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An Epidemiological Study of the Morbidity Pattern among the Elderly in Six Countries

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Abstract

The elderly are one of the most vulnerable and high risk groups in terms of morbidity and health status. For this study Global Ageing and Adult Health (SAGE) survey data (2007-2010) have been used. Results show, that prevalence of morbidities is significantly higher (58 %) in Russia Federation followed by India and Ghana (53.8& 40.7 %). Furthermore, the prevalence of Vision problem is remarkable higher in India and Russia Federation (31.2 & 20.4 %) than in other selected countries. The elderly were 12.6 % having hearing problem in Russia Federation while lees contribution of Ghana about 3.3 %.Wealth of the respondent are statically associated with morbidity across selected countries. Regression results depicts higher educated elderly are less likely (0.451, p>0.001) to have morbidity than their counterpart. Furthermore, urban respondent have significantly high morbidity as compare to their counterpart. The intergenerational support has been drastically changed due to the new economic scenario.

1. Introduction

Ageing is a universal process and is regarded as a normal biological phenomenon every object in the earth undergoes the process of ageing. From the time Immemorial people have tried to conquer aging and live a long and healthy life. Globally elderly population radically increasing it was about 200 million persons aged 60 in 1950 and this figure now stands at 550 million, and is expected to reach 1 billion marks by the year 2020. According to UN research, elderly population was in 1950 was 8% of the world population was aged 60 years or over, by 2005 that proportion had mount to 10% and it is expected to be more than double over the next 45 years, reaching 22% by 2050(UN 2011). This process by falling fertility and mortality produce markedly rapid declines in communicable disease among the young, leading to ageing populations with a rising proportion of the elder population among whom chronic disorders predominate. As the world entered the new millennium, chronic diseases accounted for 60% of all deaths worldwide, with 80% of those taking place in less develop and developing countries. Evaluation of the morbidity profile will have implications for providing health care for the elderly population and its costs (CHRD 1990; Feachem et al. 1992).

The elderly are one of the most vulnerable and high risk groups in terms of health status in any society. Evaluation of the morbidity profile will have implications for providing health care for the elderly population and its costs. The elderly are one of the most vulnerable and high risk groups in terms of health status in any society. Evaluation of the morbidity profile will have implications for providing health care for the elderly population and its costs. The health of the aged is a public health issue and needs to be addressed (Gopal &Nath 2008). In the human society, ageing was considered as a social

phenomenon rather than physiological, as ageing is always understood in the background of social milieu. A deeper understanding of ageing in the present day society needs the review of ageing as a process at the individual level and at the societal level.

Globalization and Westernization has changed the worldly outlook of people and ageing is now having more implications to the individual and society as this process has now taken a new socio-economic dimension. This process has speeded up dramatically in the last two decades as technological progress (Leslie & Suzanne 2001).

Demographic change is one of the major factors of the increase of morbidities in low and middle income countries, largely owing to the increase in the large number of older people who are come under greatest risk of developing morbidity. Many diseases share common risk factors such as tobacco use, physical inactivity, and unhealthy diet that translate into morbidities like, diabetes, and Hypertension etc. among elderly (Strong et al. 2005).The elderly population from all selected countries has high levels of these risk factors, and large proportions of the burden of disease can be attributed to these potentially modifiable risk factors. These are distinct differences between male and female, with unhealthy foods and daily life activities due to work load, being more common in men and obesity more common in women (Beaglehole &Yach 2003).

