

Aging, Disability and Health Care Services among Older Persons in India

Introduction

As a midst socio-economic consequence of demographic transition, increase in the percentage of those over 60 years and decrease in those of under 15 years so called population ageing, was most noteworthy global phenomenon in the last century and will surely remain distinctive trait of population dynamics in the twenty-first century. This process of demographic ageing no longer to stick with developed countries has taken developing countries into its grip (Agrawal & Arokiasamy, 2009; Dadkhah, 2009; Harper, 2006).

In contrast with the relatively slow process of population ageing experienced by most of the developed countries, developing countries are greying at a faster pace (United Nations, 2002). Many developing countries are currently experiencing rapid fertility decline and recent scientific and industrial advancements in medical and health care facilities have provided effective treatment and prevention of fatal diseases, these altogether had led to the increased longevity and consequently a rapid pace of population ageing. Currently two-third of the world's elderly population is living in the developing countries and it is estimated to be doubled in next 25 years (Harper, 2006). Fastest developing economies like China and India will not only be in the forefront in terms of total population but also in terms of absolute number of elderly (60+) population (Bose, 2004). In India, the percentage share of elderly population (60+) is 8.1 percent in 2007, which is projected to be 20 percent by 2050 (United Nations, 2007).

However, the million dollar question is that whether demographic ageing couples with the reduced burden of disease and disabilities. There is no denying the fact that the added years of life are often accompanied by chronic physical and psychological impairments (Alam, 2000; Konjengbam, et al., 2007; Kover, 1991; Nagi, 1976; Nayar, 199; Shrestha, 20006; Sobba & Reddy, 2006). These added years may possibly be lived by them under the increased morbidity due to age related chronic illnesses and disabilities. People value longevity improvements more when the quality of life of the additional years is high. Living longer but with disabilities is nowhere near as enjoyable as living longer with good health (Cutler, 2001).

A bound volume of literature on ageing and disability facilitated to proceed with the pertinent notional perspective. The evidences on demographic ageing and disabilities in developed countries are well documented and mixed trends are observed in disability prevalence among older persons. Some have alarmed about the possibility of rising disability rates (AIHW, 2000;

Braithwaite, 2008), and others have documented evidence of falling disability rates (Cutler, 2001; Khaw, 1997; Manton, 2002; Murabito, 2008; Spillman, 2004; Waidmann et al., 2000; Wolf, 2005). Furthermore, disability is found an important determining factor of Medicare costs among elderly persons. Elderly persons with disabilities are at higher risk of spending a greater proportion of family income on it (Drabek, 1994; Liu et al., 1997; Spillman, 2004).

There are very few empirical research based studies on disability status of elderly persons from developing countries (Konjengbam, et.al., 2007; Pandey, 2009; Parahyba, 2009; Prakash, 2003; Sengupta & Agree, 2003; Shah, 1997; Yount & Agree, 2005). In India, very little information is available about disabled older persons and studies are often based on limited samples. Keeping this perspective in view, there is a critical need to assess the patterns in disabilities among older persons and their health care seeking behavior with respect to socio-economic and demographic determinants. National Sample Survey (NSS-58) data which contains information on disabled population is the most recent data. The data provides a valuable opportunity to study the patterns in disability prevalence among older persons and their treatment seeking behavior with respect to their socio-economic and demographic characteristics.

Table 1 Selected socio-demographic indicators in Uttar Pradesh, Kerala and India

Socio-demographic indicators	Kerala	Uttar Pradesh	India
Infant Mortality Rate (IMR) ¹	14	73	58
Total Fertility Rate (TFR) ²	1.9	3.8	2.7
Under-5 Child Mortality ¹	3.0	24.7	17.3
Life expectancy at birth (e^0) ³	74.0	60.0	63.5
Ageing Index ⁴	40.2	17.2	21.1
Percent older adults (age 60+) ⁴	10.5	7.0	7.4

Sources: ¹Registrar General, Sample Registration System (SRS) Bulletin, 2005, office of Registrar General, New Delhi.

² International Institute for Population Sciences, National Family Health Survey (2005-06) India Report, Mumbai.

³ Registrar General, SRS based abridged life table, 2002-06, office of Registrar General, New Delhi.

⁴ Registrar General, Census of India, 2001, Office of Registrar General, New Delhi.

Note: Ageing index is defined as the percentage of older adult (60+) population to children population below age 15 years.

