Impact of Over-population on Economic Growth and Development in India

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ABSTRACT: India is the second most populated country in the world. India is projected to be the world's most populous country by 2024. Its population growth rate is 1.13%, ranking 112th in the world in 2017. It is expected that in 2020 average age of an Indian will be 29 years. Population is the means as well as ends of economic development. They are an asset if in adequate strength and prove to be a liability if excess in strength. Population has crossed the optimum limit in India and has become a liability. So problem of population explosion in India has proved to be a big hindrance in the success of economic planning and development.

The researcher found that there exist a significant correlation between the population and GDP of India. The researcher has taken the population of each state and their corresponding SGDP to find whether population is related to GDP or not. The researcher has found no significant correlation between annual population growth and the inflation in India. Therefore population has no significant impact on the inflation of India. Inflation may be effected due to some other factors. The research also found us that there is no significant negative impact of population growth on the GDP growth of India and the fact is that as the population increases so does the GDP.

Although overpopulation has not affected the GDP and infect GDP of India has grown very fast from last two decades. India is now 3rd largest economy with GDP (PPP) \$10.40 trillion but due to population explosion still it is ranked 116th country in terms of per capital income and 130th position in terms of HDI. Population explosion is adversely affecting the standard of living. Overpopulation creates the problems like unemployment, shortage of food, low per capita income, problem of capital formation, high pressure, social problems, economic insecurity, social insecurity, increases pressure on land and environment degradation.

Key Words: Over-population, GDP, per capita income, HDI, Economic development.

Introduction

The population of India represents 17.99% of the world's total population which arguably means that one person in every 6 people on the earth is a resident of India. India is the second most populated country in the world and is believed to surpass the population of China in coming years. India is projected to be the world's most populous country by 2024. Its population growth rate is 1.13%, ranking 112th in the world in 2017. More than 50% of Indian population is below the age of 25 and more than 65% below the age of 35. It is expected that in 2020 average age of an Indian will be 29 years and dependency ratio will be just over 0.4. Persons are means as well as ends of economic development. They are an asset if in adequate strength and prove to be a liability if excess in strength. Population has crossed the optimum limit in India and has become a liability. So problem of population explosion in India has proved to be a big hindrance in the success of economic planning and development.

Population is means as well as ends of economic development in India. It an asset if in adequate strength and prove to be a liability if excess in strength. Population has crossed the optimum limit in India and has become a liability. So problem of overpopulation in India has proved to be a big obstacle in the success of economic planning and development. The current population of India contributes to 17% of the global population. Also, all these people are unevenly distributed across 3.28 million square kilometres of our geographical area.

According to the 2001 Census, Uttar Pradesh is the highest populated state in India with a total number of 166 million people. While on the other hand, states like Sikkim and Lakshadweep have the lowest population of 0.5 million in Sikkim and only 60000 people in the island state of Lakshadweep. Furthermore, about half of the India's population is distributed into five major states- Uttar Pradesh, Maharashtra, Bihar, West Bengal, and Andhra Pradesh. Though Rajasthan is the largest state in size, its population contributes to only 5.5% of the total population of India.

Although overpopulation has not affected the GDP and infect GDP of India has grown very fast from last two decades. India is now 3rd largest economy with GDP (PPP) \$10.40 trillion but due to population explosion still it is ranked 116th country in terms of per capital income and 130th position in terms of HDI. Population explosion is adversely affecting the standard of living. Overpopulation creates the problems like unemployment, shortage of food, low per capita income, problem of capital formation, high pressure, social problems, economic insecurity, social insecurity, increases pressure on land and environment degradation.

The economic planning and development of India, is very much influenced by the changes in population. India with its increasing human resources and abundant natural resources is still considered a developing country. India is still not in a position to use its natural resources adequately for the welfare of the growing population. Poverty prevails to great extent in India due to poor clothing, inadequate housing, poor medical care and malnutrition. The situation in India today is marked in terms of lack of electricity in many villages, insufficient food for a large part of its population and very little health care and education facilities.