According to the United Nations Population Division older population in India will increase dramatically over the upcoming four decades. The share of India's older population age 60 year and above is projected to climb from 8 percent in 2010 to 19 percent in 2050. By mid-century older population the India is extend to encompass 323 million, this is greater number of older population than US population in 2012. The elderly population shift taking place in term of changing family relationship and severally limited economic support during old age and its brings with a hug variety of social, economic and health care services and health care policy challenges(UN 2011). About thirteen percent of older population in India has some type of disability that affects at least one activity of daily living. And more than one-quarter are underweight and nearly one-third have undiagnosed hypertension(Arokiasamy et al. 2011). About 47 percent of elderly population has at least one chronic disease like, asthma, angina, arthritis, depression, or diabetes. In India, economic development and elderly population have been contributed to increases many diseases like cardiovascular diseases and obesity especially, non-communicable diseases previously associated with more industrialized countries. Previous study have suggested, approximately one-half of India's disease burden is projected to be borne by older adults in 2030, when the population age groups with high levels of chronic conditions will represent a much greater share of the total population (Chatterji et al. 2008). India's is a hug of much morbidity like, diabetes, hypertension and other cardiovascular diseases. With this enormous number of diabetes cases, World have considered India is a "Capital of diabetes". Hypertensions also have the same status and it may be reasonable to call India as the capital of hypertension(Joshi &Parihk 2007).Globally, the average life expectancy has increased during past decades and reaching a world-wide average about 70 years' developing countries and approximately 80 years in developed countries in 2014. This development has been achieved due to improvements of health care services, (accessibility and affordability) sanitation, quality of life and decline of mortality (WHO 2014).

Although, the increasing of life expectancy generally reflects positive human development and it's also rising new challenges. The elderly may lead or elder still inherently connected with biological and cognitive degeneration, although the severity and speed of cognitive decline, physical frailty and psychological impairment can vary between individuals (Jin et al. 2015). However, degenerative aging process are the major underlying cause for morbidity especially, non-communicable diseases, heart problem, diabetes, hypertension, mental and many others. Globally, mental health worsening due to neurodegenerative morbidity represent the major cause of disability and it's responsible of over 20 percent of years lived with disability (WHO 2013). In developing countries hypertension is the leading factor of mortality. However, hypertension in developing countries has been the subject of substantial research many critical questions remain unaddressed (Narayan et al. 2010; PSC 2002). Developing countries, Previous study highlighted of hypertension prevalence have been usually based on imputed prevalence calculations, which may be biased, due to oversampling populations with access of health care services, and fail to inform policymakers about significant within population health disparities(Kearney et al. 2005). According World Health Report 2002 and many other studies, unhealthy diet and physical inactivity as well as tobacco use and alcohol use, are major global determinants of Non-communicable disease (Sugathan 2010). Globally, this situation would influence in further increase of high morbidity and mortality burden and to resultant rise in medical expenditure. The majority of ageing people have face problem like, inadequate diet, overweight, abdominal obesity, hypertension and smoking. High prevalence of all these factors gives a definite possibility of increasing the burden of morbidities.

According to The World Bank and WHO Report on Disability more than a billion people about 15% of the world's population experience disability and between 110 million people and 190 million have significant difficulties in functioning(WHO 2012). Morbidities are direct associated with increasing age. The WHO 2003, 2006 estimates that 10% of the world's population has some form of a disability, 20% of those aged 70 and above, and 50% of those aged 85 and above. That is, with increasing age, disability increases and, among those who are elderly, the old elderly are more likely to experience disability than are young elderly. WHO argues that in terms of disability, old

age can be viewed as starting at age 75 due to that reason. It is significant that the oldest old are the most rapidly growing segment of the population and it is among the oldest old that severe disability is the highest (Ferrucci et al. 1996; Organisation 2003).

2. Methods

The present study used from the individual level, cross-sectional data of wave 1from the WHO Study on Global AGEing and Adult Health (SAGE) which is conducted six countries, China(7519), India(3968), Ghana(2842), South Africa(2145), Mexico(1881) and Russia Federation(2780) during 2007-10. The elderly age group 60 years and above have been considered for the analysis. All selected countries are belonging from various type socioeconomic profiles, demographic characteristics along with morbidity. These SAGE countries represent different geographic regions of the world, levels of economic development and stages in the demographic and health transition, including the world's two most populous countries like, China and India. However, Global AGEing and Adult Health (SAGE) data are very rich source of information on the elderly health and health seeking behaviours.

