse interpersonal relations within the family and the same are visible in the data collected from both the areas.

Case IX: The disabled old woman in this context of 83 years age and a widow. She dwells with her grandson and granddaughter-in –law. In earlier years, she used to work as housemaid and her late husband was a mason. She is now a recipient of widow pension and also possesses a moderate fortune of money inherited from her husband. She also has a daughter who pays intermittent visits to her for mental comfort and healthcare since she is suffering from acute arthritis and locomotion problem. The granddaughter-in-law doesn't like these visits and is also envious of this small amount of money fortune which she would like to have under her own control. Due to this conflict and bitterness the granddaughter-in-law doesn't treat the old woman favourably and deprives her the basic necessity of food. The disabled old lady is suffering from a chronic hunger syndrome and is always complaining to the grandson and the daughter.

Clothing

Next to food, clothing is the sensitive issue that not only reflects the pattern of

wearing; it also shows mental satisfaction of a disabled aged person in relation to his/her attires. Naturally this mental satisfaction can only be fulfilled when the aged concerns can wear his/her dresses according to own will and taste. Apart from this, the other factors that may go a long way to fulfil such mental satisfaction are reasonable quality and colour. Adequate number of such dresses makes the aged persons feel physically and mentally at ease.

In both the areas the disabled aged males and females have too many grievances in relation to their personal attires. One of the reasons behind this may be due to, too much financial dependence and widowhood. Both disallow the woman disabled to wear dresses of their own choice. Again for both disabled aged men and women these grievances are due to inadequate availability, negligence of the othe family members and deplorable quality of clothing. For these reasons again just like food the apathy shown by other member of the family towards their disabled old ones appeared to be most disheartening to all the disabled aged of both the areas. Here also the gender biased found is due to the male domination where the aged male gets more than their female counterparts. But the central point found in this research work with regard to clothing is the diverse interpersonal relationship within the family.

Shelter

The third related factor is the dwelling place. Shelter, as is well known is a key factor that moulds the character of a person irrespective of gender. This is all the more so when a man or a woman attends a ripe age with disability. With the passage of time the relation between the dwelling place and the aged becomes keener. This has been amicably reflected while recording the grievances in relation to shelter. This is no doubt a fact that inadequate spacing for shelter is a chronic problem particularly of the Kolkata mega polis. The population syndrome is bursting in this city as a fall out of partition and incessant migration from outside the city. The problem has been tried to be solved by civic authorities who have permitted many high-rise buildings to mitigate the problem of inadequate dwelling places. However, such solutions have not solved the problem specially for those people who are financially weak. The grievances in relation to shelters recorded in this study have clearly shown that irrespective of gender all disabled aged persons in both areas have tremendous complaints with regard to their habitats.

The basic reasons behind these in both areas are four. These are namely, inadequate space, unhygienic surroundings, rental houses and apathetic behaviour of the neighbours. Of these, space inadequacy and the mental agony of not having a personal dwelling place are the most prominent factors. The disabled aged people staying in a rental house always feel insecure and inadequate space hampers their mental health, deprives them of individual privacy and habits. The other two factors of unhygienic environment and misbehaviour of the neighbours have been equally found in both the areas. Shelter therefore should be treated as an individual marker of geriatric health.

Food, clothing and shelter have been treated in this treaty as the 'basic needs' of the disabled aged. However, the current researchers have also gathered facts that may be clubbed into the secondary tier. These are health care, role performance within the family, respect and entertainment. It is an accepted fact in the modern parlance that man cannot live by bread alone. In fact the above factors of the secondary tier determined directly or indirectly the mental and physical health of a disabled aged person as well as his or her role in the society.

Health Care

Physical and personal health are the two aspects that influence human life from his birth to death (Confrey and Goldstien 1960). This is all the more determining factor when a person approaches his old age. Data recorded in this regard show sharp grievances in both the areas irrespective of gender and age group. The main factor responsible for this as recorded from the disabled aged is the empathy shown by the related family members to their disabled old ones. This in effect is a reflection of adverse inter - personal relationship within the family. Such empathy as has been seen is normally related to dependency factor which the old cannot avoid due to the onset of old age resulting in physical and mental disability. They are also neglected and deprived of the health care because younger generation does not consider them anymore useful due to the advanced aged factor and disability. Added to this there are the macro level reasons of poverty and dearth of primary health care centres. The last two reasons are universal for India because of the fact that forty percent of the aged population live below poverty line (Help Age International, 1999) and due to lack of infrastructure facilities; geriatric health care is almost non-available. Needless to say, these are factors beyond the control of an individual or a family and disabled old people in this country have to suffer.

The next two factors of the secondary tier are role performance within the family and respect. Though both aspects are quite relevant to the character development of a person, these assume greater importance at an advance age. Every individual within a family has a characteristic role in accordance to his or her age. This role also indicates its area of performance and it is equally applicable to a youth or an old person. But, for a disabled aged one, this role performance has a greater importance in so far as his or her self-dignity is concerned. At an advanced age men or women tend to change and any loss of this role performance affects their mental health adversely. They also feel disrespected, become sullen, and introvert. This is the position that has been reflected in the present analyzed data. An overwhelming majority of the aged in both the areas irrespective of gender and age group have complained of disrespect of their assigned role within the family domain. In both areas, overwhelming percentage of the disabled male and female aged have grievances towards role dispossession. One of the reasons of this, particularly for the disabled male, is the mandatory retirement from services, which adversely reflects upon their ability to rear a family. This is all the more true when a disabled person is asked to retire from his whatever services and as a consequence of which he or she feels the pinch of his or her role loss more sharply. Added to this, the other indirect reasons are the general decline of physical health and interpersonal relations within the family. On the other hand, the females suffer due to widowhood, inability to earn and decline physical health. Thus, it may be seen that both the aged disabled male and female respondents suffer from mental insulation and continue to feel disrespect and empathy. Both the psychometric factors of dissatisfaction and decline in role performance are quite emphatically visible in both the areas and have adversely affected the physical and mental health of the disabled age.

Amenities

In today's world an active person has very little time for entertainment and amenities such as recreation, cultural activities, televiewing, indoor games like card playing, chess etc. Time available to them is quite scarce and scanty. However, once a person gets out of active life and reaches old age he or she may find enough time to spare. However, utilization of such time is not that easy as it appears on paper. This has been reflected in data for both areas irrespective of gender. Three reasons have emerged while analyzing the data in this regard in both areas. These are non-availability of amenities due to poverty, deprivation of rights towards using the desirable

entertainment and recreation, and thirdly, the use of electronic gadgets that cause sound pollution and mental agony. Of these three reasons, the first two have a direct relation with dependency factor, which is interrelated, with poverty and family interpersonal relation. In other words, the disabled aged who are poor and have been marginalized cannot get their desired choice of amenities be it use of radio set/ television or external visit to a film show or a cultural program. In terms of priority within their family set up, they are a deprived lot to whom entertainment or amenities should not get priority than other relevant matters. This factor is all the more prominent amongst the Hindu women aged who appear to be more dependent on their families due to widowhood and lack of income. The second factor of prohibition with regard to use of electronic media is quite rampant in the family who are financially better off. Instances are not rare where an old couple or an individual is restricted from using radio/ television/ etc. in the name of frugality and cost effectiveness. This inter alia hampers the individual freedom of disabled aged persons who are pushed into the realm of boredom, frustration and mental deprivation. On the contrary, there are also instances where the high sounding electronic gadgets destroy the mental peace of the aged who are unable to adjust themselves with these modern electronic gadgets.

Case X: The chief protagonist of the present study was in prime time a successful businessman and had all the amenities for recreation as well as entertainment in his possessions. He is not 75 years old, is confined to bed due to severe cerebral thrombosis, and has been presently an immobile person. But this passion for entertainment and recreation has not doing dwindled. However, his sons and grandsons do not pay any attention in this regard. In fact he is not allowed to view a television set to his own discretion and he cannot use the telephones sets available in the house without the concurrence of the other members of the family. Being a bed ridden cripple he does not have the freedom to act according to his desire, though the family still busks in the glory of his wealth and name.

In sum total, the grievances reflected in the primary and the secondary tiers clearly express mental dissatisfaction, pain and agony of the disabled aged in both the rural and urban milieu and are based wholly on the socio-cultural factors determining the lifestyles of the areas under study.

However, it is not the family or the surrounding that influences the personal life of the disabled aged. Rather, such analysis will remain incomplete unless one analysis the larger environment including the society and the

broader infrastructure that indirectly controls such factors including the state and the country. In this context, one may begin with the interpersonal relationship of a disabled aged person with his or her neighbourhood. In both areas, the disabled aged males and females have strong grievances against the behaviour of their neighbour. But there are number of disabled aged respondents who desist from giving vent to their grievances due to the following reasons. This are sometimes fear, sometimes apathy and sometimes even expecting counter reaction from their own family. However, present researchers feel that such non-expression of grievances is due to the factors of affluence where the respondents do not like to give vent to his or her feelings or are unwilling to speak against never who is socially more influential.

On the other hand, aged who have expressed strong grievances against their neighbours have certain specific reasons to do so. According to those disabled aged, they feel that the neighbours are garrulous, self-centred, proud of social position, noisy, ill mannered, dishonest etc. Whatever be the reason, these disabled senior citizens are not happy with their neighbours and they feel mentally depressed. It is true that they lack the power of adjustment, but then again it is not possible for a disabled aged person to make such adjustments in an advanced age. However the redeeming feature that comes out of the discussion held with these people are certain solutions, which require second look. According to them, the neighbourly relations may improve if the state undertakes some slum displacement, the individual changes his own dwelling places or ignore the ill behaviour of the neighbours or else invite the communities to sit together so as to mitigate these grievances amicably. Needless to say, on paper, the proposition look abstract but in spite of that the present researchers feel that interested societal forces may look forward in these lines to improve the environment and the neighbourhood. In addition to these factors, the methods expressed by the disabled aged for an amicable solutions clearly reflects their desire to these problems from socio-economic angle than that of keeping themselves aloof and self-centred. Thus one may treat this as a community desire in the macro level.

Next to neighbourhood, comes the relationship between the aged and society. The present society is now changing at a fast pace due to industrialization, modernization and last but not the least globalization. All these changes have made human beings too much self-centred. In fact such ego-centrism of the present generation has immensely harmed the earlier older generation. The old people of today due to their physical inability,

financial dependence and above all erosion of their traditional values have practically lost their mental piece and have nothing to gain but loneliness and mental stress. In this background, the above relation between society and the disabled aged in the present analysis has become all the more imperative and relevant. To understand this in a proper perspective two more points were suggested to the disabled aged for their individual and collective response. These were: individuals' relation vis-a-vis the society and relationship between the older generations as a separate category with their correspondent social class.

The overwhelming majority of the disabled aged groups feel themselves to be a burden on the society. And in the same breath they also expressed their isolation vis-a-vis the larger community and the society. The other interesting observation is the fact that both trends gradually rise along with progressive advancement of age. This fact reveals the marginalised position of the older generation in the present so-called modern society.

Once more, the factors behind such social ostracism are the inadequate healthcare, loss of interpersonal relation within the family, apathy and financial deprivation. On the other hand, people who have refrained themselves from expressing such opinions, have done so due to family affluence, slightly snobbish mentality and last but not the least due to family restrictions and compulsions. In summing up, both categories may be described as a vulnerable group within the framework of rural urban society.