Statement of the Problem

Overpopulation does not depend only on the size or density of the population, but on the ratio of population to available sustainable resources. It also depends on how our natural resources are managed and distributed to the entire population. Overpopulation is one of the hazards and serious problem, which creates a great hindrance in the way of economic development. It is estimated that growth in human population affect the global land use pattern available for agriculture, forest land cover, nearby area of different type of water bodies. The rapid growth of human population is putting extraordinary pressure on our natural resources available e.g. land, water, forests, ecosystem services etc. The purpose of this research paper is to highlight the various adverse impacts of overpopulation and its impact on the economic development of our country.

Objectives of the Study: The main objectives of this study are as

- 1. To analyse the population growth in India
- 2. To examine the Impact of overpopulation on Development of India.

Hypothesis:

1. There is a significant relationship between population and GDP in India

 H_0 : p = 0 (no significant correlation) H_1 : $p \neq 0$ (Significant correlation)

2. There is a significant relationship between annual population growth and inflation in India.

 H_0 : p = 0 (no significant correlation) H_1 : $p \neq 0$ (Significant correlation)

3. There is a significant negative relationship between annual population growth and GDP growth in India.

 H_0 : p = 0 (no significant negative correlation) H_1 : $p \neq 0$ (Significant negative correlation)

Methodology

Data collection

This study is based on the secondary data collected from various sources like research papers, websites, articles, reports, etc

Methods of data analysis

Simple mathematical and statistical treatments were used to process and analyse the data to get inferences based on analytical findings. The data was then coded and analysed by drawing simple tables, bar charts, graphs, and suitable statistical tests with help of M.S excel and SPSS software.

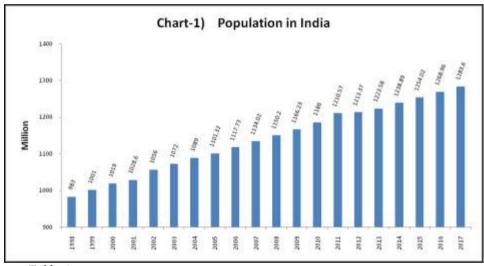
Data Analysis

From table-1, it can be seen that population has increased from 983 million in 1998 to 1283.60 million in 2017 that is 30.58% over last two decades. Fertility rate has decreased from 3.45 child per women in 1998 to 2.33 child per women in 2017.

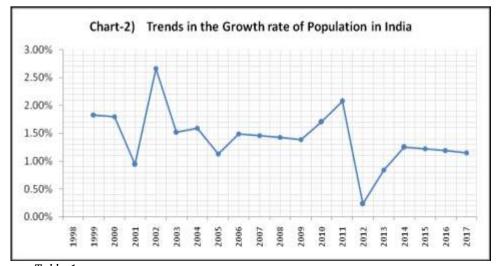
Table-1: Growth of Population in India (1998 to 2017)

1. drowth or ropulation in mala (1990 to 2017)									
S. No.	Year	Population	%age	Fertility	S.	Year	Population	%age	Fertility
		(Million)	change	Rate	No.		(Million)	change	Rate
1	1998	983		3.45	11	2008	1150.2	1.43%	2.75
_									
2	1999	1001	1.83%	3.38	12	2009	1166.23	1.39%	2.67
3	2000	1019	1.80%	3.31	13	2010	1186.00	1.70%	2.62
				0.01					
4	2001	1028.6	0.94%	3.24	14	2011	1210.57	2.07%	2.59
5	2002	1056	2.66%	3.18	15	2012	1213.37	0.23%	2.48
6	2003	1072	1.52%	3.11	16	2013	1223.58	0.84%	2.42
	2000	10,2	1.02 70	0.11	10	2010	1220.00	0.0170	2.12
7	2004	1089	1.59%	3.04	17	2014	1238.89	1.25%	2.38
8	2005	1101.32	1.13%	2.97	18	2015	1254.02	1.22%	2.35
_	2006	111550	4.4007	0.00	10	2016	106006	4.4007	0.00
9	2006	1117.73	1.49%	2.90	19	2016	1268.96	1.19%	2.33
10	2007	1134.02	1.46%	2.82	20	2017	1283.60	1.15%	
10	2007	1101.02	1.10 /0	2.02	20	2017	1205.00	1.13 /0	