The sampling method used for SAGE was based on the design for the World Health Survey (WHS) 2002–2004, which was drawn from the national census of each selected country. The sampling details of SAGE have been documented elsewhere. Briefly, SAGE employed a probability sampling strategy using multistage, stratified, random cluster samples. The primary sampling units (PSU) were stratified by region and place of residence, and enumeration areas were selected within each stratum. The samples were drawn from a national sampling frame using a stratified, multistage cluster design so as to allow each household and individual respondent to be assigned a known non-zero probability of selection. All selected countries have provided data on different types, levels and distribution of health and disability among the older population, much less on which morbidity trajectory their respective ageing populations are following: expansion of morbidity, where

people are living longer with more disease and disability compression of morbidity. Where, longevity increases but with delays in the age at onset and progression of disease. SAGE data collected information about morbidities is based on self-reported and health condition based on the interview and health measurement test anthropometric test.

Analysis

Bi-variate and multivariate analysis has been carried out for the analysis. In this study, six countries have been chosen for the analysis. The selected SAGE countries provide a broad representation from different geographic regions of the world, different levels of economic development and different stages in the demographic and health transition, and include the two most populous countries; China and India of the world. Multivariate model has been used to examine association between morbidity and socio-economic and demographic profile of the elderly. The data has been analysed using SPSS-20 and STATA 12 software.

Dependents Variables

Morbidities. In SAGE data, information on morbidities has collected for different forms. However, in this study information on morbidity was considered only for the analysis. In the dataset, information was collected for a wide variety of diseases which has been merged and computed as a single variable i.e. morbidity. For the computation of morbidity in elderly population have use dichotomous variable 1 'Yes' and 0 'No' in all countries. In this analysis these are major morbidities has been chosen like, Hearing Problem, Vision Problem, Walking Difficulties, Breathing, Mental Problem, Paralysis, Athirst, Diabetes, Hypertension and Other health problem which are direct provided in the data set in form of 'Yes' or 'No'.

Body Mass Index (BMI). BMI was calculated as weight in kilograms divided by height in meters squared. Using the standard WHO definition, BMI was categorized into four category i.e. 'Underweight' (<18.5 kg/m2), 'Normal weight' (18.5-24.9 kg/m2), Overweight (25.0-29.9 kg/m2) and Obese (30+ kg/m2).
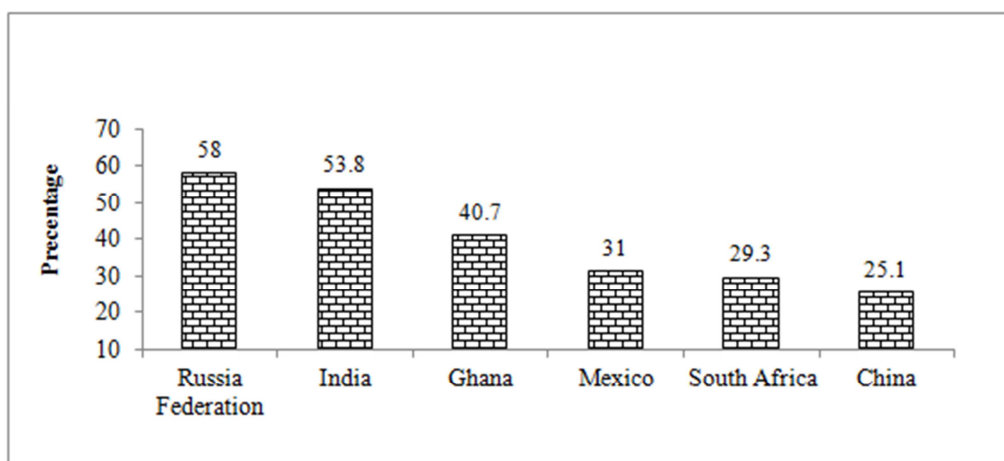
3. Results

Figure 1. *Prevalence of morbidity (in %) among elderly population age group 60 years and above in six selected countries, 2007-10.*