This discussion will remain inconclusive unless a holy stick view is undertaken with regard to the relationship between the disabled aged persons and the country or the state he or she belongs to. In a developing country like India such relationship is all the more important if one accepts the fact that problem of ageing is no longer a problem of the individual. In this perspective the solution of such problems if is confined within the periphery of the family or its members, it is bound to be negligible in comparison with necessity of the time. It been so, the role of the country or the state becomes all the more important in so far as the macro level concepts are concerned. This is the realization that led the present researchers to evaluate the developmental activities of the state with regard to the disabled aged people. The opinions of such disabled aged group with regard to the geriatric treatment in public hospitals, free treatment facilities, timely disbursement of pension, legal protection, betterment of the disabled aged backed by a database, provision of loans, awareness through media; employment opportunities for the disabled aged, road safety, establish-

ment of home for the disabled aged, recreational programme for the disabled aged in television, self-help scheme, tax exemption for the disabled aged have been expressed in details in our field survey. However also from focussed group discussion in course of our study it has been conclusively found by the present researchers that these crippled disabled gerons feel a strong necessity for a qualitative and exclusive geriatric treat - ment that should be easily available at least in the government hospitals run by the State. In fact the present researchers feel that many of the non-expressive disabled old persons also could have given their opinions in this regard. But their family members debarred them from doing so. The grievances against the governmental geriatric activities may be categorised into several ways. The factors are mainly socio- economic and may be listed as irregular old age pension, inadequate old age home for the below poverty line people, inadequate employment facilities during post-retirement period, lack of benevolent fund for the poor old, lack of recreational facilities, lack of geriatric dispensaries and absence of legal help for the protection of old age interest and family disputes. It is also seen that barring slight differences in numbers the nature of grievances is one and the same in both the areas under study. The disabled aged were also asked to give their opinion with regard to the aforementioned problems. Here the aged have expressed certain traditional ideas along with a few non-conventional ones. Along with the conventional ideas such as timely distribution of pension, post-retirement, income e tax relief, easy loan facili - ties, free treatment etc., some of the non-conventional ideas expressed by the disabled aged are geriatric treatment in government hospitals, laws to protect the old age interest, data base for the development of the aged, popularization of geriatric problems through electronic and communication media, special social entertainment programmes for the aged through tele - vision and self help group for the old.

From these expressions, one may conclude that developmental activities with regard to gerons are quite meagre. The general reason behind that is the weak infrastructure, which also is a normal factor in a developing coun - try like India. But then again in terms of consciousness it has to be accept - ed that the knowledge level with regard to gerontology is being catching up with the concepts now available in the developed world and the state plan - ners need only to recognise these facts for future development of gerontol - ogy and geriatric care in this country. One must assure these senior crip - ple citizens that the state is conscious about their problem and even within the limited resource structure the state must ensure a true delivery system

that can reach these unfortunate persons within a fixed time frame.

The discussion till now thus has been made in three formal spheres. In the first sphere fall the day to day activities of a disabled geron along with his or her interpersonal relationship within the family. In the second sphere fall individual aspirations, desires and grievances along with his or her reac tions towards the environment, neighbourhood, society and the state. In the concluding sphere fall the self-assessment and the assessment of the family members towards the disabled aged person himself or herself. The idea behind such compartmentalization is just to understand primarily the micro level world of a disabled geron and thereafter one has to understand his or her larger world that is reflected through environment, society and the state. Combining these two as the backdrop comes the question of self-assessment and the assessment of the other family members of such a micro level personality.

Self-Assessment

To understand the last section one has to realize the proper meaning of the term 'disabled aged'. Put to reality it has been found in both the areas that majority of the respondents, both males and females know the broad mean- ing of the captioned words and accept such crippling situation of the aged as a natural consequence of either ailments or accident or acquired.

However contrary to this, many of the disabled aged still cannot consider themselves to be old and immobile. In this case the males think so as long as they are able to work, can control their own movements and can also earn their own living. In these cases, the protagonists cannot still accept the fact of disability as a hindrance. Some of the females also think so because they are still physically able and can exercise considerable authorities over their families in spite of their disability. The number of disabled aged in both these categories, though being small, the opinions have been recorded as an important exception to the normal trend of disability.

In the domain of personal assessment one has also to include in general the religious perceptions of a geron. Religion plays the role of a catalyst and the thoughts therein help the aged people to overcome their physical and mental ability. In case of the disabled aged group, religion plays on their mind more emphatically. In both areas, such religiosity was more pronounced amongst the female aged than their male counterparts. None of the disabled aged were able to give a proper explanation behind such gender discrimination. But going through a number of chat sessions with

them, the present researchers observed that the female aged became more religious perhaps due to their close association with domestic duties and an overall desire for family welfare in spite of their disability. The same may not be true for the males because of their greater exposure with the outer world in various manners.

'Happiness' is the third component in the sphere of self-assessment, which depends upon the mental make-up of a particular person. For the disabled aged, this is all the more relevant because such people tend to feel happy in spite of adverse circumstances, unfair neighbourhood and bitter inter personal relationship within the family. To feel happy one only needs to be mentally happy which is quite a tall order. That is the picture that has been gathered in both areas under study and only a miniscule percentage of the disabled aged respondents feel themselves to be happy. This minority sec - tion feels so because of their joint living, good interpersonal relationship within the family, good health, control over the family matters, financial freedom and less pressure in household work etc. In addition, these people also enjoy certain societal roles, that ignore their disability and do not put any pressure on their mind and neither make them feel unwanted. On the other hand, a large section of the disabled old people under study feel unhappy because they feel isolated, burdened by family problems, such as bitter relationship with the sons, financial dependence, untimely death of family members, declining health and a total dissatisfaction with his or her own activities. Added to this, are the problems of not having one's own property, forced to live separately without the warmth associa tion of the grand children, disinheritance of property and lastly displace ment from original birthplace. All these problems individually or collectively have affected adversely the disabled aged of the second category and made them feel completely unhappy. In fact the reason behind such unhappiness is nothing but a reflection of socio-economic conditions prevailing in both the field areas.

Apart from the aforementioned three spheres, also a marginal sphere may include factors like self-degradation, lack of self-esteem, tendency to keep one idle, intolerant and a tendency to keep aloof. These factors were put into questionnaire form and subsequent discussion revealed that in both areas majority of the respondents felt themselves to be not worthwhile for any job or duty and also considered themselves unfit for such jobs and duties and training. This appears to be quite logical particularly in the Indian context. The general feeling is a sense of redundancy once a person feels himself disabled and he recoils within himself without trying to

project or associate in a purposeful life. This thought process amongst the disabled aged have percolated into their daily life and perhaps influenced them to have a negative vision towards their advancement in ageing. The feeling of tiredness is a general one and is expressed by both the disabled male and female aged due to their declining physical health, immobility and above all role loss within the family. Other marginal factors such as worthlessness, intolerance and apathy towards other people, pre-decease of self have affected a negligible section of the disabled aged. However, in terms of self-assessment the most redeeming feature is the presence of hope that has been expressed by a majority of the disabled aged in spite of a number of adverse socio-economic conditions, Such hope always denotes a mindset that wants to adjust with the ever-changing socio-economic conditions notwithstanding the reality of disability.

Family Members Attitude about the Disabled Aged

The last factor in this section is the assessment by the family membersof the disabled male or female aged. This has been highlighted to understand the mechanism of self-assessment vis-a-vis the family members' assessment. There is generally a generation gap between the normal aged persons and their young family members. But this generality deepens when such old people are disabled. Here the chief protagonist normally loses his control over the family and the loss of role aggravated the interpersonal situation within their family. On the one hand, these visible aged males or females require an ioter of more attention and care than that of normal aged person. But contrary to their desire disabled old people face a behavioural pattern that lack care, affection and attention. Thus in many of the instances the interpersonal rift within the family sharpens resulting in bitter relationship and sometimes desertion by younger members of the family. This, in fact, is a conflict of two world views (Thavanani, 2002), which sometimes have become irrevocable and irreconcilable. The family member's assessment has been looked into this background.

An old couple always cherishes a family that may consist of the son, daughter-in-law and the grandchildren. This is all the more true in the Indian context because this is the pattern of family that has the backing of the tradition. Thus the present researchers have given more stress on the interpersonal relationship prevailing in a traditional family setup. The yardstick for such understanding had been divided into twelve markers and these were knowledge of the old, old as model family anchor, role performance of family duties, level of tolerance, activities towards family adjustments better care giver, helping hand to son's wives, good adviser and

sympathetic to grandchildren, courier of socialization to grandchildren. For the disabled aged many of these roles in spite of their best efforts cannot be achieved to its fullest extent. In such circumstances, a compromise within the family is the good example of geriatric care to be bestowed upon the disabled aged. The direct observations and focussed group discussions during the field study reveal a mixed situational position where the conventional idea such as generation gap does not always reflect the actual ground realities. For example, son, daughter-in-law and the grand children have by and large shown a greater respect towards their disabled aged family members. It has also come out that in spite of disability the aged members are considered to be an asset to the family and their wisdom and experience are always called for to solve family problems. In fact such younger generation also feels that the disabled aged should come forward and perform their role to arrive at positive family peace making and adjustment. However, parallel to this their also exists a thinking pattern wherein the son and the daughter-in-law do not like their children to be reared by the disabled grandparents. They constantly try to keep away their children from the so-called traditional short processes propounded by their old off-kin. In other words, the role of the old people within a traditional Indian family has undergone a radical change and it is all the more noticeable in case of the aged disabled. No longer such person enjoys the role of an anchor, which they used to do in the earlier times. The conflict that has been shown between the young and the disabled old is rather a reflection of contradiction between the two generations.

There still is a dichotomy where in the realm of family assessment the son, daughter-in-law and grandchildren relationship pivots round the concept of dependence on the parents as and when necessary and shuns their assistance whenever the traditional ideas of these old people gets into a conflict with the so called modern day industrial life. This of course is reflection of a change from the erstwhile agricultural life to the modern day concept of industrialization and globalization. Here time eats space (Inda&Rosaldo, 2002) and relationships are measured according to the changing value system. This is the main cause behind the isolation of the aged and particularly of the disabled aged and in spite of compromise and adjustment they have become victims of mental agony. The present researchers thus believe that the love-hate relationship between the disabled old and the new generation have been transparently reflected in both the areas under study. One way out is what is known as ecological adaptation function of culture (Pecchioni et.al.2004).It means value adjustment between the younger and the older generation. Not with-standing the love hate relationship, a better family

ambience will be found through such value adjustments.

Highlights

The chapter analyses the interpersonal relationship, grievances as well as relationship with environment, society and even state at large.

• Interpersonal relationship is the most important factor in the life of a disabled aged person. The former has three main correlatives and these are economic dependence, cultural practices and social behaviour of each family member.

• In the same context grievances, reflect the attitudinal behaviour pattern of the people who are unable to cope up with the fast changing life of the present day context.

• The third point to note in this context is the so-called generation gap, which has given rise to contradictions within and without the family. Ecological adaptation function of culture is an important way out to bridge this gap

• The chapter also highlights the concept of happiness and twelve markers that have been set up that are basically the desires, aspirations and larger worldview, which the disabled elderly cherish to dream and gain.

• Adjustment for the disabled aged in the context of larger society is difficult task. Role of state and the neighbourhood are two paramount aspects that require a closer scrutiny and effective implementation.

Observation and Conclusion

The present study relates with the very touchy issue of disability and old age. It is true that after the age of sixty both men and women tends to lose their physical and mental dexterity. In that sense, old age and disability can be said to be synonymous. But in the present issue our aim is to single out disability as a special symptom of inability that may jeopardize the mental and physical activities of an old person. The definition in this regard has been put forward at the outset. The essence of the definition shows a distinct separation of the disabled aged with that of the normal aged. The back ground of this research work is this essence of disability affecting a person above sixty and a hindrance to his or her normal activities of daily life.

In the above background, samples of two hundred disabled aged male and female have been recorded in the two areas namely rural Chakdaha and KMC Ward No. 88. In terms of qualitative analysis, samples of both areas reflect an age group of 60 and above. Of these eight males and fifteen females belonging to the ‘very old’ group (81+) dwelling in both areas under survey are unable to perform any of their normal chores and are practically

immobile. In the immediate lower group of 71-80 years, there are as many as seven males and nine females living in both the areas who are equally immobile and unable to perform any of the activities of daily living. The third age group that is between 60-70 years, there is lack of mobility but these respondents in spite of their disability are able to perform different tasks including manual and mental work. In fact, barring the two sets of crippling immobility age group of 70-80+ the remaining groups have overcome their disability and are functioning as if they are normal aged persons.