Source: Tradingeconomics.com/Ministry of Statistics and Programme Implementation (MOSP)/World Bank



Source: Table-1



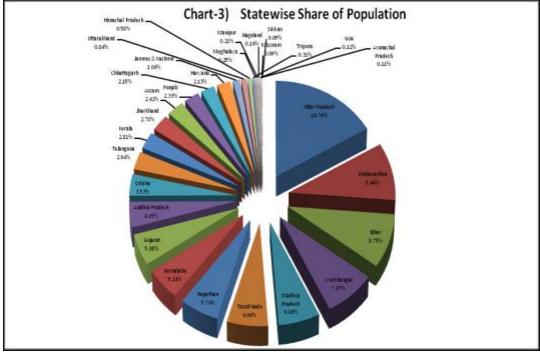
Source: Table-1

From chart-2, it can be seen that growth rate was highest 2.66% during the year 2002 and lowest 0.23% during the year 2012.

Table-2) State-wise Population and Gross State Domestic Product

S. No	STATE	Population(in Cr.) (%)	Decadal Growth (2001-2011)	GSDP at Constant prices (In Crore INR)	S. No	STATE	Population (in Cr.) (%)	Decadal Growth (2001- 2011)	GSDP at Constant prices (In Crore INR)
1	Uttar Pradesh	199,812,341 (16.51%)	20.20%	418404	16	Punjab	27,743,338 (2.29%)	13.90%	157303
2	Maharashtra	112,374,333 (9.28%)	16.00%	775610	17	Chhattisgarh	25,545,198 (2.11%)	22.60%	83409
3	Bihar	104,099,452 (8.6%)	25.40%	143560	18	Haryana	25,351,462 (2.09%)	19.90%	176917
4	West Bengal	91,276,115 (7.54%)	13.80%	323417	19	Jammu & Kashmir	12,541,302 (1.04%)	23.60%	41203
5	Madhya Pradesh	72,626,809 (6%)	20.30%	193350	20	Uttarakhand	10,086,292 (0.83%)	18.80%	60880
6	Tamil Nadu	72,147,030 (5.96%)	15.60%	433238	21	Himachal Pradesh	6,864,602 (0.57%)	12.90%	41908
7	Rajasthan	68,548,437 (5.66%)	21.30%	230859	22	Tripura	3,673,917 (0.3%)	14.80%	15428
8	Karnataka	61,095,297 (5.05%)	15,60%	282784	23	Meghalaya	2,966,889 (0.25%)	27.90%	11715
9	Gujarat 60,439,692 (4.99%)		19.30%	392058	24	Manipur	2,570,390 (0.21%)	18.60%	7327
10	Andhra Pradesh	49,577,103 (4.08%)	11.00%	221285	25	Nagaland	1,978,502 (0.16%)	-0.6%	10024
11	Odisha	41,974,218 (3.47%)	14.00%	130113	26	Goa	1,458,545 (0.12%)	8.20%	27045
12	Telangana	35,003,674 (2.89%)	13.58%	189269	27	Arunachal Pradesh	1,383,727 (0.11%)	26.00%	5510
13	Kerala	33,406,061 (2.76%)	4.90%	200958	28	Mizoram	1,097,206 (0.09%)	23.50%	4852
14	Jharkhand	32,988,134 (2.73%)	22.40%	93510	29	Sikkim	610,577 (0.05%)	12.90%	5299
15	Assam	31,205,576 (2.58%)	17.10%	76844					