*Morbidity preference and BMI distribution.*Figure 1 shows the percentage of morbidity among elderly age group 60 years and above across all selected countries. The percentage of morbidity is higher about 58 % in Russia Federation and about 54 % in India followed by Ghana. The China has significantly less contributed nearly 25 % of morbidity as compare to other countries. The prevalence of overweight and obesity among elderly have been shows in Figure 2 in six selected countries. The percentage of respondent who were overweight ranged from 6.8 % low in India to 38.9 % in Mexico. Likewise, the percentage of obese is significantly higher 49.2 % in South Africa and lowest in China 15 % have been found in figure 2. Nearly, 2.1 % and 38 % of the respondent in Mexico and India respectively, were underweight.
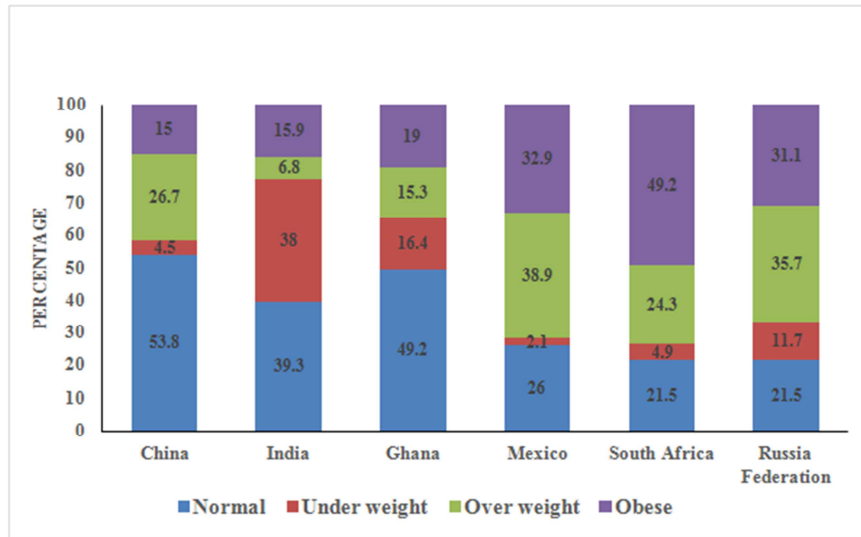

Figure 2. Distribution of BMI in all selected countries among elderly population, 2007-10.

*Types of Morbidities.*Various types of selected morbidities prevalence in six selected countries have been shows in table 1.The prevalence of respondent who were Diabetic raged between as low as 11.1 % in Mexico and highest as 45.5 % in South Africa. Similarly, the prevalence of Arthritis higher about 28.5 % in South Africa and lowest about 10.4 % in Mexico has been found in the table 1. The elderly respondent s that are belonging to Russia Federation they have significant prevalence of Hypertension (nearly 20 %) and lowest in Mexico (nearly 3.2 %). Table 1 depicts, Russia Federation have higher contributed in morbidities i.e. Vision Problem (20.4 %), Hearing problem (12.6 %), Breathing problem as compare to their counterpart (WHO 2012).

Table 1. Prevalence (in %) of selected morbidities among elderly population in all selected countries, 2007-10.

Type of Morbidities	China (7519)	India (3968)	South Africa (2145)	Ghana (2842)	Mexico (1881)	Russia Federation (2780)
Arthritis	19.9	20.7	28.5	12.5	10.4	12.7
Diabetes	24.1	27.1	45.5	12.3	11.1	37.9
Vision Problem	10.5	31.2	13.9	11.4	10.5	20.4
Hearing Problem	9.7	7.7	5.1	3.3	9.5	12.6
Hypertension	5.8	8.8	7.2	4.5	3.2	19.7
Walking Difficulties	4.8	10.8	7.2	14.4	17.6	15.1
Breathing Problem	1.3	6.7	2.6	1.2	2.2	4.8
Mental Problem	0.3	2.7	1.4	0.4	0.5	0.6
Paralysis	0.4	1.5	1.6	2.3	1.0	1.7
Other Health Problem	10.4	34.7	14.5	30.8	7.8	49.2