In the above light a detailed analysis of age–sex distribution, marital status, level of education, religious and caste affiliation, place of birth, and duration of stay have been conducted .The essential idea behind these factors is to bring out in details a broad profile of the disabled aged persons and to understand the problems of ageing and its manifestation in proper perspective. The results show a variety of data and manifestations of disability in its proper perspective.

The economic factors guiding the disable aged are mainly self-income, inherited income from the property, pension and indebtedness. The observed fact show most of the disabled aged females as dependent on their protégée, be it son, unmarried daughter, daughter-in-law and even the grand children. In comparison to these disabled aged males are less dependent and enjoy some of the family decision making status. Most of the disable aged respondents are somewhat forced to contribute a small amount to the family kitty for their up keeping. The disabled aged females being more dependent have to perform many a manual task within the periphery of the family domain. The economic situation of these people may therefore be summed up as inadequate bordering to pittance.

Health and health care is a very touchy issue for the disable aged male and female. The crippling disability that these kind of people are suffering from requires special attention and geriatric care of highest expertise. Unfortu nately, such geriatric care is very rarely found in this state and no special arrangement has been made in the state hospitals for this kind of special attention. Thus, the health care available to these people is limited within the family precinct. The small time opportunities sometimes are offered by the NGOs and other benevolent civil society organizations. There are eye camps, diabetic camps and orthopaedic camps where these unfortunate cripples flock together to get a minimum redressal for their chronic ailments and disability.

This is an area where a guideline should be framed by the state for the treatment of these types of maladies. In Indian context, family still is the

basic-care-providing unit of the aged. For the disabled aged, the role of the family even surpasses this expectation. Due to disability, the respondents suffer from depression and self-degradation. The members of a family should understand this problem in its proper perspective and adjust the interpersonal relationship within the family in an amicable manner. The so-called generation gap for the disabled becomes more acute and stringent resulting in bitter relationship within the family. The younger generation must understand that today's caregiver will tomorrow be care beneficiaries. In other words, compassion, sympathy and physical assistance should be three key aspects of a proper family care giving.

Behaviour is yet another touchy issue that reflects the nature of the disabled aged their mood anger, passion, joy and sorrow. Mentally the disabled generally feels insecure and neglected. But inwardly the desire, love and affection particularly from the family and the touch of sympathy at many a times help them to overcome their discomfort and provides energy and courage. The interpersonal relationship here also plays an important role. The members of a family must adjust with the disability of its elder member and encourage him or her to overcome their disability as far as practicable.

In larger context of the society, the role of neighbourhood in this connection is very important. From direct observations and case studies it has been found that disability has not been accepted as a general physical feature and in many instances our respondents have suffered due to lack of understanding and adverse reactions shown by the neighbours. The role of state in this regard is also not very encouraging. Seldom there are policies to help these disabled overcome their disability fully or partially. In effect there does not exist any fruitful state policy of rehabilitation.

Lastly, from the behaviour pattern of the disabled aged, it has been observed that these people, like the normal aged, desire to have a happy state of mind and would like to share their happiness with the family members, neighbours on an equal footing. They also like to be treated as normal social beings in spite of their disabilities. Unfortunately, these aspirations even today remain unfulfilled dreams and the society at large consciously or unconsciously treat their senior disabled citizens as if they are parasites living outside the perimeter of the society.

Society and social factors are congenitally fluid and moving. This is essentially a natural phenomenon just like birth and death. Social problems need to be treated within this parameter. But there are varieties of

variations in locating these problems. A society is said to be vibrant, active and dynamic where problems such as disability is considered not as a marginal one and allows its members to accept this phenomena as a problem of larger consequence. However, from our research experi - ence we have found that disability is still considered as a problem of the few though occasionally social groups within the society behave sympa - thetically showing empathy and compassion to the disabled of their respective areas. Needless to say, it is an exception and not a general rule that needs to be followed in an overall manner.

The present research work is an attempt to understand the problem of disability in a holistic manner. But it is also a maiden attempt to create such compassion and empathy within the parameters of a society that is otherwise vibrant but is yet to rise to the occasion of solving the problems of its disabled senior members.

To do this, it is imperative that the State, the civil society organizations, the NGOs and the Gerontological experts need to act in cohesion and formulate policies, guidelines and medical assistance to such unfortunate disabled aged cripples and allow them a space to act as normal human beings and as far as practicable to return them back to the flow of main - stream population.

RECOMMENDATIONS

• The foremost requirement is to create a database all over the country for recording the aged disabled.

• There should be a uniform central policy with regard to the disabled aged pop - ulation throughout the country.

• Each state need to formulate separate policies with regard to their disabled in keeping with the uniform central policy.

• There must be separate geriatric wards in all the state hospitals all over the country. The disabled aged should get a priority in these geriatric units.

• For the disabled aged old age homes need to be established as special entities. The respective state governments may also subsidize these homes.

• Special workshops may be conducted to train the disabled aged for fruitful engagement in the ancillary working stream as far as practicable.

• To avoid gender discrimination the aged disabled women may be provided with a minimum daily allowance and such allowance can be arranged by the Commissioner for Disability in the respective state.

REFERENCES

• American with Disabilities Act (ADA), P.L. 202-236. 1990. July 26. (World's first comprehensive declaration of the equality of people with disabilities).

• Ara, Shabeen. 1994. Old age among slum dwellers. New Delhi: South Asian Publication.

• Bali, P. Arun. 1999. Well being of the elderly. Journal of Social Change 29 122: 64-76.

• Bali, P. Arun. 1997. "Role of family in elderly care", in Ageing and the aged: Challenges before Indian gerontology. Edited by N.K.Chadha, pp. 185-204. Chadha, N.K. Ibid. Pp 185-204.

• Basu, Saumitra. 2006. Some Social, economic and behavioural problems of the aged inhabiting the Calcutta city: An anthropological approach (Unpublished Ph.D Dissertation).

• Bhatia, H.S. 1983. Ageing and society: A sociological study of retired public servants. Udaipur: Arya Book Centre.

• Bose, A.B. 1988. "Policies and Programmes for the Ageing in India", in The Ageing in India: Problems and potentials. Edited by A.B. Bose and K.D. Gandragde, pp. 58-85. New Delhi: Abhinav Publications.

• Bosu, Rajsekhar. 1388 (1982). Mahabharat (in Bengali). Kolkata: M.C. Sarkar Private Limited.

• Brody, E.M. 1985. Parent care as a normative family stress. Gerontologist 25: 19-25.

• Burgess, E.W. 1960. "Ageing in western culture", in Ageing in western societies. Edited by E.W. Burgess, pp. 3-28. Chicago: University of Chicago Press.

• Cavan, R.S., Burgess, E.W., Havighurst, R.J., and H. Goldhammeer. 1949. Personal adjustment in old age. Chicago: Science Research Associates.

• Census of India. 1991. Population tables. Government of India.

• Census of India. 2001. Population tables. Government of India.

• Chattopadhyay (Chakravarty) Indrani, 1987: The Pensioners in Calcutta: A Gerontological Study: An unpublished Ph.D. Dissertation.

• Confrey, E.A., and M.S. Goldstein. 1960. "The health status of ageing people", in : Handbook of social gerontology: Societal aspects of ageing. Edited by Clark Tibbitts, pp. 165-207. Chicago: The University of Chicago Press.

• Couch, Robert, H., and Sawyer, Horace, W. 1992. Adjustment services for special populations. Vocational Evaluation and Work Adjustment Bulletin, 25: 63-69.

• Cowgill, D.O. 1972. "A theory of aging in cross-cultural perspective", in Aging and modernization. Edited by D.O. Cowgill, and L.D. Holmes, pp. 1-13 New York: Appleton-Century Crofts.

• Creen, S.H., 1977. Towards an understanding of religion. Journal of Pastoral Care 31, 4: 273-278.

• De Souza, Alfred. 1982. The social organization of ageing among the urban poor. Social Action 32: 53-64.

• Desai, K.G. and Naik, R.D. 1971. Problems of retired people in greater Bombay. Tata Institute of Social Sciences. Sr. No. 27, Bombay.

• Doty, P. 1986. Family care of the elderly: The role of public policy. Milibank Quarterly 64: 34-75.

• Ekerdt, David. 2002. Editor in Chief. Encyclopedia of Aging. Four Volumes. USA: Macmillan Reference.

• Fernandes, W.1982. “Ageing in South Asia as marginalization in neo-colonial economy: An introduc tion”, in Ageing in South Asia. Edited by A, De Souza and W, Fernandes, pp. 1-23. New Delhi: Indian Social Institute.

• Fine, Michelle, and Asch, Adrienne. 1988. Disability beyond stigma: Societal interaction, discrimina tion and activism. Journal of Social Issues. 44: 1, 3-21.

• Folsom, J.K., and M.C. Morgan. 1937. The social adjustment of 381 recipients of old age allowanc - es. American Sociological Review 2:223-229.

• Friedman, L.W. 1978. The psychological rehabilitation of the amputees. Springfield: Charles C. Thomas.

• Gary, L. Albert. Ed. 2006. Encyclopaedia of Disability. Thousand Oaks: London.

• Ghai, Anita. 2006. “Disability in contemporary India”. In Encyclopaedia of Disability. Edited by Albert, L. Gary. Thousand Oaks: London.

• Goode, W.J. 1963. World revolution and family patterns. New York: Free Press.

• Granaham, D.V. 1972. Contents and measurement of socio-economic development. New York: United Nations Research Institute of Social Development.

• Gulati, Leela and S. IrudayaRajan. 1999. The added years: Elderly in India and Kerala. Economic and Political Weekly 34: WS46-WS51.

• Gurumurthy, K.G. 1998 the aged in India. New Delhi: Reliance Publishing House.

• Hammel, J., and S. Nochajski. Eds.2001. aging and developmental disability: Current research, programming and practice implications. New York: Haworth Press.

• Haveman, R., De Jong. P., and Wolfe, B. 1991. Disability transfers and the work decisions of older men. Quarterly Journal of Economics, 106, 939-949.

• Help Age International. 1999.

• Herbert, James, T., and Dambrocia, Cynthis, J. 1989. Employability of older persons with disabilities: A partnership among employers, rehabilitation counsellors and potential workers. Journal of Applied Rehabilitation Counseling, 20, 16-20.

• Holden, K.2001. Chronic and disability conditions: The economic costs to individuals and society. Public Policy and Aging Report, 11, No.2:1-6.

• Holder, Karen. 2002. “Disability: Economic costs and insurance protection”, in Encyclopaedia of Aging. Edited by David Ekerdt, vol. 1: A-D, USA: Macmillan Reference, pp.: 350-354.

• Holland, Beverly. And Falvo, Donna, R.1990. Forgotten: Elderly persons with disability – A conse quence of policy. Journal of Rehabilitation, 56, 32-35.

• Hooyman, Nancy R., and Asuman H. Kiyak. 1993. Social gerontology: A multidisciplinary perspec tive. Boston: Allyn and Bacon.

• House4, J.S. and Others. 1990. Age: Socio-economic status and health. Milbank Quarterly 68, 3:383-411.

• Hussain, M.G. 1997. Changing Indian society and status of aged. New Delhi: Manak Publication.

• Inda, Jonathan Xavier and RentoRosaldo. Editors. 2002. The anthropology of globalization – A reader. USA: Blackwell Publishers.

• Isaacson, Kalies. June. 1991. “Aging with a disability: Another advocacy priority”, in Aging, Disability

and the Nation's Productivity: A Report on the 15th Mary E. Switzer Memorial Seminar. Eds. Leonard G. Perlman and Carl E. Hansen. Reston, VA.

• Ishwaran, K. 1966. Tradition and economy in village India. London: Routledge and Kegan Paul.

• Kalache A. 1990. "Aging in developing countries", in Principles of Geriatric Medicine. Edited by M. Pathy. Pp. 93-113. New York: John Wiley Press.

• Karve, Irawati.1965. Kinship organization in India. Bombay: Asia Publishing House.

• Keith, Jennie. Et. Al. 1994. The aging experience: Diversity and commonality across cultures. Thousand Oaks: Sage Publications.

• Kennedy. Ed.2003. disability and aging. Journal of Disability Policy Studies, Special Issue. 12, 4.

