

---

*The Current Issue of Indian Journal of Community  
Health is being dedicated in revered memory of  
our beloved Prof. Deoki Nandan.*

**EDITORIAL****Geriatrics-Future Social Medicine**Mathur JS<sup>1</sup>, Kumar S<sup>2</sup>

<sup>1</sup>Retd. Dean, Principal & CMS, LLRM Medical College, Meerut, MGIMS, Sevagram, Wardha, GSVM Medical College, Kanpur, <sup>2</sup>Associate Professor, UPRIMS & R, Saifai, Etawah.

The problem of aging has drawn the attention of World Health Organization in 1982 and again in 2000 and expressed concern on the increasing population of aged over 60 years of age and poses the growing policy challenging in both developed and developing countries. ILO in 2002 has warned in its report that the number of old people aged 60 years and over are increasing throughout World in a "demographic resolution". According to UN Population data and their analysis, the persons over 60 years and their rate will be accelerated

over the next 50 years. In developing countries population 60 years are expected to increase 33.3 percent in 2050 from 11.7 percent in 1950 and aged over 60 years to increase 19.3 percent from 6.4 percent for the same period in the developing countries. Similarly the persons over 80 years in the total population in the developing countries are expected to rise from 0.7 percent in 2000 to 3.3 percent in 2050. But this rise is expected to be 400 percent in developing countries.

**UN Population data and ILO analysis**

Country	Age	1950	2000	Percent increase between 50-2000	Expected in 2050	Percent increase between 2000 to 2050
Developing countries	60 years	11.7 %	19.4 %	66 %	33.3 %	72 %
Developing countries	60 years +	6.4 %			19.3 %	150 % Between 2000 to 2050
Developing countries	80 +	—	3.1 %		9.6 %	200 % increase between 2000 to 2050
Developing countries	80+	—	0.7 %		3.3 %	400% increase between 2000 to 2050

In India according to Population Division of DESA. United Nations the population over 60 years is likely to increase from 19, 175.8 thousands in 1950 to 2,76, 156.4 thousands in 2050 that is increase from 8.9 percent to 37.7 percent. (Female population from 9.9

% to 35.4 % and male population from 8.1 % to 43.2% for the same period). The last census of India of 2011 revealed 6.5 percent population above 60 years and 3.6 percent over 65 years.

**Address for Correspondence:**

JS Mathur, 23, Katra Meera, Pakka Talab, Shikohabad- 205135 Distt. Firozabad (UP)

Email:

**India: Reveals population in India from 1950 to 2050**

Indicator	Age	1950	1975	2000	2025	2050
<b>Population (thousands)</b>						
	<b>0-14</b>	<b>1,39,155.6</b>	<b>2,47,002.1</b>	<b>3,37,920.6</b>	<b>3,14,118.0</b>	<b>3,08,995.5</b>
	60-64	8127.1	14739.9	26755.8	56153.9	91692.9
	65-79	11,048.7	21629.3	<b>43,985.5</b>	<b>94,995.9</b>	<b>1,84,465.5</b>
	80-94	922.4	1919.8	6,063.1	16842.2	4,69,77.0
	95+	-	-	46.9	316.4	1180.4
				(3.2 + 100 Yrs)	(33.2+100Yrs)	(141.6+100)
<b>Female Total -</b>		174255.2	299249.7	488625.7	660956.3	779105.8
	0-14	68833.5	118717.0	163238.2	152826.5	150749.7
	60-64	3939.6	7186.1	13716.0	27929.9	45868.8
	65-79	6178.0	10,677.86	22,983.2	49,484.0	96,291.3
	80-94	-	-	3150.1	9023.7	2,40,39.6
	95+	-	-	210.5	1104.6	3678.7
				(2.0 + 100Yrs)	(21.5+100Yrs)	(94.0+100)
<b>Male Total -</b>		183305.6	321451.1	520311.6	690844	4792948.8
	0-14	70322.1	128345.1	174682.4	161291.5	158245.8
	60-64	4187.5	7553.8	13039.8	28224.0	45824.1
	65-79	6178.0	10677.8	22983.2	49,484.0	96,291.3
	80-94-	456.8	969.5	4225.3	7113.6	20012.9
	95+	-	-	20.2	116.8	426.1
				(1.3+100 Yrs)	(11.7+100 Yrs)	(47.6+100)

Source: Population Division, DESA, United Nation

It is worth mentioning at this stage to project the percentage of population likely to increase over a of decades, responsible for the reversal of age structure.