Morbidity distribution by Socio-economic Categories. Table 2 illustrated morbidity percentage distribution among elderly population by selected background characteristics in six selected countries. Table 2 shows elderly age group 60-64 have high morbidity (31.4) in India and lowest in South Africa and Russia Federation (18.6). The morbidity percentage have been found nearly 21 % and 38.9 % of the respondent age group 75 year and above in India, South Africa and Russia Federation. The education have played important role to reduce of morbidity among elderly. No education category respondent have considerable percentage of morbidity about 80% in Mexico and 62 % in Ghana as compare to other selected countries. Furthermore, the elderly were belonging to higher level of education they have very less percentage of morbidity across all selected countries. The female elderly are belong to high level of morbidity. The

result describe more than 60 % elderly women have morbidity across all countries. In China and India, married women have radically percentage (77.5 % and 64.5 %) of morbidity as compare to other countries. Meanwhile, the percentage of morbidity is higher (54.5 %) in Wid/Div/Sep group among South Africa and Russia Federation. The percentage of morbidity is much higher (more than 50 %) in urban areas compare to rural areas (Ferrucci et al. 1996; Joshi et al. 2003).

***Table 2.** Morbidity percentage (%) distributions among elderly by selected background characteristics in all selected countries, 2007-10.*

Background Characteristic	China (N=7519)	India (N=3968)	South Africa (N=2145)	Ghana (N=2842)	Mexico (N=1881)	Russia Federation (N=2780)
Age Group						
60-64	26.6	31.4	18.6	22.1	28.6	18.6
65-69	27.2	26.0	23.6	19.8	20.5	23.6
70-74	20.7	21.7	19.0	24.8	15.5	19.0
75+	25.4	21	38.9	33.3	35.4	38.9
Level of Education						
No Education	31.2	56.6	1.4	62.3	79.6	1.4
Primary	37.1	24.7	13.0	16.8	11.8	13.0
Secondary	25.6	15	72.2	17.3	8.6	72.2
Higher	6.0	3.7	13.4	3.7	0.0	13.4
Sex						
Male	47.8	48.3	31.2	49.7	42.2	31.2
Female	52.2	51.7	68.8	50.3	57.8	68.8
Marital Status						
Never Married	1.1	0.6	1.8	0.9	5.9	1.8
Married	77.5	64.4	43.7	48.9	56.9	43.7
Wid/Div/Sep	21.4	35	54.5	50.2	37.2	54.5
Place of Residence						
Rural	43.4	70.4	25.1	58.6	21.4	25.1
Urban	56.6	29.6	74.9	41.4	78.6	74.9
Working Status						
Working	26.1	41.5	13.2	49.0	33.5	13.2
Not-Working	73.9	58.5	86.8	51.0	66.5	86.8
Wealth Index						
1st Quintile	20.8	19.9	18.4	19.5	20.2	18.4
2nd Quintile	18.0	19.7	23.8	19.2	24.8	23.8
3rd Quintile	20.6	18.1	25.0	19.5	15.2	25.0
4rth Quintile	21.3	18.3	14.9	19.8	16.6	14.9
5thQueientile	19.2	23.9	17.8	22.0	23.2	17.8
Total	100	100	100	100	100	100

Note- Widowed/divorced/separated, N total number of un-weighted cases.

Logistic Regression. The binary logistic regression (odd ratio) shows association between morbidity and selected background characteristics in six selected countries (Table 3). Age group of the elderly are positively associated with morbidity. The respondent age groups 70-74 years were 1.06-1.41 times as likely compare to respondent age group 60-64 years. Likewise, elderly 75 years and above were 1.36-1.92 as likely as compare to reference category. Gender was statically associated with morbidity has been found among all selected countries. The female respondents were 1.24-1.84 as more likely as compare to reference group. Marital status of the respondent also statistically associated with morbidity in all selected countries. The respondent those are belonging to Widow/Divorce/Separated group they have 1.23-2.59 times more likely morbidity as compare to never married group. The level of education of the respondent have play important role to contribution of the morbidity. The respondents that are belonging to the China, India, Mexico and Russia Federation have primary education were 0.39-0.96 time less likely have morbidity as compare to reference group. Likewise, in higher educated group respondent were 1.26-2.06 times more likely than no educated group. In China respondents are have 0.99 times less likely as compare to Reference group. The association between morbidity and place of residence was significant have been found in table 3. Urban when compared to rural area were 1.04-1.11 more likely in India, South Africa, Ghana, Mexico and Russia Federation. The binary logistic regression (Odd ratio) shows that the respondent belong to more than 1st wealth quintile they have less likely of morbidities in China (table 3). While, South Africa result shows as respondent wealth quintal increase from 2 to 5th, respondent has morbidity 1.10 – 1.76 times more likely as compare to 1st wealth quintile.