• Khan, M.Z. 1997. Elderly in metropolis. New Delhi: Inter India Publications.

• Landis, J.T.1942. Social psychological factors of ageing. Social Forces, 20: 468-470.

• Mac Iver, R.M., and C H Page. 1952. Society: Introductory analysis. London: Macmillan.

• Mahajan, A. 1987. Problems of the aged in unorganized sector. Delhi: Mittal Publications.

• Mahajan, V.D. 1960. Ancient India. New Delhi: S. Chand.

• Malinowski, B. 1958. Crime and custom in a savage society. London: Routledge & Kegan Paul.

• Mintern, L. and W Lambert. 1964. Mothers of six cultures. New York: John Wiley.

• Mishra, Saraswati. 1987. Social adjustment in Old Age. New Delhi: B. R. Publishing Company.

• Morgan, Leslie, and Suzanne Kunkel. 2001. Aging: The social context. California: Pine Forge Press.

• Myers, G.C. 1986. Cross-national patterns and trends in marital status among the elderly. Paper presented to the Conference on Aged Population. Universities Catholique de Lou Vain, Belgium, October.

• National Sample Survey Organization (NSSO). 1998. The aged in India – socio-economic profile. 52nd Round. July 1995-June 1996. Department of Statistics: Govt of India.

• Orto, Dell, E. Arthur., and Marinelli, P. Robert. Ed. 1995. Encyclopaedia of Disability and Rehabilitation. New York: Macmillan Publishing.

• Padula, P.A. and L.W. Freidman. 1987. Acquired amputation and the prostheses before the sixteenth century. The Journal of the Vascular Diseases, February.

• Pearlin, Leonard, I., Mullan, Joseph. T. Semple, Shirley, J., and Skaff, Marilyn, M. 1990. Care giving and the stress process: An overview of concepts and their measures. The Gerontologists, 30: 583-591.

• Pecchioni, Loretta, Ota, Hiroshi and Lisa sparks. 2004. "Cultural Issues in Communication and Aging", in Handbook of communication and aging research. Edited by Nussbaum, Jon. F. And Justine Coupland. New Jersey: Lawrence Erlbaum Associates Publishers. Pp: 167-208.

• Pollak, O. 1948. Social adjustment in old age: A research planning report, Bulletin, 59. New York: Social Science Research Council.

· Powel, chuck, and Thorson, James, A. 1990. Rural elderly and their needs: Understanding, developing and using a needs assessment. Kanas City, MO.

· Pratt, M W, and J E Norris. 1994. Understanding ageing: The social psychology of ageing. Oxford: Blackwell Publishers.

· Priestly, Mark. 2001. Disability and the life course: Global perspectives. UK: Cambridge University Press.

· Radhakrishnan, Sarbapally. 1996. The Hindu view of life. New Delhi: Harper & Collins Publishers.

· Redfield, R., and Milton, B. Singer. 1956. The cultural role of cities. Man in India. 36(3): 162-194. Ranchi.

· Reservation For Backward Classes. 1991. Mondal Commission Report of the Backward Class Commission. Delhi: Atalnak Publications.

· Rosen, G. 1960. "Health programme for an ageing population", in Handbook of social Gerontology: Societal aspects of ageing. Edited by Clark tibbitts, pp. 521-548, Chicago: Chicago University Press.

· Rowels, G.D. 1986. Rural elderly and the church. Journal of Religion and Ageing 2, 1-2: 79-88.

· Sanders, G.T. 1986. Amputation prosthetics. Philadelphia: F.A. Devis Company.

· Schultz, J.H. 1980. The economics of ageing. Belmont, CA: Wadsworth.

· Shanas, E, And P M Hauser. 1974. Zero population growth and the family life of older people. Journal of Social Issue 30: 79-92. Silversteine, M., and V.L. Bengston. 1997. Intergenerational solidarity and the structure of adult child-parent relationships in American families. American Journal of Sociology 103: 429-460.

· Smeeding, T.M. 1990. "Economic status of the elderly", in Handbook of ageing and the social sciences. Edited by R.H. Binstock and L.K. George, 3rd edition. Pp. 362-381. San Diego: Academic Press.

· Stone, R.I. and P. Kemper. 1989. Spouses and children of disabled elders.

· Streib, G.F. and W E Thompson. 1960. "The older person in a family context", in Handbook of Social Gerontology: Societal aspects of ageing. Edited by Clark Tibbitts, pp. 447-487, Chicago: Chicago University Press.

· Sudan, K.S. 1975. Ageing in India. Calcutta: Minerva Associates.

·Synder, Sharon, and David, Mitchell. 2005. Cultural locations of disability. Chicago: University of Chicago Press.

· Thavanni, M. 2002. "Adjustment problems of the old with younger generation", in Ageing: Indian Perspective. Edited by T. Bai, pp. 23-34. New Delhi: Decent Books.

· Trieschmann, Roberta, B. 1987. Aging with a disability. New York.

· United Nations Organization. 1992. World programme of actions concerning disabled persons. United Nations Department for Policy Coordination and Sustainable Development.

· United Nations.2000. World population prospects. New York: United Nations.

· Vatuk, S. 1975. “The ageing women in India: Self-perception and changing roles”, in Women in contemporary India and South India: Traditional images and changing roles. Edited by Alfred De Souza, pp. 142-163. New Delhi: Monohar Publications.

· Wan, T.M. 1982. Stressful life events, social support network and gerontological health. Lexington: Lexington books.

· Wilson, A.B. 1978. Limb prosthesis. New York: Demos Publications.

· World Health Organization.1980. International classification of impairment, disabilities and handicaps. Geneva: World Health Organization.

Prof. R. N. Kapoor, former Vice Chancellor of M.G. Gramodaya Vishwavidyalaya, Chitrakut, along with Prof. T. M. Dak and Mr. Tom Holloway is coordinating program of Universities of 3rd Age (U3A). A national level U3A is being planned sometime in March-April 2008.

The concept note prepared by Prof. Kapoor for this purpose is published here.

Concept Paper for Third-Age Universities – U3A

Scientific study, research and care of elderly has gained tremendous priority and importance during the past couple of decades. Rapid advances in medical science and better care of elderly, improvement in nutrition, mass immunization against diseases and due to decreasing infant mortality rate, late marriages and later child bearing and more people now practicing family planning, the absolute numbers of the elderly over 60 years is fast increasing. Today, 60% of World's older persons live in Asia and by 2025 it will increase to 75%. In several so called advanced countries, this population is around 50% of the workforce. About 25% population of Japan is of older persons above 60 years age and in China it is 11%. Modernization, urbanization, breaking of joint family systems and consumerism have aggravated the problems of elderly. In most Asian countries, the order of precedence had been mother, father, teacher and God but the fast changing culture and the impact of western civilization has diluted the precedence, family ties and mutual regard. Ageing is no longer a minor issue and soon in many countries, elderly will outnumber the young. The dream of people to live long is becoming a reality. Baby bonus schemes have been taken up in Australia, Scandinavis, France, Spain and Singapore, etc. to increase the birth rate.

Paradoxically, however, the problems of elderly is over shadowing the joy of longevity and affect the social, economic and physical well being of individuals, their families and their society. Recent surveys have indicated that 50% people above 50 have one or more diseases. Elderly people continuing to learn and work have overall higher health standard. Problems of elderly women and particularly widows or singles are many more. Their greater emotional attachment with family members, lack of security, depression, hypertension, difficulty in adapting to changing lifestyles, makes their living miserable. Never married men and women have lowest survival rate. Traditionally, the care of elderly has been largely the responsibility of women i.e. spouse, daughter-in-law and daughter and they provide physical, emotional and sometimes economic support. In case of chronically ill elderly persons, the care becomes more difficult.

Present Scenario:

Malta, a small country of 3,50,000 population, situated in the middle of the Mediterranean, was the first to raise the question of ageing at UN in 1968. In 1979 the General Assembly agreed to raise the issue in World Assembly in 1982 and an international institute on ageing Malta was later setup by UN in 1988. A notable signpost on the road leading to implementation of the international plan of action on ageing was erected during the 47th session of General Assembly of UNO in October 1992, the proclamation on Ageing. Recognizing the need for a practical strategy on ageing for the next decade, the General Assembly urged the international community, in Proclamation, to undertake the implementation of their International plan of action on ageing. It supported broad and practical partnership with UN programme on Ageing, including those between Governments, specialized agencies and UN Bodies, NGOs and private sector. It strengthened the UN Fund for Ageing as a means for supporting developing countries.

The Asian Pacific Population conference held in 1992 in Indonesia also stressed that Asia has become the center of population ageing and faces the necessity of dramatic, social and economic changes in order to cope with the demographic transition. In 21st century, the world population will experience ageing at a rate never before experienced in the history of mankind. In this sense, the 21st century could be called the “Era of Population Ageing”. The conference recommended prolonged productivity and self-reliance of older people. It maintains that ageing need not be a negative experience.

China is well known as a country where the elderly are held in deep respect even today. The establishment of the Chinese National Committee on ageing in 1983 was an important step. The committee's principal responsibilities included education, training and research, planning reforms, supervision and inspection. China has more than 45,000 town and village run old people's homes, care, recreation and rehabilitation centres, residential flats, consultancy offices and separate bureaus have been to help and educate the elderly.

As a member of International federation on Ageing and Helpage International, Singapore Action Group of Elders (SAGE) was established as early as 1977. Singapore is hosting 8th ASEAN Gerontology conference / course jointly with INIA from August 27 to September 17, 2007. SAGE has setup a center for study of Ageing (CENSA) and managed by multi-disciplinary professionals. TSAO Foundation in Singapore for women, National Volunteer and Philanthrophy Centre Singapore (NVPC); Retired Senior Volunteer Programme (RSVP) are excellent NGOs working in Singapore. Recently, Singapore Government has setup a council for Third Age (C3A) and it will work with voluntary organizations, statutory Boards and the private sector.

Brief history of University of Third Age

The first UTA emerged in Toulouse, France in 1973 at the University of Social Science where Professor Pierre Vellas of the Faculty of Law and Economics conceived the idea of offering third agers a program of activities commensurate with the conditions, needs and aspirations of this age group. After modest beginnings and the initial lectures and physical activities, the classrooms were soon full. The older people were equally receptive to the social and emotional development brought about by meeting and sharing common aspirations as they were to intellectual and physical culture. The first example was not long before being copied and several universities in their turn set up programs for older people. It was in France that the movement developed the most rapidly with the number of UTAs growing consistently over the years. After Belgium, it was Spain, Switzerland, Poland, Canada, Sweden, Italy, the USA, England, Germany …… then South America, Africa and Asia. Then Professor Pierre Vellas founded the International Association of Universities of the Third Age, the ideal location for exchanges and meetings for all providers and users of university institutions, given its role as a cleaning-house of experience and research.

Based on Roger Bernier (Sociology and Society, Vol. XVI) Translated by S. H. Miller.