**India: reveals geriatric population in India from 1950 to 2050**

Indicator percent older age	Age	1950	1975	2000	2025	2050
Total	60+	5.6	6.2	7.6	12.5	20.6
	65+	3.3	3.8	5.0	8.3	14.8
	80+	0.3	0.3	0.6	1.3	3.1
Female	60+	6.1	6.3	8.2	13.2	21.8
	65+	3.8	3.9	5.4	9.0	15.9
	80+	0.3	0.3	0.7	1.5	3.6
Male	60+	5.2	6.1	7.1	11.7	19.5
	65+	2.9	3.8	4.6	7.6	13.7
	80+	0.2	0.3	0.5	1.0	x 2.6
Aging index	Total	14.4	15.6	22.7	55.6	105.0
Broad age	0-14	38.9	39.8	33.5	23.2	19.7
Groups	15-59	55.5	54.0	58.9	64.3	59.7
	60+	5.6	6.2	7.6	12.5	20.6

There is going to be reversal of age pyramid, where percentages of children below 15 years are going down because of number of factors due to low mortality rate, decline of new born to total population, decline in general fertility, improvement of health status and many similar factors. This shift largely is irreversible for the first time in the history of humanity, where oldies will exceed young's. The factors which need consideration are- this is compounded with the increasing life expectation

at old age. The life expectancy at 60 years in 2000 recorded was 17.0 years, which is expected to increase to 20.8 by the year 2045-50. While expectation of life at birth for the same period was 64.2 years in 2000 and is expected to be 75.4 years in 2045-50. ( for females at 60 years it was 17.9 years in 2000 and is expected 22.2 years in 2045-5; males it was 16.1 years in 2000 and is likely to be 7.7 years in 2045-50.

**Life expectancy in India in geriatric age group**

Indicator	Age	1950-55	1975-80	2000-05	2025-30	2045-50
Life expectancy (Years) Birth		38.7	52.9	64.2	71.6	75.4
Total	60	-	-	17.0	19.4	20.8
	65	-	-	13.7	15.7	16.9
	80	-	-	6.2	7.2	7.7
Female	Birth	38.0	52.4	64.9	73.4	77.4
	60	-	-	17.9	20.7	22.2
	65	-	-	14.4	16.7	18.1
	80	-	-	6.5	7.5	8.1
Male	Birth	39.4	53.3	63.6	69.9	73.5
	60	-	-	16.1	18.1	19.4
	65	-	-	13.0	14.7	15.8
	80	-	-	6.0	6.8	7.3

In order to understand geriatric problem let us view the survival rate of geriatric age group. The survival rate of people of 60 years was 72.8 in 2000 and is likely to increase to 87.7 % in 2045-50. The survival rate for people above 80 years for the same period was 27.8 % and is likely to go up to 51.7 % for the same period.

The survival rate for females at 60 years was 74.6 % in 2000 and is expected to be 88.8 %; for females 80 years survival rate in 2000 was 31.4 % and is expected to be 55.4% in 2045-50, males of 80 years survival rate was 24.3% and is likely to go up to 41.9%. The survival rate for females is more for the various reasons.

### Survival rate of geriatric age group

Indicator	Age	1950-55	1975-80	2000-05	2025-30	2045-50
Survival rate (Percentage)						
Total	60	-	-	72.8	82.9	87.7
	65	-	-	65.2	76.8	82.2
	80	-	-	27.8	40.0	51.7
Female	60	-	-	74.6	85.6	88.8
	65	-	-	68.1	80.8	85.4
	80	-	-	31.4	46.6	55.4
Male	60	-	-	71.1	80.4	85.7
	65	-	-	62.5	73.1	79.3
	80	-	-	24.3	34.8	41.9

Growth rate of old people is an indicator of reversal of young and old.