Table 3. Odd Ratio from binary logistic regression model by selected background characteristics among elderly in all selected countries, 2007-10.

Background	China (N=7519)	India (N=3968)	South Africa (N=2145)	Ghana (N=2842)	Mexico (N=1881)	Russia Federation (N=2780)
Age Group						
60-64®	1	1	1	1	1	1
65-69	1.25 * (1.02-1.85)	0.95 ** (0.95-2.96)	2.18 ** (1.16-2.59)	1.01* (0.79-1.75)	0.74** (0.60-1.91)	1.53** (1.13-2.57)
70-74	1.34** (1.31-2.31)	1.06*** (1.02-2.07)	1.41* (0.94-2.42)	1.24** (1.12-2.25)	0.93 ** (0.72-1.20)	1.81 *** (1.20-2.84)
75+	1.70*** (1.41-2.11)	1.73*** (1.12-2.73)	1.92 *** (0.90-2.13)	1.36* (1.12-2.25)	0.56 *** (0.45-2.68)	2.94 *** (1.23-3.95)
Sex						
Male ®	1	1	1	1	1	1
Female	1.30** (1.21-3.30)	1.27*** (1.01-1.57)	1.84** (1.24-3.85)	1.24*** (1.05-2.25)	1.50*** (1.23-2.81)	2.76** (1.01-2.95)
Marital Status						
Never Married®	1	1	1	1	1	1
Married	1.23* (1.23-4.24)	1.46 *** (1.35-2.47)	0.77** (0.74-2.78)	1.33*** (0.29-2.78)	1.87*** (1.02-2.51)	2.46 * (2.01-2.48)
Wid/Div /Sep.	1.23 ** (1.10-2.24)	1.55 (1.14-2.58)	1.41** (1.20-2.42)	1.51 (1.46-1.56)	2.59*** (1.91-3.52)	1.89 ** (1.88-1.91)
Level of Education						
No Education®	1	1	1	1	1	1
Primary	0.78 *** (0.79-1.99)	0.96*** (0.81-1.84)	1.58** (1.57-2.59)	1.10*** (1.04-2.11)	0.54** (0.43-1.68)	0.39** (0.31-2.40)
Secondary	1.04** (1.03-3.21)	1.11** (1.00-1.21)	1.41** (1.20-1.42)	1.33** (1.11-1.34)	1.32 (0.99-1.76)	0.25*** (0.24-0.25)
Higher	1.43** (1.39-2.49)	1.33*** (1.02-2.35)	0.42*** (0.41-1.15)	1.26** (1.01-1.89)	2.06*** (1.74-3.44)	0.38** (0.31-1.39)
Place of Residence						
Rural®	1	1	1	1	1	1
Urban	0.99 (0.99-2.45)	1.27 *** (1.27-2.18)	1.71*** (1.25-2.72)	1.26**** (1.06-2.36)	1.04** (1.01-3.07)	0.76*** (0.45-0.97)
Working Status						
Working®	1	1	1	1	1	1
Not-Working	2.19** (1.19-3.23)	1.25** (1.12-2.40)	1.12*** (1.01-2.20)	2.74 ** (1.22-3.79)	2.06 *** (1.04-2.44)	1.23** (1.11-3.27)
Wealth Index						
1st Quintile®	1	1	1	1	1	1
2nd Quintile	0.89* (0.80-2.19)	0.84*** (0.64-0.98)	1.10*** (1.10-3.18)	0.86** (0.83-1.87)	1.02*** (0.79-1.33)	1.74*** (1.05-2.55)
3rd Quintile	0.98 *** (0.71- 2.98)	0.77 *** (0.75-2.78)	1.14 *** (1.13-3.14)	0.31** (0.32-2.83)	1.62 *** (1.23-2.13)	1.94 *** (1.23-2.98)
4rth Quintile	0.90*** (0.90-3.14)	1.02*** (1.01-2. 35)	1.91 *** (1.90-4.91)	1.03 *** (1.01-2.42)	1.71 (1.31-2.23)	1.09 ** (1.09-3.10)
5thQueientile	0.75 ** (0.73-1.51)	0.88** (0.67-1.88)	1.76** (1.01-2.86)	1.12* (1.11-2.44)	1.10** (1.47-2.45)	1.57* (1.26-3.58)