Dr.Vellis first developed this concept at Toulouse, France in February 1973 and it was v ery successful from the very beginning. Today, there is large number of U3As in Europe, America, Australia, Canada, and Japan and in very large numbers in China. Since 1976 the International Association of Third Age Universities (AIUTA) is also functioning and its Headquarter is in Anatole – 3170 Toulouse Cedex – France. Reports indicate that most of these U3As are functioning very well and their membership vary from 50 to 5000 elderly men and women. Activities in U3A vary according to membership, location, support by Government and Non-Government organizations. Tentative list of activities, collected from U3As in UK, Australia, South Africa and several other countries is as below:

I. Organize seminars, workshops, camps.
ii. Monthly/Weekly meetings at conversant locations, Guest lectures.
iii. Studies and research on ways to improve the quality of life of elderly.
iv. Short and long term educational / training programmes including distance education.

v. Special programmes designed for pre-retirees, training care-givers, Management of Day Care Centres, courses for Policy Makers, Planners, etc.
vi. Research in Medicine, pharmacology, public administration, Social Gerontology, Medical Gerontology, Geriatrics, economy, politics, sociology, psychology, demography, etc.
vii. Computer literacy e.g. Basic packages, Windows, Word, Internet, multimedia, Excel, digital photography, video-editing, repairs, web designing, etc.
viii. Art, drawing, photography, oil painting, fabric art, etc.
ix. Music e.g., guitar, accordion, drums, piano, dancing, chorus singing, etc.
x. Yoga, tai-chi, naturopathy, meditation, spiritual lectures, acupressure, traditional Chinese Medicines, physiotherapy, occupational therapy, health club, religious issues, laughter club, healthy cooking, nursing, skills, etc.
ix. Music e.g., guitar, accordion, drums, piano, dancing, chorus singing, etc.
x. Yoga, tai-chi, naturopathy, meditation, spiritual lectures, acupressure, traditional Chinese Medicines, physiotherapy, occupational therapy, health club, religious issues, laughter club, healthy cooking, nursing, skills, etc.
xi Picnics, tours, film shows, common lunches/dinners, visiting museums/zoo, etc.
xii. Games, dancing, wine club, badminton, tennis, table-tennis, billiards, golf, etc.
xiii. Need based vocational trainings, social works.
xiv. Library, bulletins, magazines.
xv. Short courses on Finance Management, investment, journalism, waste management, aboriginal studies, poetry, legal rights, Astronomy, comparative religions, history, languages, philosophy, study of scriptures, etc.
xvi. Employment bureau, placement, counselling cell.
xvii. Normally, U3As work in close collaborations with NGOs, Educational bodies, religious organizations, hospitals and charge nominal membership and course fees.

Ever increasing socio-economic implications and humanitarian issues of the Aged, the vulnerable section of the population especially susceptible to physical and mental health deterioration and social crisis, must now be a serious concern for the Government, policy makers, planners, NGOs, universities as well as corporate sectors. Though several national and international organizations/federations are already involved in the care and education of elderly but all this appears to be far too inadequate.

Old age can be creative or self-destructive. It is your choice to decide. Old age need not be painful and death may not be frightening. It is possible to learn in the days of retirement.

*For more detail, please contact/consult Prof. R.N. Kapoor (E-mail: mkapoor31@hotmail.com. M: 09956593157), Mr. Tom Holloway

Increase in oxidative stress leads to downregulation of VAMP2 expression in the rotenone-induced PD mouse brain and decreased recognition memory

Shriya Vats
Garima Chandra
Jagannath Das
S. Prasad*

Abstract

Parkinson's disease (PD), a chronic neurodegenerative disease, is associated with motor disorders in people over the age of 65 yrs due to loss of nigrostriatal dopaminergic neurons in the SNPc. The precise mechanism of PD pathogenesis remains uncertain, however, evidences suggest that the oxidative stress is one of the major factors in the pathogenesis of sporadic PD attributed to accumulation of Lewy bodies made up of abnormally accumulated *α*-Synuclein (*α*-Syn) leading to selective degeneration of dopaminergic (DA) neurons. Reportedly, *α*-Syn interacts with presynaptic vesicle associated proteins. Evidences suggest that the aggregated *α*-Syn leads to reduced interaction with the DA-vesicle followed possibly by loss of dopaminergic neurons and decline in the release of DA in the synapse. In the present paper, we have asked whether rotenone-induced oxidative stress leads to accumulation of α-Syn and both affects the expression of a vSNARE complex assembly associated VAMP2 (vesicle-associated membrane protein 2, or synaptobrevin-2). Further, we have also examined whether this condition leads to cognitive decline in PD mice. Our data reveal that the rotenone-induced PD mice exhibit the features of motor decline and were associated with significant decline in the anti-oxidative stress enzymes (SOD and GPx) activities compared to control and vehicle mice. Data from NOR test clearly indicates that the above alterations in PD mouse leads to significant cognitive decline in PD mice compared to control mice. Our Western blotting data favors the above by a significant increase in the level of *α*-Syn compared to the control and vehicle-treated mice. This was associated with the significant down regulation of VAMP2 protein expression in the brain of rotenone-induced PD mouse model. Our data provides an evidence for a possible link between PD-induced motor disabilities and cognitive impairment which may be associated with upregulated *α*-Syn and decline in VAMP2 expression in the brain.

*Biochemistry and Molecular Biology Lab, Department of Zoology, Institute of Science, Banaras Hindu University, Varanasi-221005, UP, India,
email: s.sprasadbhu@gmail.com

Keywords: *PD, α-Synuclein, SNARE complex, VAMP2, or Synaptobrevin-2, SOD, GPx, NOR.*

Abbreviations: PD-Parkinson'disease; DA- Dpamine; VAMP2- Vesicle-associated membrane protein 2; SNAP- Soluble N-ethylmaleimide Sensitive Factor Attachment Protein; SNARE- Soluble N-ethylmaleimide Sensitive Factor Attachment Protein Receptor; SV- Synaptic Vesicle; SN-Substancia Nigra (SN); ROS- Reactive Oxygen Species; DMSO-dimethyl sulfoxide; SOD-superoxide dismutase; GPx-Glutathione peroxidase; DNA-deoxyribonucleic acid; RNA-ribonucleic acid; HRP-Horse radish peroxidase; RIPA-Radioimmunoprecipitation assay; TEMED-tetramethylethylenediamine; EDTA -Ethylenediaminetetraacetic acid; EGTA-Ethylene glycol tetraacetic acid; PMSF-Phenylmethylsulfonyl fluoride.

Introduction

Parkinson's disease (PD) is a progressive most common age-dependent neurodegenerative disorder after the Alzheimer's disease (AD) and is characterized by its hallmark symptoms called tremor, rigidity, ataxia and postural instability (TRAP). This is reported to occur in the subjects over 65 years of age. This is well established that PD is caused by the loss of dopaminergic neurons in the substantia nigra pars compacta (SNPc) of the basal ganglia, the accessory motor organ located in the core of the brain, which eventually affects the cross-talk of the SNPc to vital parts of brain associated with higher function of brain such as learning, memory and cognition. This is associated with the misfolding of protein called α-Synuclein which leads to the loss of DA neurons diminishing the release of DA. This condition also leads to loss of many other non dopaminergic areas of the brain such as noradrenergic locus ceruleus, the cholinergic nucleus basalis of Meynert, the serotonergic Raphe nucleus and the autonomic nervous system [1]. PD is associated with abnormal deposition of protein such as α- Synuclein (α-Syn). Toxicity of α- Synuclein may be related to disequilibrium in dopamine storage and release or through massive increase in ApoE levels and accumulation of insoluble amyloid fibrils [2]. The abnormal folding, function and metabolism of proteins are the key source and targets of oxidative and nitrosative stress [3].

Rotenone has been used by researchers to develop an animal model of PD that mimics the salient features of the symptoms of the PD. Non-familiar sporadic PD is characterized by a 15-30% reduction in the activity of Complex-I of the mitochondria by rotenone [4]. Development of PD with administration of rotenone, represent a specific model with construct validity , as it targets the mitochondrial Complex-I of electron transport chain system and leads [2]. The abnormal folding, function and metabolism of proteins are the key source and targets of oxidative and nitrosative stress [3]. Development of PD with administration of rotenone, represent a specific model with construct validity ,

as it targets the mitochondrial Complex-I of electron transport chain system and leads to disruption of respiratory chain, disruption of oxidative stress and increase in the reactive oxygen species (ROS) [5]. Oxidative stress is another factor that contributes to the cascade leading to degeneration of dopaminergic cells in PD [6]. Mitochondria act as the main intracellular generator of reactive oxygen (RO). Simultaneously, the electron transport chain is also a target of the ROS attack [7]. Cells consist of a large number of antioxidants systems to prevent the damage caused by the ROS, and to regulate the redox sensitive signaling pathway [8]. There are several antioxidant systems found in human tissues including, brain such as, Superoxide Dismutase (SOD), which is responsible for the conversion of superoxide anions into H_2O_2. According to studies, Mn-SOD, which contributes to metabolism of superoxide in mitochondria, has also been reported to be increased in PD [9]. In addition, glutathione peroxidase (GPx) catalyzes H_2O_2 to H_2O using glutathione (GSH). Thus reduced GSH level in the midbrain may be indicative of increased free radical levels [10].

α-Syn is a highly charged 140-amino acid heat-stable protein that is soluble and found natively “unfolded” in the neurons [11]. Since α- Syn is localized to the presynaptic terminal, both synaptic transmission and the SNARE complex, the central fusion machinery for vesicle fusion, have also been connected to its physiological feature. Growing data, however, indicates that α- Syn over-expression functions as a central regulator in synaptic vesicle fusion pathology [12]. The over-expression of α- Syn, for example, has been shown to induce dopamine release reduction by interfering with a step downstream of vesicle docking in exocytosis or inhibiting the reclustering of synaptic vesicles after endocytosis in the active region [13]. In addition, in the development of neurodegeneration, α- Syn can represent an essential protein. The over-expression of α- Syn can interfere with synaptic function, contributing to cognitive disruption. [14]. Thus, while the over-expression of α- Syn is highly likely to interact with the mechanism underlying vesicular fusion, the molecular mechanism of this process is entirely unclear.

Redistribution of SNARE proteins at the synapse and the altered exocytosis may be an early event in the pathogenesis of PD [13]. The SNARE proteins are very crucial for the synaptic vesicles fusion with the plasma membrane at the active zone to release the neurotransmitter [15].The SNARE assembly and disassembly leads to extremely reactive unfolded SNARE protein intermediates, exposing the presynaptic terminals to the activity dependent degeneration [15,16]. α- Syn acts as a chaperone for the SNARE complex assembly and to support its folding it binds directly to VAMP -2 (vesicle-associated membrane protein 2) and phospholipids of SVs [16]. SNARE proteins play a key role in vesicle fusion to the presynaptic membrane and hence modulating the release of neurotransmitters [17]. VAMP2, a member of the SNARE protein family, is respectively localized to synaptic vesicles and the presynaptic membrane where they form part of the SNARE complex required for vesicle release. It was recently reported that large α- Syn oligomers preferentially bind to VAMP 2 which results in the inhibition of docking between donor and acceptor vesicles [18]. Hence, VAMP2 could represent a key component for mediating the impact of α-Syn.

The present study, therefore, was carried out to aid our understanding of the role of pre-synaptic dysfunction that may occurs in PD and may provide information on identifying changes in the key markers of the synapse machinery and its plasticity which may underlie the pathogenesis of PD and PD-induced cognitive dysfunction. Therefore, in the light of above, we mainly focused our investigations toward understanding the rotenone-induced oxidative stress leads to alterations in the expression of a key SNARE protein, VAMP 2 and α- Syn which might be associated with change in the cognitive function PD mouse model.

Materials and Methods

1.1 Chemicals and reagents

All chemicals used in the study were of the analytical and molecular biology grade and were purchased from Sigma, USA or Merck, India. The anti α- Syn and the anti-VAMP 2 primary antibodies were purchased from Cell Signalling Technology, Inc. and HRP-conjugated secondary antibody against anti-rabbit primary antibodies was obtained from Genie, Bangalore, India. Rotenone and DMSO were purchased from Sigma, USA.

1.2 Animals

Swiss albino male mice were used for experimentation. Mice were kept in the animal house Department of Zoology, Banaras Hindu University, Varanasi, India at 26±2˚ C and relative humidity 44- 56% with 12 hour light and dark schedule were maintained. Animals were provided with standard rodent pellet diet and water was allowed *ad libitum*. The animals were of the same age (25 ± 2 weeks). The experiment included 3 groups including 6 mice in each group. The present study was approved by Banaras Hindu University's Animal Care and Use Committee (IACUC) for the use of animals for experiments and handling protocol were in accordance with its guidelines.

1.3 Drug Treatment

Six rats were randomly selected for the treatment group and were injected subcutaneously with freshly prepared rotenone once daily at the same time (5 mg/kg body weight dissolved in DMSO) for a period of 8 days. Control group (n=6) received equal volume of vehicle (DMSO) or saline only (equivalent volume; n = 6). The well being of all mice was monitored once daily. Motor impairment tests were performed one day before sacrificing the animals. All tests were conducted after a 30–45 min habituation period to the experimental room during the day time under artificial light and acoustic exposure to reduce the adverse effects of impulsive noise.