**Growth rate of old in percentage is given in the table.**

Indicator	Age	1950-1955	1975-1980	2000-2005	2025-2030	2045-2050
INDIA	Total	2.0	2.1	1.5	0.8	2.4
	60+	2.0	2.9	2.7	3.2	2.2
	65+	2.1	3.2	3.0	3.5	2.5
	80+	1.4	4.1	4.7	3.9	3.5

The reversal of age structure old to young shall lead to many social-medical problems, community and family problems, unless governments implement plans for the geriatric age group. Government few decades back considered pediatric age group as separate problem from general medical and established separate pediatric units. The increasing geriatric group of population has already lead to the problems of dependency potential workers, social security system, break down of joint

family, urbanization, industrialization, unemployment, rising cost of living change in social values, high dependency rate, loss of authority, generation gap, emotion insecurity and similar other conditions.

The old suffer from multiple pathology the same time and need geriatric specialists rather specialist for each condition. The young are becoming young old, young old are becoming old and old are becoming elderly old. The elderly population is expected to rise sharply by

2.6 annually. This consequently will effect dependency ratio.

The ratio of oldie above the age of 64 years and below 15 years to the people of working group of 15-14 years is expected to fall. This Indian potential ratio shall drop down 17.2 % in 1950 to 4.4 % in 2050.

$$PSR = \frac{\text{No aged 15 years to 64 years}}{\text{Old people 85 years and above}}$$

**Potential Support ratio- 1950 to 2050**

PSR	1950	1975	2000	2025	2050
World	12	10.1	9.1	6.3	4.1
India	17.2	14.7	12.4	8.2	4.4
Nepal	15.5	16.1	14.8	13.6	8.2

The table shall reveal the potential support ratio will effect dependency on potential workers, will effect social security, where workers will pay for retired and old people. PSR is likely to fall in each and every country. The effect of demographic shift shall be seen as increase of population of old of both sexes in absolute and relative numbers. "Intergenerational and intragenerational"

equity, a foundation of society will be shaken and will effect, saving, investments, consumptions, labor market, taxation, pension, health of people, family composition, living arrangements, housing, effect migration and effect voting patterns, labor force participation etc.

**Labor force participation in percentage**

Indicator	Age	1950-1955	1975-1980	2000-2005	2025-2030	2045-2050
World-Total	65+	31.9	24.6	19.9	18.8	17.9
Female	65+	14.5	11.6	10.4	10.1	10.0
Male	64+	54.7	42.1	32.9	30.2	28.1

India- Total	65+	44.1	41.1	34.8	32.1	29.6
Female	65+	22.0	17.6	14.3	13.5	12.9
Male	64+	71.7	63.6	56.6	52.7	48.9

The health of old people typically deteriorates with age and need long term support from the family, community, medical fraternity and the government. The parent/family support ratio for people above 65 or more years will be still more. In this stage people of ages 15-64 years

indicates family support to elderly members of the family. At this stage people of ages 15-64 years indicates family support to elderly members of the family.

**Parent/family support ratio**

Indicator	1950	1975	2000	2025	2050
World	2.5	2.6	4.3	5.5	11.1
India	1.0	0.9	1.9	3.3	6.7
Nepal	0.8	0.9	1.3	1.9	2.7

The old age appears with multiple diseases complex together, which need to be taken care one the same and need geriatric specialists rather bunch of specialists for specific conditions, some of these conditions are of chronic in nature like degenerative diseases, disabilities, cataract, glaucoma, chronic lung diseases, cardio-vascular disease, prostrate problems deafness, joint problems, mental conditions, urinary tract infections and many more. Psycho-social conditions, loneliness, loss of spouse, loss of identity, low or no

income, in capitation, indifference, addition, rigid attitude are some social problems of age. The table shall high light some old age diseases in India in rural and urban areas.