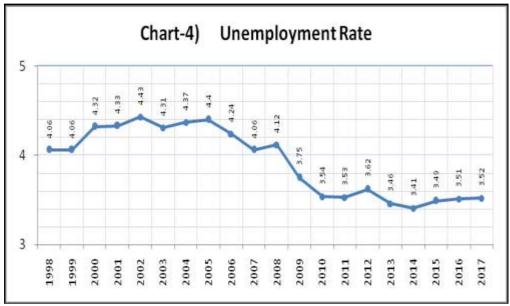
Source: Senses 2011 / Statistics Times



Source: Table-2

S. No.	Year	Unemployment Rate	S. No.	Year	Unemployment Rate
1	1998	4.06	11	2008	4.12
2	1999	4.06	12	2009	3.75
3	2000	4.32	13	2010	3.54
4	2001	4.33	14	2011	3.53
5	2002	4.43	15	2012	3.62
6	2003	4.31	16	2013	3.46
7	2004	4.37	17	2014	3.41
8	2005	4.4	18	2015	3.49
9	2006	4.24	19	2016	3.51
10	2007	4.06	20	2017	3.52

Source: Tradingeconomics.com/International Labour Organisation (ILO)



Source: Table-3

From chart-4, it can be clearly observed that unemployment rate was highest in 2002 and 2005 and lowest during 2014. Unemployment started rising again after 2014 onwards.

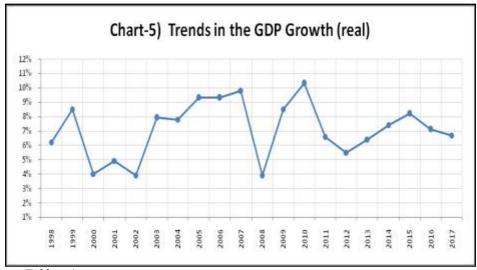
In India, the number of unemployed persons decreased to 44.85 Million in 2016 from 48.26 Million in 2014. Unemployed Persons averaged 30.60 Million from 1971 until 2016, reaching an all time high of 48.26 Million in 2014 and a record low of 5.10 Million in 1971 and the number of employed persons in India increased to 29650 Thousand in 2012 from 28999 Thousand in 2011. Employed Persons in India averaged 25169.51 Thousand from 1971 until 2012, reaching an all time high of 29650 Thousand in 2012 and a record low of 17491 Thousand in 1971. (Trading Economis)

Table - 4) Economic growth from the period of 1998 to 2017

Year	GDP	GDP	Share of world	GDP	Inflation	Government
	(in Bil.	per capita	(GDP PPP in %)	growth	rate	debt
	US\$ PPP)	(in US\$ PPP)		(real)	(in Percent)	(in % of GDP)
1998	1,774.40	1,789	4.00 %	6.2 %	13.1 %	68.1 %
1999	1,954.00	1,935	4.19 %	8.5 %	5.7 %	70.0 %
2000	2,077.90	2,018	4.16 %	4.0 %	5.6 %	73.6 %
2001	2,230.40	2,130	4.26 %	4.9 %	4.3 %	78.7 %
2002	2,353.10	2,210	4.30 %	3.9 %	4.0 %	82.9 %
2003	2,590.70	2,395	4.46 %	7.9 %	3.9 %	84.2 %
2004	2,870.80	2,612	4.58 %	7.8 %	3.8 %	83.3 %
2005	3,238.30	2,901	4.77 %	9.3 %	4.4 %	80.9 %

2006	3,647.00	3,218	4.95 %	9.3 %	6.7 %	77.1 %
2007	4,111.10	3,574	5.16 %	9.8 %	6.2 %	74.0 %
2008	4,354.80	3,731	5.21 %	3.9 %	9.1 %	74.5 %
2009	4,759.90	4,020	5.68 %	8.5 %	11.0 %	72.5 %
2010	5,312.40	4,425	5.95 %	10.3 %	9.5 %	67.5 %
2011	5,782.00	4,750	6.09 %	6.6 %	9.5 %	69.6 %
2012	6,209.90	5,034	6.23 %	5.5 %	10.0 %	69.1 %
2013	6,713.10	5,371	6.41 %	6.4 %	9.4 %	68.5 %
2014	7,340.00	5,797	6.65 %	7.4 %	5.8 %	67.8 %
2015	8,024.60	6,255	6.96 %	8.2 %	4.9 %	69.6 %
2016	8,705.00	6,697	7.23 %	7.1 %	4.5 %	68.9 %
2017	9,459.00	7,183	7.45 %	6.7 %	3.6 %	70.2 %