1.4 Grip-strength measurement

Grip strength of the forelimbs was recorded using a digital grip force meter (MEDICRAFT GRIP STRENGTH METER). To capture the grid, individual mouse was positioned with the forelimbs and was softly pushed to test the grip strength. The strength of the grip was measured in terms of force measured as Kg.

1.5 Novel Object Recognition Test

Novel object recognition test was performed to investigate the cognitive decline with a few modifications [19]. Because mice have an innate preference for novelty, if the mouse recognizes the familiar object, it will spend most of its time at the novel object. The choice of exploring novel objects implies the use of cognitive memory and learning [20]. The novel object recognition test included three sessions (habituation, training and testing). Each session was conducted once a day for three consecutive days. The first day consisted of a 10-min habituation session for each mouse in a black arena box (30 cm × 30 cm × 28 cm). On the second day of training session, the mouse was allowed to explore freely for 10 min after two identical objects were centered. On the third day of testing session, one object (familiar object) was replaced with a novel object and the mouse was allowed to explore for 5 min. Through video recording, the exploration time for each object, the number of entries into the novel objects zone, and discrimination index were analyzed by ANY MAZE software. Memory for the novel and familiar object was determined by the discrimination index using a formula [Discrimination index = (novel object exploration time/total exploration time) – (familiar object exploration time/total exploration time) × 100].

1.6 Processing of brain tissue

On 9th day, mice were sacrificed by cervical dislocation following the guidelines of IACUC of Banaras Hindu University. Skull bones were carefully removed and the whole brain was carefully dissected out immediately transferred into ice-cold phosphate-buffered saline (PBS),

phosphate-buffered saline (PBS), the adherent blood was removed, transferred onto a wet blotting paper followed by blot dried between the folds of Whatman 1M filter paper. Cerebellum was carefully removed and cerebrums were dissected out, pooled and was stored at -80 degree for further experimental use.

1.7 Measurement of oxidative stress

Total native protein extract was prepared by making a 10 % homogenate (w/v) of the pooled brain in ice-cold buffers 50 mM Tris (pH 7.4), 1 mM EDTA, and 0.5 mM EGTA. The homogenate thereafter was centrifuged at 12,000xg for 20-30 min at 4°C. The supernatant was collected and its protein content was measured by the Bradford method [21].

1.7.1 In-Gel assay of SOD activity

In order to study the activity of SOD under different experimental condition, 40µg total protein from the experimental as well as controlled mice was mixed with sample buffer containing 10mM Tris HCl (pH7.4), 10% glycerol and 0.0001% Bromophenol blue and resolved on 10% native polyacrylamide gel (PAGE) polymerized in 0.375M Tris.HCl (pH7.4) and 250 mM glycine. At the end of electrophoresis, the gel was carefully washed with triple distilled water, stained in a mixture containing 1.23mM nitro blue tetrazolium (NBT) 28 mM TEMED for 20 minutes in dark and thereafter, the gel was placed under fluorescent light till the appearance of achromatic bands.

1.7.2 In-gel assay of GPx activity

Native PAGE of tissue extracts was conducted to test the activity of glutathione peroxidase. The extract containing 60µg protein was loaded in each lane of 10% native PAGE as described earlier. After electrophoresis, the gel carefully removed and was submerged in a 50mM Tris HCl buffer (pH 7.9) containing 13mM reduced glutathione (GSH) and 0.004%H_2O_2 with gentle shaking up to 5-10 min. The gel was then stained with 1.2 mM NBT and 1.6mM

phenazine methosulfate (PMS) till the clear band zones under fluorescent light appeared. The intensity of the resultant stained SOD and GPx bands was quantified using Alpha Imager 2200 software.

1.8 Western blot analysis

A 10% homogenate of the pooled cerebral tissue was prepared in RIPA buffer (50 mM Tris-Cl, pH 7.4, 1mM EDTA, 1mM EGTA, 150 mM NaCl) containing 100 µg/ml PMSF and 1µg/ml protease inhibitor cocktail. The resulting homogenate was centrifuged at 12,000xg and the supernatant was carefully collected, dispensed in aliquots and stored for future experiments. The total protein content in the supernatant was estimated by the Bradford method [21]. The aliquoted supernatant was mixed with sample buffer (100 mM Tris-Cl, pH 6.8), 2% SDS, 2% β-mercaptoethanol, 20% glycerol and 0.2% bromophenol blue), heated on a boiling water bath for 5 min and centrifuged at 12,000xg at 4°C for 20 min. Thereafter, the supernatant was collected. 20µg total protein was loaded onto 12% SDS-polyacrylamide gel and electrophoresis was carried out. After electrophoresis, the gel was carefully removed and proteins from the gel were transferred onto polyvinylidenedifluoride (PVDF) membrane by wet transfer method. The membrane was then stained with Ponceau-S in order to ensure the protein transfer. Thereafter, the membrane was blocked in 5% non-fat milk powder dissolved in 1X TBST for 1h at RT. The membrane was then incubated with anti-VAMP2 (1:1000 dilutions) primary antibody overnight at 4°C with gentle shaking. Following the same protocol, 15% SDS-polyacrylamide gel electrophoresis was carried out for checking the expression level of the biomarker of Parkinson's disease that is α-Syn protein. And the membrane obtained after blotting the protein was incubated with anti-α-Syn (1:1000 dilutions) primary antibody overnight at 4°C with gentle shaking. The next day, the membranes were washed 3 times for 5 min each in TBST (TBS containing 0.1%Tween 20). After this, the blots were incubated with an anti-rabbit HRP-conjugated secondary antibody (1:1000 dilutions) in TBST containing 5% non-fat milk for 3 h and then washed with TBST 3 times

for 5 minutes each at RT. The respective blots were also processed with rabbit monoclonal anti-β-Actin antibody (1:25,000 dilutions, Sigma-Aldrich, USA) side by side to determine the level of β-actin as an internal marker. The signal of the specific antibody-protein complex was detected on the X-ray film by the enhanced chemiluminescence (ECL) method. The signals on the X-ray film were densitometrically quantified using a computer-assisted densitometry program (Alpha imager 2200). The scanned value of individual protein signals was normalized with the scanned value of the β-actin and the quantization data was expressed as relative density value (RDV) for VAMP22 expression and α-Syn expression.

1.9 Statistical analysis

All the experiments were repeated thrice (n = 3). Data were expressed as bar value representing mean ± standard error of means (SEM) using SPSS 16.0 software for windows. One way ANOVA and Student's t-test were used to analyze statistical differences between groups under different experimental conditions. For multiple comparisons, the Tukey's post hoc test was used after one way ANOVA. $p<0.001$ and <0.01 values were considered statistically significant.

Results

2.1 Effect rotenone treatment on grip strength

Our data on the measurement of grip strength clearly indicates that the rotenone treated mice shows a significant decrease as a result of the treatment of mice with rotenone as compared to the vehicle-treated and control group (Fig. 1).

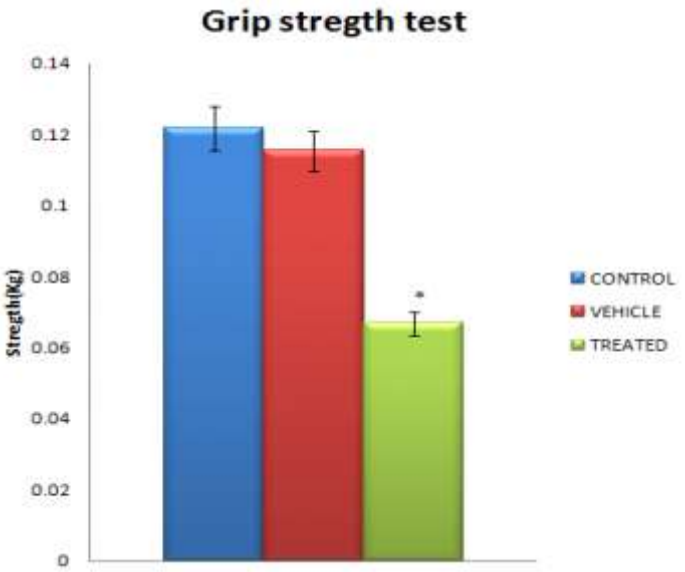

Fig. 1: Comparison of grip strengths of the control, vehicle- and rotenone-treated mice. *Signifies the p-value <0.001.

2.2 Nobel object recognition test

As shown in Figs. 2a and 2b, our findings on NOR suggest that the control and vehicle-treated mice possess the tendency of exploring significantly more at the scale of spending time for the novel objects compared to familial objects. However, the exploration time for the novel objects by rotenone-treated mice is significantly decreased compared to that in the control and vehicle-treated mice. However, the exploration time for the familiar time also decreases compared to the control and vehicle-treated mice (Fig. 2a). In order to assess the ability to discriminate the objects at the level of discrimination index, it is clearly visible that the rotenone-treated mice abruptly lose their ability of distinction between familiar and novel objects. However, the vehicle treated mice do show the significant decline at the level of discrimination index (Fig. 2b).

2.3 Effect of rotenone on anti oxidative stress enzymes (SOD and GPx)

Our in-gel assay data on the status of anti oxidative stress enzymes reveal that rotenone-induced inhibition of Complex-I of the mitochondrial electron transport system leads to significant decline in the function of SOD (Fig. 3a, b) in the cerebrum compared to that found in normal and vehicle-treated mice. Similarly, the other antioxidative stress enzyme called GPx, which is most prevalent in brain, is affected. The in-gel assay data for the GPx activity also suggests that the rotenone treated rat brain exhibits significantly declined in its activity in comparison to the control vehicle-treated mice (Fig. 4a, b).

2.4 Western blot analysis of α-Syn expression

Western blot data on the expression of α-Syn expression reveal that levels of its expression is significantly increased in the cerebral cortex of rotenone-treated mice groups in comparison to that in the control and vehicle-treated mice. Levels of β-actin protein were found to be uniform and also indicated the uniformity in loading of lysate in terms the protein content used in experiments (Fig. 5a, b).

2.5 Western blot analysis of VAMP2 expression

Western blot data of VAMP2 expression at protein level clearly exhibits that its expression is significantly down regulated in the brain cortex of rotenone-treated PD mice when compared to that in the brain cortex of the control and vehicle-treated mice. As evident from the western blot figure, the levels of β-actin was found to be uniformly expressed and uniform loading of the protein on the gel (Fig. 6a, b).

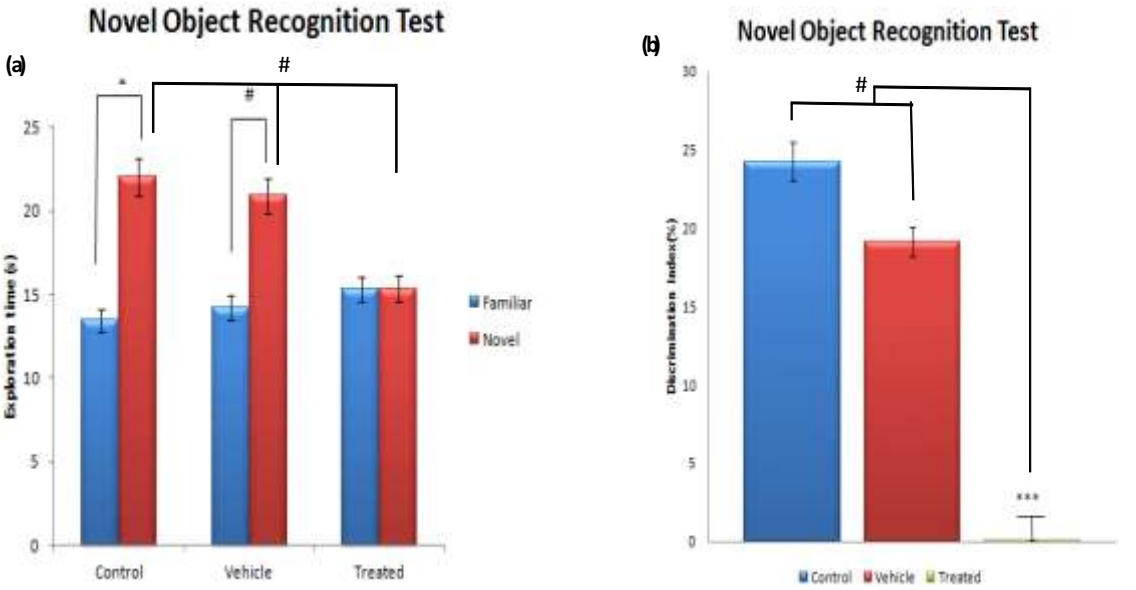

Fig.2: NOR Test. (a) Time (s) exploring the novel object and the familiar object. (b) Discrimination index in the novel object recognition test. *Signifies the p-value <0.001, #Signifies the p-value < 0.01.