But the people remains healthy for the years is much low in India. Males and females are expected to remain healthy till 54 years of age and the remaining years they have ailments amounting 9 years or more in males and 10.4 years of more in females (Times of India)

**Chronic Diseases among the elderly in India**

Disease	Rural		Urban	
	Male	Female	Male	Female
Problem of Joints	44.5	50.6	35.1	44.2
Cough	35.5	32.7	26.0	22.4
Blood Pressure	6.4	6.5	16.8	18.5
Diabetes	2.1	1.2	5.9	4.3
Heart Disease	3.7	3.9	6.9	5.6
Piles	3.8	2.5	4.3	2.6
Urinary Problems	4.1	2.7	5.1	2.4

(Source: Rao and Townsend)

The old age is associated with deposit of fat, which becomes double between the ages of 20-65 years, which is much more in women: muscle mass goes down by 1/4 Kg. per year during 30-80 years of age: motor units are lost 20 % between the ages of 30-70 years ( bundle of muscles and motor nerves): brain loss of neurons are accelerated after 60 years of age with the reduction of blood supply, which manifests as depression, forgetfulness, syncope, parkinsonism, Alzheimer' s etc; vital capacity is reduced to 40 % at the age of 70 years with stiffness of chest and lung elasticity decreases. All this leads to repeated chest infections. To cut short the different systems like eyes, hearing, endocrines, CVS, GIT, renal, immune response (Number of B and T cells are reduced), deficiencies of

minerals and vitamins are effected. Their details can be had from the text books of the author and literature. It would be worth to lay stress as how the old age people could increase their span of life or survival. There are factors at old age which could accelerate old age or retard old age process. Here factors that reverse the process of old age are only mentioned. Harvard School ( Langer) demonstrated improvement of memory, manual Dexter, self independence of people over 70 years by duplicating life of 20 years earlier and behaved like 55-6- years old. Tuft Group could reverse lost motor units and resulted in quadriceps becoming doubled and hamstrings tripled by simple exercises for 3 months; they demonstrated that lowering of cholesterol by 20 % could lower heart attacks by 40%, which was also

demonstrated by Multi 12000 people trial. That blocked arteries were unblocked (Dean Ornish, Lancer; Len Fault of National Heart Lung and Blood Institute, Bethesda) and reversal of arteriosclerosis in coronary arteries was also demonstrated by Grey Brown of University of Washington by lowering of cholesterol and change of lifestyle.

PRANAYAM improves oxygen efficiency by 40 %, which declines 30-40 % by the age of 65 years and thereby improves vital capacity; improves blood pressure, vision, hearing and Biomarkers of old age are reversed after 5-12 years of meditation and pranayam and had gained 5-12 years of biological age than chronological age; reduces corticoids, which is liberated in non-lethal doses with each threatening of life and adrenals and thus reverses the aging process. Pranayam awaits the action of free radicals like oxidants and reverses the aging and also dilates coronary arteries. Free radicals are molecules with unpaired electrons that steal electrons from stable molecules, making stable molecule to become free radical, causing chain of damaging reactions. Free damage DNA and increase the risk of cancer. DHEA, precursor of cortisone, is anti aging factor its peak reaches at 25 years of age and falls lower to 5 % in old age. Higher DHEA is associated with longer survival. Glasser found in meditation in men and women at 45 years of ages at the level of 23 % and 45% more DHEA, which was equal to 6-10 year old child, meaning by a help in reversal of aging.

## References:

1. BMJ ( south east Asia) vol 332,1 April, 2006, 730-740.
2. Burr ML Ashfield Wait Pal, Dunstan FDJ, FEhily AM, Brey P, Ashton I et al-Lack of benefit of dietary advice to men with angina: results of controlled trials, Eur J Clin Nutr, 2003; 57:193-200.
3. Lim W, Gammack J, Van Niekerk J, Dangour A- Omega 3 fatty acids for the prevention of dementia, Cochranedatabase syste rev. 2006; (10 CD005379).
4. Preventive and Social medicine-A Comprehensive Text Book, JS Mathur, CBS Publishers and Distributors, New Delhi, India.
5. The report of World Population aging Population Bibliography.
6. Garrow JS and Webster J. Quarterly Index ( W/h2) as measure of fatness, Int J. of Obesity. 1985; 9: 147-153.