Source: Tradingeconomics.com/Ministry of Statistics and Programme Implementation (MOSP)



Source: Table - 4

Following are the main effects of Over-population

1. Problem of Investment Requirement:

As we know Indian population is growing at a very high rate as compared to developing countries. In order to achieve a given rate of increase in per capita income, larger investment is needed. Though both GDP and per capita income of India increased over a decade but due to overpopulation per capita income is increasing at a very slow rate. This adversely affects the growth rate of the economy. In India, annual growth rate of population is 1.15 percent as recorded in 2017 and capital output ratio is 4.1. It means that 4×1.15 = 4.6 percent of investment is required to stabilize the existing Economic growth rate.

2. Effect on per Capita Income

Large size of population and rapid rate of growth results into low per capita income. India is now world's $3^{\rm rd}$ largest economy but still at $116^{\rm th}$ rank for per capita income. Per capita income has increased from last two decades but due to overpopulation it is increasing at very slow rate.

3. Problem of Capital Formation

Overpopulation in India hampers the increase in capital formation. High birth rate and low expectancy of life reflects that there is large number of dependents in the total population. In India about 35% of population is composed of persons less than 14 years of age. Most of these people depend on others for subsistence. They are unproductive consumers and reduce the capacity of the people to save. So the rate of capital formation falls. Therefore access population is one of hindrance in the way of capital formation.

4. Effect on Food Problem:

Population explosion is one of the major causes of food problem in India. There is less food production as compared to increasing demand. Due to overpopulation large portion of agriculture land is shifting into construction of industries, houses, buildings, cities, roads and other infrastructure. This leads to the shortage of food in the country.



Source: Inc42 Staff, Meha Agarwal (6, Jun 2017)

According to a report, In 2017 India was ranked at the 100th position but now India has been ranked at the 103rd position among 119 countries on the Global Hunger Index. According to the report, prepared by Welthungerhilfe and Concern Worldwide, India is among the 45 countries that have "serious levels of hunger" ((Times of India, 2018)

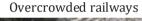
5. Problem of Unemployment:

Unemployment is one of biggest challenge for the India. Unemployment is mainly caused by Overpopulation. Large size of population results in large army of labour force in India. But due to shortage of capital resources it becomes difficult for a country to provide gainful employment to the entire working population. Open unemployment in urban areas and Disguised unemployment in rural areas are the normal features of an under developed country like India.

6. Low Standard of Living:

Rapid growth of population accounts for low standard of living in India. Even the bare necessities of life are not available adequately. As the population increase pressure on healthcare centres, education departments, transporting services, railways, and other public services increases.









Source: Hindustan Times, Tanbir Dhaliwal (7 Mar. 2018) Source: India Today, Amruta Shedge (3 Jan. 2015)

7. Burden of Unproductive Consumers:

Due to overpopulation In India, a large number of children are dependent. Old persons above the age of 60 and many more in the age group of 15-59 do not find employment. In 2001, working population was 39.2 percent while 60.8 percent are unproductive workers. This high degree of dependency is due to high rate of dependent children. This dependency adversely affects effective saving. (Mehta)

8. Poverty

Poverty is one of the biggest issue in India. Rising population increases the poverty in India. According to United Nation's Millennium Development Goals (MDG) programme 270 million or 21.9% people out of 1.2 billion of Indians lived below poverty line of \$1.25 in 2011-2012. People have to spend a large portion of their resources for bringing up of their wards. It results into less saving and low rate of capital formation. Hence improvement in production technique becomes impossible. It means low productivity of labour.