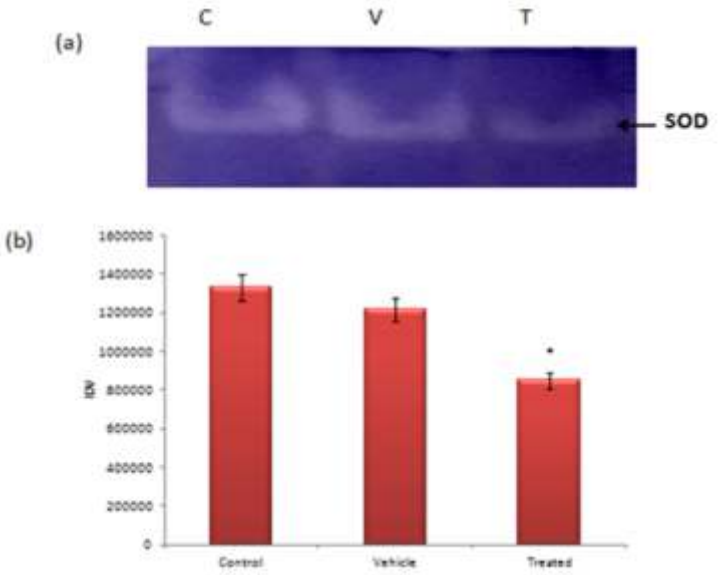

Fig. 3: In-gel assay of SOD activity. (a) Effect of rotenone on the activity of superoxide dismutase (SOD) analyzed by In-gel assay in the brains of control(C), vehicle (V) and rotenone treated (T) mice. (b) Densitometric analysis of SOD activity. *Signifies the p-value <0.001.

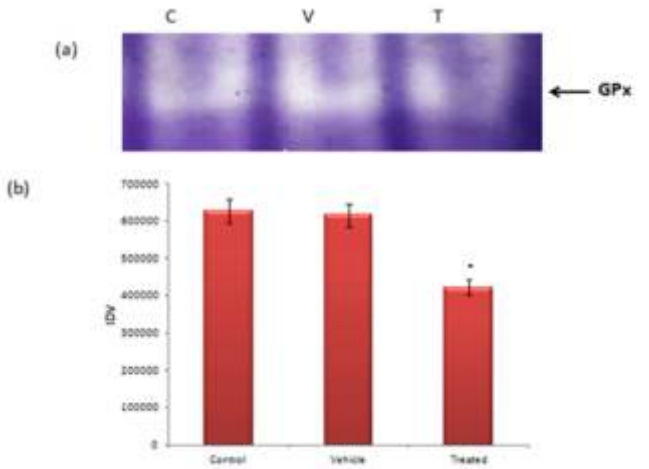

Fig. 4: In-gel assay of GPx activity. (a) Effect of rotenone on the activity of Glutathione Peroxides (GPx) analyzed by In-gel assay in the brains of control(C), vehicle (V) and rotenone treated (T) mice. b)ensitometric analysis of GPx activity. *Signifies the p-value <0.001.

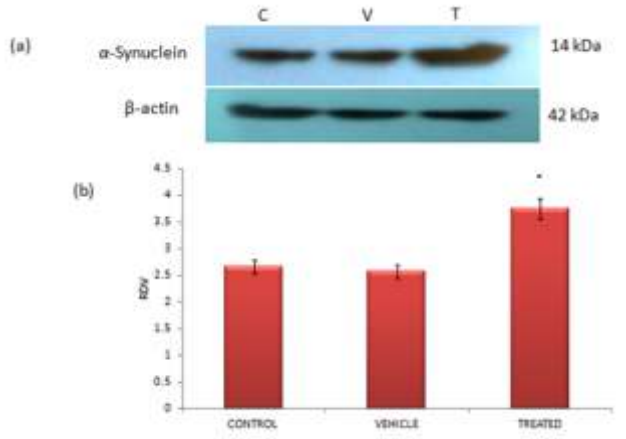

Fig. 5: Western blot analysis of (a) *α*-Synuclein protein expression analyzed by Western blot in the brain of control(C), Vehicle (V) and rotenone treated (T) mice. (b) Densitometric analysis of *α*-Synuclein at protein level. *Signifies the p-value <0.001.

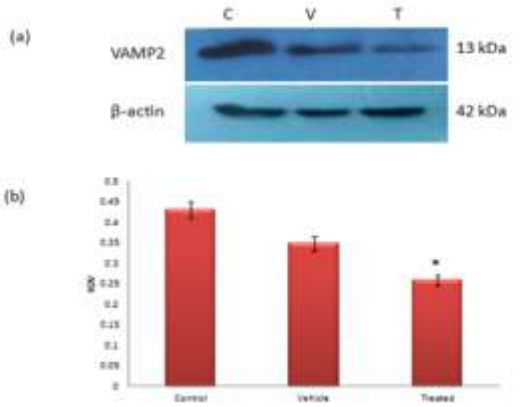

Fig. 6: Western blot analysis of (a) Vesicle-associated membrane protein (2) VAMP2 protein expression analysed by western blot in the brain of control(C), vehicle(V) and rotenone treated (T) mice. (b) Densitometric analysis of VAMP2 at protein level. *Signifies the p-value <0.001.

Discussion

Rotenone has been used as one the drug for developing the animal model of PD which mimics the motor disorder symptoms of the disease. However, clear understanding and the precise mechanisms of the effects of PD on the non-motor symptoms such as cognitive decline, synaptic plasticity and its molecular underpinning are far from clear. Therefore, in the present work, we thought to investigate whether PD induced by rotenone leads to cognitive decline or not. Also, we have investigated the presynaptic neuronal function, an important step responsible for the dopaminergic neuronal function decline leading to motor disability which might be correlated with the negatively affected LTP and the synaptic plasticity which in turn affects the cognitive alterations.

Our data on the use of rotenone in developing PD model and associated motor system and development of associated oxidative stress support the method for developing PD mouse model. On the other hand, this also for the first time clearly shows that somehow the synaptic plasticity is altered negatively which leads to cognitive decline. As observed, decline in the grip strength of the rotenone-treated mice the rotenone disrupts the neuronal circuit for the maintenance of motor function (Fig. 1). This is associated with decline in the activities of SOD and GPx which might lead to dopaminergic neuronal degeneration in the SNPc of PD mice compared to normal control mice (Fig 3 and 4). Also, the present work demonstrated the NOR based behavioural defects in the rotenone-treated mice is indicative of the cognitive impairment as well as a consequence of rotenone treatment (Fig. 2). Our results also validate the biochemical marker of Parkinson's disease i.e. over expression of α-Syn protein in the brain of rotenone-treated mice (Fig 5). To our surprise, our Western blot data on the expression of vSNARE protein, VAMP2 (Fig. 6), clearly suggests that rotenone-induced PD related motor disorder also is associated with decline in memory at the level of recognition memory as mentioned above.

Rotenone is an inhibitor of mitochondrial electron transport chain associated NADH Dehydrogenase. It is a naturally occurring toxin and a commonly used pesticide [22]. Since, it is an inhibitor of Complex-I of Electron Transport Chain (ETC), it leads to disruption of mitochondrial respiration which results in neurochemical, neuropathological and behavioural features of Parkinson's disease [23] .The formation of α-Syn fibrils is facilitated by rotenone [24] and because of its lipophilic nature, it crosses the blood brain barrier as well as the cell membrane [25]. The selective toxicity of rotenone is relevant because of its wide use as herbicide and thus it is a real threat an environmental substance can cause [26]. This increased accumulation of α-Syn might be responsible for an altered expression of VAMP2 and their association with successful interaction of dopamine containing vesicles to be less primed and docked to the pre synaptic membrane and release of adequate dopamine in the synapse leading motor as well as cognitive disability which might be resulting due to decreased LTP and increased LTD ultimately leading to altered synaptic plasticity.

A potential role of oxidative stress and excitotoxicity has strengthened with the finding of defect in Complex I of ETC [27, 28]. The rotenone-treated mice model for PD showed reduced activities of antioxidant enzymes, which is consistent with the previous studies [29, 30]. Superoxide Dismutase (SOD) is a ubiquitous antioxidant enzyme, which is present in many tissues, is one of the main antioxidant in the central nervous system (CNS) together with GPx and Catalase. Impaired complex I activity leads to increased ROS production and subsequent decrease in GSH levels. The decrease in GSH levels can result from decreased synthesis due to inhibition of glutathione reductase, or from increased levels of glutathione disulfide (GSSG) and alteration in GSH:GSSG ratio [31]. Inactivation of SOD by ROS can be determined by the reduced activity of SOD in the rotenone-treated mice, and this reduction in SOD activity leads to increased superoxide radicals production [32]. Increase in oxidative damage is correlated with simultaneous decline in the activity of

the antioxidant enzymes [33]. Following rotenone treatment, a significant reduction in the activities of brain SOD and GPx was observed in our study.

Non-motor symptoms are also associated with PD that can appear after the motor symptoms, these may include sleep disturbance, neuropsychiatric and cognitive deficits and autonomic and sensory dysfunction [34, 35] which explains our result of decreased explorative behaviour in NOR test in rotenone treated mice. α-Syn is a central component to the disease pathogenesis. Biochemical and biophysical approaches and evidences from animal models suggest that the prefibrillar forms of α-Syn referred to as soluble oligomers are early and toxic species that contribute to the neurodegenerative process in PD [36, 37]. α-Syn aggregates modulate mitochondrial dysfunction , transport , mitophagy and other neuronal function in the presynaptic terminals and axons [38]. Since , α-Syn is localised at the presynaptic terminal , its hysiological function is linked to the synaptic transmission and SNARE (Soluble N – ethymaleimide sesitive factor attachment protein receptor) complex which is the core fusion machinery of vesicle fusion [39]. Over expression of α-Syn results in the reduction of the release of dopamine by interfering with the step of vesicle docking in exocytosis [40,41] or it might inhibit the reclustering of synaptic vesicles at the active zone after endocytosis [42] . α-Syn promotes SNARE complex formation through its binding to a vesicular SNARE protein VAMP 2/Synaptobrevin 2 [43]. Although it is likely that α-Syn might interfere with the fusion machinery. Large α-Syn oligomers preferentially bind to the N terminal domain of VAMP 2, which blocks the docking of the vesicles [44].

One of the chief purpose of the current study was to access the alteration in the level of VAMP 2 (a V-SNARE protein) of the PD mouse model . The variation in the level of VAMP2 may be indicative of the interference in the docking of the synaptic vesicle [45]. Binding of α-Syn oligomers to VAMP2 limits the accessibility of VAMP2 to t-SNARE thus inhibiting the SNARE complex formation [44]. α-Syn (a chief biomarker of PD) , it's over expression may be

associated with attenuates synaptic vesicles recycling and exocytosis [46] . As observed from the result, the level of VAMP2 is lower in rotenone treated mouse, this concomitant deregulation of SNARE protein can be associated with the cognitive decline [47] .Targeting the toxicity of α-Syn at the synapse, and the connection with SNARE proteins (especially VAMP2) could be an effective way to tackle the pathology of the disease. It could be of great interest to show the association of dementia and Parkinsonism [45].