Considering the proportion of older persons, this study made an effort to work out comparative picture of patterns in disability prevalence and health service coverage between the two selected states and to see how they vary between the two states which vary in socioeconomic and demographic conditions. The study focus this analysis in two selected states at varying stages of demographic transition namely Kerala and Uttar Pradesh (Table 1). The study aims to contribute in ongoing debate whether disability prevalence tends to decline with demographic transition or it is reversal of trends observed in developed countries. The differences in the pace of demographic transition and ageing between the two states can be seen from table 1. The lower

rates of infant mortality, under-5 child mortality, total fertility rate and the comparatively greater life expectancy at birth, ageing index and the percent share of older adults (60+) confirms the advancement of Kerala in demographic and ageing transitional processes. This comparative assessment of two states differing in health transition process will help to understand the changing disability profile among older persons in the course of demographic transition in India.

Methods and Material

The study used data from 58th round of National Sample Survey (NSS) on “Disabled persons”. Five types of disabilities: Mental, Visual, Hearing, Speech and Locomotion were covered in this round. In this round, a total of 70,302 household were surveyed, 45,571 from rural and 24,731 from urban areas. Data was gathered by face-to-face interview of each member of every sample household.

In the 58th round of NSSO, a total of 43,864 older persons (60+) were surveyed at the national level, out of which the number of aged persons surveyed in Uttar Pradesh and Kerala were 5,702 and 2,434 respectively. To have an appraisal of patterns in disabilities among older persons, disability prevalence rates were defined as the ratio of number of older persons reported a specific disability to sample population (60+) eligible to report a disability.

Multivariate logistic regression models were estimated to study the patterns in disability prevalence by socio-economic and demographic predictors of older adults. The dependent variable was defined in two mutually exclusive categories: coded ‘1’ for reporting a specific disability and ‘0’ for others. The category ‘0’ includes all those older persons who did not report any disability or had reported disability other than the disability defined as a positive outcome in the regression model.

Binary logistic regression models were further estimated to examine differentials of treatment seeking behavior among older persons. The dependent variable was dichotomized with value ‘1’ if an older person received any treatment for the reported disability, otherwise ‘0’. The analysis on health care utilized the sample of older adults who reported any disability at the time of survey. Appropriate weights were applied in all the statistical analyses performed in this paper. STATA 9.0 program was used for all statistical analyses carried out in this paper.

Cataloguing of Predictor Variables

The influence of socio-economic and demographic factors on disability prevalence patterns and treatment seeking behavior were estimated using multivariate logistic regression models. Evidence suggests that disability prevalence among older persons and their behavior of accessing health care services vary remarkably by socio-economic and demographic factors. In the light of evidences documented in previous literature, the predictor variables included in multivariate regression models were age, sex, residence, living status, social group, educational level, monthly per capita expenditure (MPCE) quintiles, and living arrangements of older adults. The variables education and living arrangement were canvassed only for disabled persons, therefore could not be considered as predictors of disability prevalence among older persons. The categorization of predictor variable is described below.

Age: 60-64 (ref.), 65-74 and 75+

Sex: Male (ref.) and Female

Residence: Rural (ref.) and Urban

Living status: This variable was defined to capture the effect of spouse loss on disability prevalence and health care utilization among older persons. It had two categories: living with spouse and living without spouse with former as reference category. The category included never married, widowed/widower, divorced and separated older persons

Education: Literate and Illiterate (ref.)

Monthly Per Capita Expenditure (MPCE): This variable of quintile distribution was obtained by dividing the total household expenditure by the household size and then distributing households into three equal percentile groups.

Social group: Scheduled castes/Tribes (SCs/STs), Other backward classes (OBCs) and Others (ref.)

Living arrangement: Living with family (ref.), Living without family members and Living with others