Note- ® reference category, *p < 0.05, **p < 0.01, ***p < 0.001.N total number of un-weighted cases.

4. Discussion

During the last decade globally life expectancy has increased and reaching internationally average of concerning 70 years in 2014 and 80 years in developed countries. The aim of this research was to understand the health status of elderly population and to examine the various type of morbidity condition by selected countries. Research findings will provide help to health planners, policy makers and decision-making processes about the ill health and well-being of the elderly population in all selected countries. Prevent morbidity risk need to be monitor and intervention strategies to evaluate the expected outcomes. The research finding suggested about 30 percent of elderly suffering from diabetics' problem in all selected countries. That is a common disease affecting several million individuals' elderly; it is rising due to human behaviour and changing in lifestyle. The present study shows that South Africa elderly have high prevalence of Diabetic and Athirst (45.5, 28.5%) followed by obese (49.2%). There is high prevalence of other diseases were also found. Globally requires the health promotion strategies and health policy planners are actively focused on morbidity deterrence (Joshi et al. 2003; Prakash et al. 2004). The make empower people through individually and collectively to prevent health risk behaviour and create strong economically and environmental condition that can prevent

morbidity during old age. The challenges of during ageing have been widely accepted and several researchers, government representative and development programs around the world have been initiated undertaken age related morbidities i.e. prevent through Diabetes, Hypertension, Arthritis, Mental, Vision problem, etc.(Prakash et al. 2004).

Globally, the elderly population continues growing and needed health caretaker's health care providers. The increasing elderly population and improvement of life expectancy statistically positive associated with accessibility and availability of public healthcare services at grassroots level. However, this is also reflecting positive human development and new mounting challenges i.e. Diabetes, Hypertension, Mental problem, etc.(Prakash et al. 2004; Kishore et al. 2007). The fact is that growing elderly population is still naturally associated with the biological and cognitive disintegration. Furthermore, on one hand the new process will start like declining of severity and cognitive power, physical frailty and psychological impairment but it can vary between individuals. And another hand ageing also raise the risk of morbidity due to unhealthy food habits and physical in-activities. Moreover, the vulnerability of injury and trauma (such as falls and un-conciseness), destruction of mental state are strongly associated with ageing. Ageing related health decline is the leading cause of morbidity, and it should be addressed according to the severity of the problem at globally Kishore et al. 2007; Khanam et al. 2011). Because there are several issues are influences of elderly health and economical, this should not deserted by the leader, policy maker, health programmes and government representative (Medhi et al. 2006; Bhatt et al. 2011).

5. Conclusion

Awareness among the elderly population should be created time to time and regular basis medical check-ups to ensure that prevent and detection of diseases. However, current situation of the elderly population introduce to new set of socio-economic, cultural and medical problem that would mount. For creating awareness among the ageing population, health education, and encouragement should be implemented for the prevent morbidities in proper manner. Formulate regular health check-up camp at the local level and insurance scheme that would help medical expenses for the elderly. Provide positive social and family support for making strong mental power of the ageing society.The practitioners ageing are one of the most neglected issues, mainly because they are disempowered and non-resourceful persons in term of development. The concept of ageing had a new meaning at this time. The elderly should consider in every family as a development indicator.

Funding

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