9. Social Problems

Over-population give rise to various social problems. It leads to movement of people from rural areas to the urban areas and causes the growth of slum areas. People live in most unhygienic and insanitary conditions. Unemployment and poverty lead to frustration and anger among the educated youth. This leads to robbery, beggary, prostitution and murder etc. The terrorist activities that we find today in various parts of the

country are the reflection of frustration among educated unemployed youth. Overcrowding, traffic congestions, frequent accidents and pollution in big cities are the direct result of over-population.

10. More Pressure on Land:

Due to excess population growth density of population in India is increasing very fast. Rising rate of population growth exerts more pressure on land. On the one hand, per capita availability of land goes on diminishing and on the other, the problem of sub-division and fragmentation of holdings goes on increasing. More and more agriculture land comes under the construction of industries, roads, cities and other infrastructure. Population explosion leads to environmental degradation. Higher birth rate brings more pollution, more toxic wastes and damage to biosphere. It adversely affects the economic development of the country. Briefly speaking, population explosion hinders the economic development. It should be controlled effectively.

Findings:

The hypothesis which has been put forth by the researcher is discussed as:

1. There is a significant relationship between population (State wise) and GDP (State wise) in India

 $H_0: p = 0$ (no significant correlation) $H_1: p \neq 0$ (Significant correlation)

Decision: (Ho: Rejected)

Conclusion: Since the correlation coefficient r = 0.77 fall in the rejection region (in the Tail; + 0.367) at 5% level of significance and df = 27. Therefore, there is enough evidence to conclude that there is a significant correlation between population and the GDP in India.

The researcher found that there exist a correlation between the population and GDP of India. The researcher has taken the population of each state and their corresponding SGDP to find whether population is related to GDP or not. From table 2, it can be seen that higher populous states have higher level of GDP and vice versa. Therefore population to some extent plays a positive role for the gross domestic product.

2. There is a significant relationship between Annual population growth and inflation in India.

(no significant correlation) $H_0: p = 0$ $H_1: p \neq 0$ (Significant correlation)

Decision: (Ho Accepted)

Conclusion: Since the correlation coefficient r = 0.019 do not fall in rejection region (in the Tail; ± 0.444) at 5% level of significance and df = 27. Therefore, there is enough evidence to conclude that there is **no** significant linear correlation between annual population growth and inflation in India.

The researcher has found no significant correlation between annual population growth and the inflation in India. Therefore population has no significant impact on the inflation of India. Inflation may be effected due to some other factors.

3. There is a significant negative relationship between Annual population growth and GDP growth in India.

> $H_0: p = 0$ (no significant negative correlation) $H_1: p \neq 0$ (Significant negative correlation)

Decision: (Ho: Accepted)

Conclusion: Since the correlation coefficient $\mathbf{r} = -0.057$ do not fall in the rejection region (in the Tail; -0.378) at 5% level of significance and df = 18. Therefore, there is enough evidence to conclude that there is no significant negative linear correlation between Annual Population growth and GDP growth in India.

Findings of the research depict that there is no significant negative impact of population growth on the GDP growth of India and the fact is that as the population increases so does the GDP.

Hypothesis	Correlation coefficient	Type of Tail	df = (N- 2)	Level of Significance (a)	Critical (r)	P= Value (0 ≤ P ≤ 1)	Traditional Method	P-value Method	Decision
	(r), (-1≤r≤ +1) Calculated (r)						Comparing Calculated r with Critical r	Comparing P-value with (a)	
lst	0.77	2 tailed	27	0.05	± 0.367	0.000001	r>+0.367	P < 0.05	Rejected
2nd	0.019	2 tailed	18	0.05	± 0,444	0.934	r < +0.444	P > 0.05	Accepted
3rd	-0.057	1 tailed	18	0.05	± 0.378	0.82	r > -0.444	P > 0.05	Accepted

Conclusion:

Population is very important for the development of a nation. It is the means as well as ends of economic development. Population is an important asset for the nation but becomes liability if it is uncontrolled. Population has crossed the optimum limit in India and has become a liability. So problem of population explosion in India has proved to be a big hindrance in the success of economic planning and development. From last two decades population has increased from 983 million in 1998 to 1283.60 million in 2017 that is 30.58% increase.