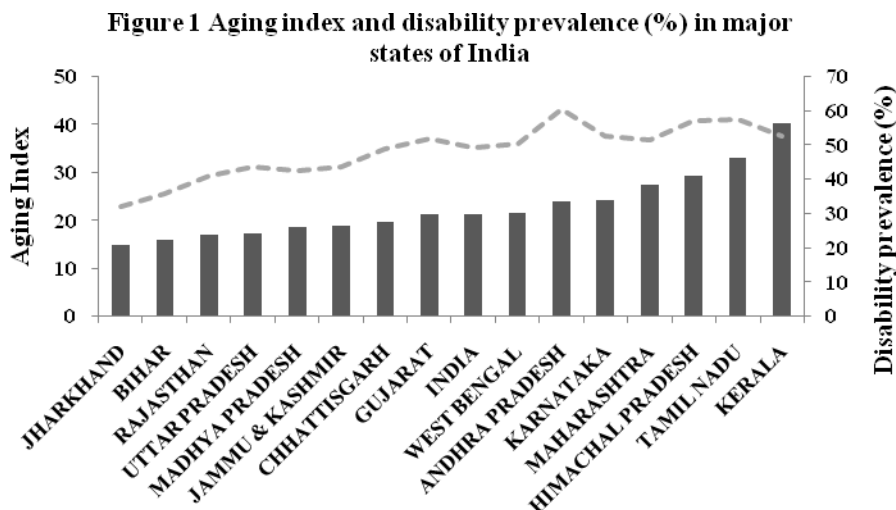
ref. = reference category

Results

Disability Prevalence Among Older Persons

Figure 1 established the ensuing patterns in disability prevalence among older persons with the progress in aging process measured in terms of aging index across the states. Across the major states of India, the prevalence of disability among older persons gradually increased with the encroachment in aging process. Jharkhand and Bihar positioned on bottom line of the aging process in the country displayed the lowest prevalence of disability by 32 percent and 36 percent,

respectively. Compared with this, Tamil Nadu (58 percent) and Kerala (53 percent) having highest values of aging index across the major states were documented with highest prevalence of disability in the country.



In sum, the state comparisons of aging-disability prevalence linkages suggest ample evidence that advancement in aging process in India has resulted in increasing prevalence of disabilities among older persons.

Table 2 depicts a comparative picture of disability prevalence per 1000 persons by different types of disabilities and by sex and residence among older persons in Uttar Pradesh and Kerala. Overall, the disability prevalence was almost 1.2 times higher in Kerala (528) compared to Uttar Pradesh (437). Among older persons, the prevalence of all types of disabilities except visual disabilities was greater in Kerala compared with Uttar Pradesh. In Kerala, locomotion disabilities (222) were highly prevalent followed by hearing (125), visual (113) and mental disabilities (39). In Uttar Pradesh, visual disabilities (180) were highly prevalent among older persons followed by locomotion (161) and hearing disabilities (77). Apparently, Kerala, demographically built-up state is experiencing higher prevalence of locomotion and mental disabilities as a result of sedentary life styles.

Substantial differentials were observed in disability prevalence among older adults by sex and residence (Table 2). In both the states, all types of disabilities except locomotion were concentrated more in rural than urban areas. In rural Uttar Pradesh, the most prevalent disabilities were visual (190) and locomotion disabilities (150). Hearing and mental were next highly prevalent disabilities. Correspondingly, locomotion (216), hearing (130) and visual

disabilities (113) were emerged the most prevalent disabilities in rural Kerala. The urban areas of Uttar Pradesh were contrasted with more widely prevalent disabilities of locomotion (220) and visual (114) followed by hearing disabilities (79). Nevertheless, similar pattern prevailed in Kerala.

Table 2 Disability prevalence (per 1000) among older persons (60+) in Uttar Pradesh and Kerala, 2002

Type of Disability		Uttar Pradesh			Kerala		
		Male	Female	Total	Male	Female	Total
Mental	U	10	8	9	28	35	32
	R	8	12	10	31	48	41
	T	8	12	10	31	45	39
Visual	U	98	130	114	117	109	112
	R	162	224	192	88	132	113
	T	152	209	180	95	126	113
Hearing	U	99	58	79	88	120	106
	R	78	76	77	122	137	130
	T	81	73	77	113	133	125
Speech	U	22	16	19	34	17	24
	R	8	6	7	45	20	31
	T	10	7	9	42	19	29
Locomotion	U	237	203	220	297	200	242
	R	178	121	150	232	205	216
	T	187	134	161	248	204	222
Any disability		438	435	437	529	526	528
		U- Urban	R- Rural	T- Total			

Between the two sexes as a whole, the disability prevalence was marginally high among male older adults than females in both the states. However, female older persons reported greater prevalence of mental, visual and hearing disabilities in both the states. In contrast, the prevalence of locomotion and speech disabilities was more among males than females.

Determinants of Disability Prevalence

The estimates of odds ratios from logistic regression analyses on the likelihood of reporting various disabilities among older persons in Uttar Pradesh and Kerala are presented in table 3. In both the states, older persons residing in rural areas had greater likelihood of reporting disabilities compared with those in urban areas. Contrastingly, locomotion disabilities were more prevalent in urban areas. Females were less likely to report any disability except mental in both the states.