Conclusion

Our findings clearly suggest alteration in the key SNARE protein associated VAMP2 may be a potential marker for the motor as well as cognitive deficits in PD.

Acknowledgements

SV *et al* acknowledges the ICMR Project to SP. Authors gratefully acknowledges the CAS, DST-FIST Level II Programs in the Department of Zoology for partial financial and equipment facilities, respectively; Brain Research Centre, Department of Zoology for providing Any-Maze Software, DBT-ISLS, Faculty of Science, Banaras Hindu University for providing the equipment facilities.

References

1

1. Hindle J V (2010). Ageing, neurodegeneration and Parkinson's disease, *Age and Ageing* , 39:156-161.
2. Kirkwood TBL. (2003) .The most pressing problem of our age. *BMJ* , 326:1297-9.
3. Rudow G, O'Brien R, Savonenko AV et al.(2008) Morphometry of the human substantia nigra in ageing and Parkinson's disease*. Acta Neuropathol* 115: 461-70.
4. Gallardo G, Schluter OM, Sudhof TC (2008). A molecular pathway of neurodegeneration linking α-synuclein to ApoE and Aβ peptides. *Nat Neurosci*, 11: 301-8.
5. Mariani E, Polidori M.C., Cherubini A , Mecocci P (2005). Oxidative stress in brain aging, neurodegenerative and vascular diseases: An overview *Journal of Chromatography* B, 827: 65-75.
6. Weydert, C. J., & Cullen, J. J. (2010). Measurement of superoxide dismutase, catalase and glutathione peroxidase in cultured cells and tissue. *Nature protocols*, 5(1):51-66.
7. Bossy-Wetzel, E., Schwarzenbacher, R., & Lipton, S. A. (2004). Molecular pathways to neurodegeneration. *Nature Medicine*, 10(7): S2-S9.
8. Jenner, P. (2003). Oxidative stress in Parkinson's disease. *Annals of Neurology*, 53(S3): S26-S38.
9. Genestra M. (2007) Oxyl radicals, redox-sensitive signalling cascades and antioxidants. *Cell Signal*, 19:1807-1819.
10. Sweeney, P. et al (2017). Protein misfolding in neurodegenerative diseases: implications and strategies. *Translational Neurodegeneration*, 6:6
11. Abeliovich A, Schmitz Y, Farinas I, Choi-Lundberg D, Ho W, Castillo P, Shinsky N, Verdugo J, Armanini M, Ryan A, Hynes M, Philips H, Sulzer D, Rosenthal A.(2000) Mice lacking alpha-synuclein display functional deficits in the nigrostriatal dopamine system. *Neuron.* 25: 239-252.
12. Calne DB, Langston J (1983) Aetiology of Parkinson's disease. *Lancet,* 2:1457-1459.
13. Floyd, R., & Hensley, K. (2002). Oxidative stress in brain aging Implications for therapeutics of neurodegenerative diseases . *Neurobiology of Aging*, 23(5): 795-807.
14. Stefanis L.(2012). α-Synuclein in Parkinson's Disease. *Cold Spring Harb Perspect Med.,* 2(2): a009399.
15. Schapira, A.H. (1999) Parkinson's disease. *BMJ*, 318(7179), pp.311-314.
16. Ellenbroek, B. A., & Cools, A. R. (1990). Animal models with construct validity for schizophrenia. *Behavioural Pharmacology*, 1(6): 469-490.
17. Saggu, H., Cooksey, J., Dexter, D., Wells, F. R., Lees, A., Jenner, P., and Marsden, C. D. (1989). A selective increase in particulate superoxide dismutase activity in parkinsonian substantia nigra. *J. Neurochem.*, 53: 692-697.
18. Genestra M.(2007) Oxyl radicals, redox-sensitive signalling cascades and antioxidants. *Cell Signal.,* 19:807-1819.
19. Fernandez, S. P., Muzerelle, A., Scotto-Lomassese, S., Barik, J., Gruart, A., Delgado-García, J. M., et al. (2017). Constitutive and Acquired Serotonin Deficiency Alters Memory and

Hippocampal Synaptic Plasticity. *Neuropsychopharmacology* 42:512-523.

20. Antunes, M., and Biala, G. (2012). The novel object recognition memory: neurobiology, test procedure, and its modifications. *Cogn. Process* 13:93-110.
21. Garcia-Reitböck, P., Anichtchik, O., Bellucci, A., Iovino, M., Ballini, C., Fineberg, E., Spillantini, M. G. (2010). SNARE protein redistribution and synaptic failure in a transgenic mouse model of Parkinson's disease. *Brain*, 133(7): 2032-2044.
22. Südhof, T. C. (2004). The synaptic vesicle cycle*. Annu. Rev. Neurosci*. , 27: 509-547.
23. Burré, J., Sharma, M., Tsetsenis, T., Buchman, V., Etherton, M. R., and Südhof, T. C. (2010). Alpha-synuclein promotes SNARE-complex assembly in vivo and in vitro. *Science*, 329:1663-1667.
24. Alam, M., & Schmidt, W. . (2002). Rotenone destroys dopaminergic neurons and induces parkinsonian symptoms in rats. *Behavioural Brain Research*, 136(1):317-324.
25. Betarbet, R., Sherer, T. B., MacKenzie, G., Garcia-Osuna, M., Panov, A. V., & Greenamyre, J. T. (2000). Chronic systemic pesticide exposure reproduces features of Parkinson's disease. *Nature Neuroscience*, 3(12):1301-1306.
26. Yoshikawa T (1993). Free Radicles and their scavengers in Parkinson's Disease. *Eur J Neurol*, 33: 60-68.
27. Marey Semper I, Gelman M, Levi Strauss M (1995). A selective toxicity toward cultured mesencephalic dopaminergic neurons is induced by the synergistic effects of energetic metabolism impairment and NMDA receptor activation. *J Neurosci*, 15:5912-18.
28. Schapira AH, Cooper JM, Dexter D, Clark JB, Jenner P, Marsden CD(1990) Mitochondrial complex I deficiency in Parkinson's disease. *J Neurochem* 54:823-27.
29. Gerlach M, Riederer P, Youdim MB (1996) Molecular mechanisms for neurodegeneration. Synergism between reactive oxygen species, calcium, and excitotoxic amino acids. *Adv Neurol*, 69:177-194.
30. Schapira AH, Mann VM, Cooper JM, Dexter D, Daniel SE, Jenner P, Clark JB, Marsden CD (1990) Anatomic and disease specificity of NADH CoQ1 reductase (complex I) deficiency in Parkinson's disease. *J Neurochemical,* 55:2142-2145
31. Koutsilieri, E., Scheller, C., Grünblatt, E., Nara, K., Li, J., & Riederer, P. (2002). Free radicals in Parkinson's disease. *Journal of Neurology*, 249, 1–1.
32. Sanchez-Reus MI, del Rio MG, Iglesias I, Elorza M, Slowing K, Benedi J. (2007) Standardized *Hypericum perforatum* reduces oxidative stress and increases gene expression of antioxidant enzymes on rotenone-exposed rats. *Neuropharmacology*, 52: 606-16.
33. Sharma N, Nehru B.(2015) Characterization of the lipopolysaccharide induced model of Parkinson's disease: Role of oxidative stress and neuroinflammation. *Neurochem Int*, 87: 92-105.
34. Pigeolet E, Corbisier P, Houbion A, Lambert D, Michiels C, Raes M *et al.* (1990) Glutathione peroxidase, superoxide dismutase, and catalase inactivation by peroxides and oxygen derived free radicals. *Mech Ageing Dev,* 51:283-97.
35. Evans, A. C., Collins, D. L., Mills, S. R., Brown, E. D., Kelly, R. L., & Peters,

T. M. (n.d.).(1993) 3D statistical neuroanatomical models from 305 MRI volumes. IEEE Conference Record Nuclear Science Symposium and Medical Imaging Conference.

36. Niranjan R.(2014) The role of inflammatory and oxidative stress mechanisms in the pathogenesis of Parkinson's disease: Focus on astrocytes. *Mol Neurobiol*, 49:28-38.
37. Bronstein, J.M., et al., (2011). Deep brain stimulation for Parkinson disease: an expert consensus and review of key issues. *Arch. Neurol*, 68: 165.
38. Factor, S.A., (2008). Current status of symptomatic medical therapy in Parkinson's disease. *Neurotherapeutics*, 5:164-180.
39. Bassetti, C.L. (2011) Non-motor disturbances in Parkinson's disease. *Neurodegener. Dis.* 8: 95-108.
40. Chaudhuri, K. R., Odin, P., Antonini, A., & Martinez-Martin, P. (2011). Parkinson's disease: The non-motor issues. *Parkinsonism & Related Disorders*, 17(10):717-723.
41. Colla, E., et al., 2012. Accumulation of toxic alpha-synuclein oligomer within endoplasmic reticulum occurs in alpha-synucleinopathy in vivo. *J. Neurosci.* , 32:3301-3305.
42. Emmanouilidou, E., et al.,(2010). Cell-produced alpha-synuclein oligomers are targeted to, and impair, the 26S proteasome. *Neurobiol. Aging*, 31: 953-968.
43. Rocha, E. M., De Miranda, B., & Sanders, L. H. (2018). Alpha-synuclein: Pathology, mitochondrial dysfunction and neuroinflammation in Parkinson's disease. *Neurobiology of Disease*, 109: 249-257.
44. Cooper AA, et al. (2006) Alpha-synuclein blocks ER-Golgi traffic and Rab1 rescues neuron loss in Parkinson's models. *Science*, 313(5785):324-328.
45. Larsen, K. E., Schmitz, Y., Troyer, M. D., Mosharov, E., Dietrich, P., Quazi, A. Z., Sulzer, D. (2006). Alpha-Synuclein Overexpression in PC12 and Chromaffin Cells Impairs Catecholamine Release by Interfering with a Late Step in Exocytosis. *Journal of Neuroscience*, 26(46):11915-11922.
46. Gitler AD, et al. (2008) The Parkinson's disease protein alpha-synuclein disrupts cellular Rab homeostasis. *Proc Natl Acad Sci USA* ,105(1):145-150.
47. Nemani VM, et al. (2010) Increased expression of alpha-synuclein reduces neurotransmitter release by inhibiting synaptic vesicle reclustering after endocytosis. *Neuron* ,65(1):66-79.
48. Burré J, et al. (2010) Alpha-synuclein promotes SNARE-complex assembly in vivo and in vitro. *Science* , 329(5999):1663-1667.
49. Choi, B.K., et al., 2013. Large alpha-synuclein oligomers inhibit neuronal SNARE-mediated vesicle docking. *Proc. Natl. Acad. Sci.* USA, 110:4087-4092.
50. Vallortigara, J., Whitfield, D., Quelch, W., Alghamdi, A., Howlett, D., Hortobágyi, T., Francis, P. T. (2015). Decreased Levels of VAMP2 and Monomeric Alpha-Synuclein Correlate with Duration of Dementia. *Journal of Alzheimer's Disease*, 50(1):101-110.
51. Sun, J., Wang, L., Bao, H., Premi, S., Das, U., Chapman, E. R., & Roy, S. (2019) Functional cooperation of α-synuclein and VAMP2 in synaptic vesicle recycling. *Proc. Natl Acad Sci* (USA)*,* 1123: 11113-11115.
52. Orimo S, Uchihara T, Nakamura A, Mori F, Kakita A, Wakabayashi K, Takahashi H (2008) Axonal alpha-synuclein aggregates herald centripetal degeneration of cardiac sympathetic nerve in Parkinson's disease. *Brain*, 131:642-650.

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, free of grammatical or 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 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 developmental psychology: On the dynamics between growth and decline. Developmental Psychology, 23,611-626.

Baltes, P. B. Reese, H. W., & Nesseiroade, J. R. (1988). Life-span Developmental Psychology: Introduction to Research Methods. Hillsdale, NJ : Eribaum.

(b) Footnotes should be avoided unless absolutely essential.

(c) Tables and figures should be clearly laid out, typed in standard format, numbered consecutively, and designed to fit on the page of the journal "AGEING & SOCIETY" of CMIG.