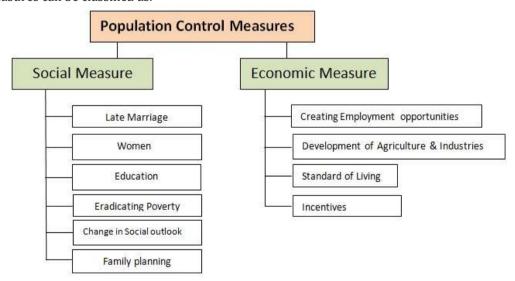
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The economic planning and development of India, is very much influenced by the changes in population. India with its increasing human resources and abundant natural resources is still considered a developing country. India is still not in a position to use its natural resources adequately for the welfare of the growing population. Poverty prevails to great extent in India due to poor clothing, inadequate housing, poor medical care and malnutrition. The situation in India today is marked in terms of lack of electricity in many villages, insufficient food for a large part of its population and very little health care and education facilities.

Suggestions:

Population of India is very large and is rapidly increasing. One percent growth rate of population means an addition of 1 crore people every year but at present growth rate of population is more than one percent therefore more than 1 crore persons are being adding every year. For the betterment and welfare of society effective population control measures is the need of the hour. As we know that birth rate is mainly responsible for rapid population growth. Hence measures which can reduce the birth rate should be adopted.

These measures can be classified as.



1. Social Measures

- **Late Marriage**: As far as possible, marriage should be solemnized at the age of 30 years. This will reduce the period of reproduction among the females and will reduce the fertility rate. The govt. has fixed the minimum marriage age at 21 yrs. for males and 18 yrs. for females. But we need to motivate people to do marriage after the age of 30 years.
- Women Empowerment: In most developing countries, the women folks are not considered equivalent to men in terms of force and might. People keep giving birth to kids in order to have more sons than daughters. Empowering woman with a say in matters concerning them like child birth and educating them to fight against discrimination will ensure a healthy and aware society.

- **Education**: Education is the solution to all the problems. Education is the backbone of an individual and economy of country. Educated people can easily understand the adverse effects which a high population growth rate possesses. Education, especially women education, can work wonders in controlling population. An educated man and woman can easily understand the merits of a small family. Without proper education most measures like awareness campaigns and women empowerment will prove to be inefficient and useless.
- **Eradicating Poverty:** Poverty is one of the main causes of social problems. Poverty. Poverty is one of the reasons for overpopulation. Poor people are mostly illiterate and ignorant. They have high fertility rate and gives birth to many children. They don't follow the family planning and other methods of population control. Therefore Govt. should take steps to eradicate the poverty so that they get awareness and benefits of family planning.
- Change in social outlook: People in India preferring male child instead of female child. This leads to increase in births because people gave birth to child until male child is not born. This type of attitude among people should be changed. Both male and female should have an equal preference.
- **Family planning**: This method implies family by choice and not by chance. By using preventive measures, people can regulate birth rate. Family planning mainly depends on the availability of cheap contraceptive devices for birth control and proper medical facilities. The govt. should give various types of incentives to the people to adopt birth control measures.

2. Economic Measures

- **Creating employment opportunities:** Govt. should create more and more employment so that income of people can be raised. This will increase the living standard of people and people will adopt small families instead of big one.
- **Development of Agriculture & Industries:** If agriculture and industry are properly developed, large number of people will get employment. When their income is increased they would improve their standard of living and adopt small family norms.
- **Standard of Living:** Improvement in the standard of living acts as a deterrent to large family norm. In order to maintain their higher standard of living people prefer to have a small family. Govt. should take important steps to increase the living standard of the people.
- Incentives: The govt. should give various types of incentives to people to adopt birth control
 measures. Providing educational, health or even financial incentive can be a highly effective
 population measure. Incentive policies like paying certain amount of money to the people with
 not more than two kids or free or discounted education for single child etc. can help to adopt
 small family norms.

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