Increasing age is often associated with increasing physical and mental impairment and consequently, oldest-old persons had greater likelihood of reporting disabilities (Chanana & Talwar, 1987; Sengupta & Agree, 2003). Surprisingly, mental disabilities were more pronounced among older adults in age 60-64. Predictor monthly per capita expenditure quintiles showed positive direction of impact on the disability prevalence among older adults. The likelihood of reporting disabilities increased with MPCE quintiles. The similar pattern was observed for all types of disabilities except speech disabilities. In both of the states, older persons with higher income quintiles had lower chances of reporting speech disabilities.

Social status had prominent alliance with the likelihood of reporting disabilities among older persons. Older persons from backward social groups i.e. SCs/STs and OBCs had greater likelihood of reporting disabilities compared with older persons of other castes. However, this was contrasted with the greater likelihood of reporting hearing disabilities among other caste groups in Uttar Pradesh. In Kerala, older persons of SCs/STs and OBCs were less likely to report speech disabilities.

Living arrangement had shown plausible association with the reporting of disabilities among older persons. In both states, older persons living without spouse had higher likelihood of reporting disabilities compared with older persons living with spouse.

Health Care Services Among Older Persons

Table 4 portrays a comparative picture of treatment seeking behavior among older persons who reported disabilities between Uttar Pradesh and Kerala. Age was negatively associated with utilization of health care services in both the states. Older persons residing in urban areas were having greater chances of accessing health care services. In Uttar Pradesh, urban

Table 3 Logistic regression modelling of socio-demographic factors of disability prevalence among older persons in Uttar Pradesh (N=5702) and Kerala (N=2434), 2002

Background Variables	Mental			Visual			Hearing			Speech			Locomotion		
	Uttar Pradesh	Kerala	Uttar Pradesh	Uttar Pradesh	Kerala	Uttar Pradesh	Kerala	Uttar Pradesh	Kerala	Uttar Pradesh	Kerala	Uttar Pradesh	Kerala		
Residence (ref.=rural)															
Urban	0.89 (0.41-1.97)	0.72 (0.43-1.22)	0.57*** (0.45-0.72)	1.02 (0.75-1.38)	0.99 (0.74-1.31)	0.81 (0.59-1.09)	2.37** (1.24-4.53)	0.75 (0.41-1.36)	1.50*** (1.24-1.82)	1.12 (0.90-1.41)					
Sex (ref.= male)															
Female	1.27 (0.73-2.19)	1.37 (0.77-2.42)	1.32*** (1.14-1.52)	0.91 (0.66-1.26)	0.78** (0.64-0.96)	0.79 (0.58-1.07)	0.65 (0.36-1.17)	0.35*** (0.19-0.63)	0.61*** (0.52-0.70)	0.64*** (0.50-0.81)					
Age(ref.= 60-64)															
65-74	0.37*** (0.20-0.67)	0.98 (0.59-1.63)	1.80*** (1.49-2.17)	1.67** (1.09-2.57)	1.28* (0.98-1.68)	1.23 (0.84-1.80)	0.90 (0.44-1.82)	2.04** (1.01-4.13)	0.95 (0.81-1.12)	0.97 (0.74-1.27)					
75+	0.30*** (0.13-0.67)	0.35*** (0.19-0.67)	3.30*** (2.70-4.04)	2.97*** (1.95-4.54)	2.46*** (1.86-3.23)	2.13*** (1.47-3.08)	1.49 (0.71-3.11)	1.35 (0.63-2.90)	0.79** (0.64-0.97)	1.74*** (1.33-2.29)					
Social Group(ref.=others)															
STs & SCs	1.94* (0.92-4.08)	1.24 (0.60-2.57)	1.73*** (1.41-2.14)	1.33 (0.86-2.04)	0.96 (0.71-1.28)	0.83 (0.54-1.27)	0.39** (0.16-0.97)	1.48 (0.63-3.47)	1.10 (0.89-1.36)	1.21 (0.85-1.72)					
OBCs	1.07 (0.53-2.18)	1.17 (0.72-1.89)	1.39** (1.15-1.67)	1.01 (0.76-1.36)	1.0 (0.78-1.27)	0.67*** (0.51-0.88)	0.50* (0.27-0.95)	1.38 (0.79-2.42)	1.01 (0.84-1.20)	1.22* (0.98-1.52)					
Living without spouse															
Living spouse	1.55 (0.89-2.71)	3.11*** (1.83-5.26)	1.97*** (1.70-2.29)	2.05*** (1.48-2.84)	2.02*** (1.63-2.50)	2.03*** (1.49-2.7)	1.40 (0.77-2.54)	1.48 (0.81-2.68)	1.40*** (1.20-1.64)	1.39** (1.09-1.78)					
MPCE® quintiles (ref. = quintile1)															
Quintile2	1.40 (0.73-2.67)	1.27 (0.59-2.70)	1.18** (1.00-1.38)	1.44* (0.95-2.21)	1.43** (1.13-1.82)	0.88 (0.58-1.34)	0.46** (0.22-0.94)	0.54 (0.25-1.19)	0.97 (0.82-1.16)	1.01 (0.71-1.42)					
Quintile3	1.69 (0.81-3.53)	1.50 (0.72-3.11)	1.01 (0.83-1.24)	0.98 (0.63-1.51)	1.30* (0.98-1.73)	1.07 (0.72-1.59)	0.77 (0.37-1.58)	0.99 (0.49-2.0)	1.37*** (1.13-1.67)	1.39** (1.00-1.94)					
Log likelihood	-302.93	-379.18	-2481.59	-816.17	-1478.56	-875.69	-274.56	-307.73	-2460.43	-1256.04					
LR chi2	23.07	37.07	401.97	85.29	140.45	77.74	27.19	24.9	94.69	67.08					
Prob. > chi2	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.03	0.001	0.001					

*** p<0.001, **p<0.05, *p<0.10, MPCE® - monthly per capita expenditure, Reference category - rc

Table 4 Logistic Regression Analyses: Modelling background factor of treatment seeking behaviour among older persons in Uttar Pradesh and Kerala, 2002

Background Variables	Uttar Pradesh (N=2380)		Kerala (N=1213)	
	Exp (β)	(95% CI)	Exp (β)	(95% CI)
Residence (ref.=rural)				
Urban	1.84***	(1.29-2.63)	1.17	(0.83-1.66)
Sex (ref.=male)				
Female	0.86	(0.69-1.08)	1.50**	(1.02-2.20)
Age(ref.=60-64)				
65-74	1.14	(0.88-1.49)	0.94	(0.59-1.50)
75+	0.72**	(0.55-0.94)	0.63**	(0.40-0.98)
Social Group(ref.=others)				
STs & SCs	0.63***	(0.46-0.86)	0.68*	(0.43-1.08)
OBCs	0.75**	(0.56-1.00)	1.39**	(1.01-1.91)
Education (ref.= illiterate)				
Literate	1.44**	(1.01-2.06)	1.09	(0.80-1.50)
Living Status(ref.=living with spouse)				
Living without spouse	0.64***	(0.51-0.81)	0.40***	(0.26-0.60)
Living Arrangement(ref.=living with family)				
Living without family members	0.74**	(0.56-0.97)	1.34	(0.80-2.24)
Living with others	1.13	(0.79-1.62)	0.85	(0.55-1.32)
MPCE[®] quintiles (ref. =quintile1)				
Quintile2	1.44***	(1.15-1.81)	1.49*	(0.94-2.37)
Quintile3	1.83***	(1.37-2.45)	1.27	(0.82-1.97)
Log likelihood	-1185.1		-605.23	
LR chi2	122.27		60.08	
Prob. > chi2	0.001		0.001	

*** p<0.001, **p<0.05, *p<0.10, MPCE[®] - monthly per capita expenditure, Reference category - rc

dwellers were 1.8 times more likely to seek treatment for reported disabilities compared with rural older inhabitants. However, disparities in health care utilization by residence were comparatively lower in Kerala. In Uttar Pradesh, female older persons were 14 percent less likely to seek treatment for reported disabilities compared with male older persons. This was contrasted in Kerala with 1.5 times higher chances of accessing health care among female older persons. Such reversal of trend possibly arises as result of differences in health transition stages in these two states.

Results reveal that better socio-economic status is closely associated with greater utilization of health care services among older persons. In both states, the likelihood of accessing health care services among older persons increased with MPCE quintiles. Literate older persons were more likely to seek treatment for reported disabilities compared with illiterates. Older persons

belonging to backward social classes i.e. SCs/STs were less likely to seek treatment. Older persons of OBCs were having 25% lesser chances of utilizing health care services in Uttar Pradesh compared with older persons in other social classes. This was contrasted in Kerala with OBCs older adults reported greater utilization of health care services.

Loss of spouse in old age is often associated with poor health outcomes and less or no desire to live longer among older persons. Consequently, older persons who experienced spouse loss were at greater risk of not to seek treatment for reported disabilities. In Uttar Pradesh, older adults living without spouse were 36% less likely to access health care services compared with those living with their spouse. Similar pattern was observed in Kerala. However, living arrangement of older persons did not show significant impact on their treatment seeking behavior.

Discussion and Conclusion

Compared with developed countries, the pace of population ageing is much faster in developing country like India. Consequently, they will have less time to adjust the consequences of population ageing. The increasing longevity has now presented a new challenge for policy makers to ensure the well-being of the enormous number of the elderly (Medhi, 2007). As a result of the faster pace of demographic transition and advancement in health transition stages, the Indian states are characterised by higher disability burden among older adult population. Set to the above context, this paper has documented critical evidence on the patterns of disability and health care utilization among older persons with respect to socio-economic and demographic determinants.

The study has substantiated that Kerala, which is in an advanced stage of health transition had higher burden of disabilities compared with Uttar Pradesh, the state lagging in these processes. With several states advancing in the process of health transition, most of the Indian states will be distressed with the increasing burden of disabilities among older adults in the coming decades. At the same time, reporting of multiple disabilities is common among older persons and it is expected to rise more consequent with the progress in health transition stages. The rising burden of disabilities will demand for an expanded health care and support system which is still in a very pathetic situation in India.

Results from this study confirm that there are substantial disparities in disability prevalence among older persons and their treatment seeking behavior between Uttar Pradesh and Kerala by

gender, residence and socio-economic conditions. In both the states, disabilities were concentrated more in rural than urban areas. A plausible explanation can be given that health care services are more concentrated in urban areas and are supposed to provide quality health care services. At the same time, older adults living in urban areas are more advantaged in terms of awareness and exposure to better household environment, therefore have higher chances of seeking treatment. Furthermore, locomotion disabilities were more pronounced in urban areas, which could be an outcome of sedentary life-style practices among urban dwellers. For some extent, better reporting of disabilities by the urban adults could also be responsible for this. The same reason could be cited for the greater reporting of disabilities among older persons of higher income quintiles.

There are ample evidence which shows that better socio-economic conditions are associated with greater utilization of better and high quality health care (Cutler et al., 2008; Khetarpal et al., 1996; Kumar, 2003; Mazumder, 2007; Smith, 2007). In both the states, chances of seeking health care were higher among literate older persons. Similarly, health care utilization was positively associated with monthly per capita expenditure quintiles.

Living arrangement has its own significance on health and well being of older population, particularly in traditional societies such as India. Traditionally, younger generation was supposed to take responsibilities of their older counterparts in the house. In addition to fulfil basic daily requirements, younger generations were used to provide emotional, social and mental support to their previous generations. Rapid urbanization and movement of younger generation from their home in the search of career advancement have tended to weaken traditional systems and ancestral values in Indian societies (Bhat et al., 2001; Chanana and Talwar, 1987; Pal, 2004; Prakash, 2007; Shah, 1999). Consequently, disabilities were more pronounced among older adults living without their spouses. At the same time, level of health care utilization was lower among them compared with those living with spouses.

The shift in disability prevalence is clearly evident in Kerala and other Indian states are expected to pass these stages of health transition. The observed differences in the effects of various socio-economic and demographic determinants of disabilities and related health care between Uttar Pradesh and Kerala are largely result of apparent lag in health transition stages of the two states. Diseases, particularly multiple chronic illnesses, are the main causes of old age disabilities. Interventions should therefore include their prevention and effective management, including

self-management. An important starting point for successful prevention is to use the available evidence to dispel the old myths that the risk of disease is a normal part of old age and not amenable to change, and that an old body cannot respond positively to lifestyle changes. The promotion of physically active lifestyles is among the most promising strategies. Improved disability prevention will require a change in organizational priorities, restructuring of the symptom-driven health care system, and training for providers and clients to cooperate in collaborative care. Many interventions are most effective in concert with community resources and policies (Heikkinen, 2003).

Health promotion and cost-effective interventions based on the primary health care approach over a life-course, especially at the village level, will greatly help towards achieving the goal of healthy aging (Kumar, 2003). In addition to this, the rapidly changing socio-economic circumstances and inter-state disparities should be taken care to ensure a comprehensive policy regime for older persons in India.

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