RESEARCH REVIEW JOURNALS
Volume-03
Issue-12
December -2018

ISSN: 2455-3085 (Online)
RESEARCH REVIEW International Journal of Multidisciplinary
www.rrjournals.com [UGC Listed Journal]

Demographic Change and Urbanization in India with reference to Empowered Action Group (EAG) States: Some comments on socio-demographic development and policy implications

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ARTICLE DETAILS

Article History
Published Online: 10 December 2018

Keywords
Population growth, literacy rate, urbanization, Empowered Action Group, India

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ABSTRACT

Empowered Action Group (EAG) states constitute 45.9 % share of India's total population, where Uttar Pradesh secures highest rank and Uttarakhand the lowest among the EAG states. The objectives of this paper, to examine the demographic changes of population and level of urbanization in EAG states based on the secondary sources of data like: Census of India and Sample Registration System (SRS). It is to analyze patterns of population growth, birth and death rate, age-sex structure, literacy differential index in EAG states. The population growth and demographic structure are determined by variation in process of fertility, mortality, migration and age composition. The demographic characteristics of the EAG states are their high fertility rate, IMR, MMR, high population growth rate, low literacy rate. Based on 2011 census, the economically developed states more or less show higher levels of urbanization as compared to EAG states followed by Bihar (11.3 %), Orissa (16.6 %). But it is observed that among the eight EAG states, only two states have highest annual exponential growth rate (AEGR) i.e. Uttarakhand (3.5%) and Chhattisgarh (3.49%) in this decade. It also notably that, there was no negative AEGR recorded in 2001-2011. These states show a steady decline in fertility, low reproductive health of women and the relatively slower rise in contraceptive use. In the EAG states, concerted efforts are required to improve the education, health facilities, sanitation, urbanization and income etc.

1. Introduction

The Empowered Action Group (EAG) set up to encourage planning of territory explicit projects in eight States, specifically, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Orissa, Rajasthan, Uttar Pradesh and Uttaranchal. The EAG states are formerly known as BIMARU states i.e. Bihar, Madhya Pradesh, Rajasthan and Uttar Pradesh. The most conspicuous feature of demographic characteristics of EAG states is its unevenness and highly irregular spatio-temporal character. This study provides information on size, growth, distribution of population and nature of urbanization of EAG states and relates this information to various demographic characteristics, including the demographic situation of Scheduled Castes (SC's) and Scheduled Tribes (ST's).

2. Literature Review

The three notable demographic segments of fertility, mortality and relocation of people are the determinants of population change. Consequently, the population's development and the demographic structure are dictated by the variety during the time of maturation, mortality, migration and age composition. The perspective on population issues such as the demographic structure, the rate of growth and the dimension of fertility and mortality between EAG states are relatively consistent.

Population Growth, Fertility and mortality

The outline of the population of EAG states is characterized by high levels of fertility and high levels of mortality. Fertility levels have declined in all the major Indian states, including EAG states; however, Total Fertility Rate (TFR) remains high (around 3.1 to 3.7) in Madhya Pradesh, Rajasthan, Bihar, and Uttar Pradesh (SRS, 2011). The decrease in fertility has increased the son preference, which has been proven in the last ten years, especially in the EAG states, because of the couple wants a son for the security of the elderly. That's why sex selective abortion is increase (Som & Mishra, 2014).

The literacy level of women has no direct effect on Infant Mortality Rate (IMR). However, the higher level of literacy of women, the greater the possibility that the input variables of the program operate increasingly and effectively and produce a low IMR (Roy and Srivastava, 1979). According to Kumar (2016), the female infant mortality in Uttar Pradesh is likely to have been caused by various types of discrimination against girls.

Srinivasan and Kanitkar (1984) observed that morbidity and mortality are high in Bihar than in Rajasthan. The tradition of family planning is uppermost in Rajasthan; conversely, fertility is lower in Bihar, due to differences in nearby variables, such as the duration of breastfeeding. The important investigation on the high IMR in Orissa is that it seems to be associated with the non availability of safe drinking water, antenatal care of the mother, and housing conditions (Kanitkar, 1984). Orissa ranked second in rural child mortality rate in (0-4) year age group i.e. 46.5 percentages in 1986 followed by Madhya Pradesh. The importance of the utilization of Maternal Child Health (MCH) services, maternal and socio-economic factors have been emphasized for the survival of the new born (Sinha, 1989).

Population and Urbanization

Urbanization is a transformation from the traditional rural economy to the modern urban one. The socio-economic, political-administrative and geographical processes are associated with urbanization. Urbanization is strongly related to industrial growth and economic development (Bloom, Canning, & Fink, 2008). Sridhar (2016) depicts the provincial variety in urbanization in the conditions of India and noticed that urbanization and per capita income of Indian states is a positively correlated.

Datta (2006) has studied urbanization in India based on census data. She has found that there has been a continuous concentration of the population in the class I city instead of the medium and small cities. Globalization, liberalization and privatization are addressing the negative process of urbanization in India. The re-orientation of the investment is recommended to develop a solid economic base for small and medium-sized cities.

Kundu (2011) observed that many of the less developed states like Bihar, Orissa and Rajasthan experienced high urban growth in their Class I cities as compared to smaller towns.

Singh (1980) found that the trend of urbanization in Bihar is very inconsistent and indefinite. He also noted the level of urbanization at district or division level is quite uneven. Pandey (2014) observed that Uttar Pradesh has a low level of urbanization and inter-regional imbalance creates socio economic problems.

The main objectives of the study are: (i) to understand and analyze the demographic changes of population and highlight the salient features of other demographic data in EAG states with reference to SCs and STs populations, (ii) to study the trend and patterns of urbanization in EAG states in India and (iii) to suggest some policy measures and to formulate appropriate policy suggestions to improve the socio-economic development in EAG states of India.

3. Data and Methodology

The data are analyzed and compared regionally to understand the regional variations in the size, growth, distribution, age-sex distribution, dependency burden, and literacy rate by sex, work participation by sex, religious composition, social structure, urbanization, and population density. For this purpose decennial census data have used extensively with the methods used in demographic analysis.

The study uses data from Census of India 2001 and 2011. The estimated Crude Birth Rates (CBR) and Total Fertility Rates (TFR) have been taken from the Sample Registration System (SRS) in all the EAG states.

The analysis of the data involved the preparation of various maps, charts and frequency tabulations. The collected data are processed to analyze the literacy differential index, pattern of population density and growth and sex ratio in EAG states. Level of urbanization is calculated by (Urban Population**/**Total Population *100) and Annual Exponential Growth Rate (AEGR) is calculated by using the following formula,

AEGR=(log (p2/p1) *t)

Where, t is time interval (10), log is natural log, p2 is population at time period t and p1 is population at time period at 0.

The literacy rate taking into account the total population in the denominator has now been termed the ‘gross literacy rate’, while the literacy rate calculated taking into account the population of 7 and over in the denominator is called the effective literacy rate. The following formula to calculate the effective literacy rate is as follows:

Effective literacy rate =

$$\frac{\textit{Number of literate personsaged 7 and above}}{\textit{Population aged 7 and above}} * 1$$

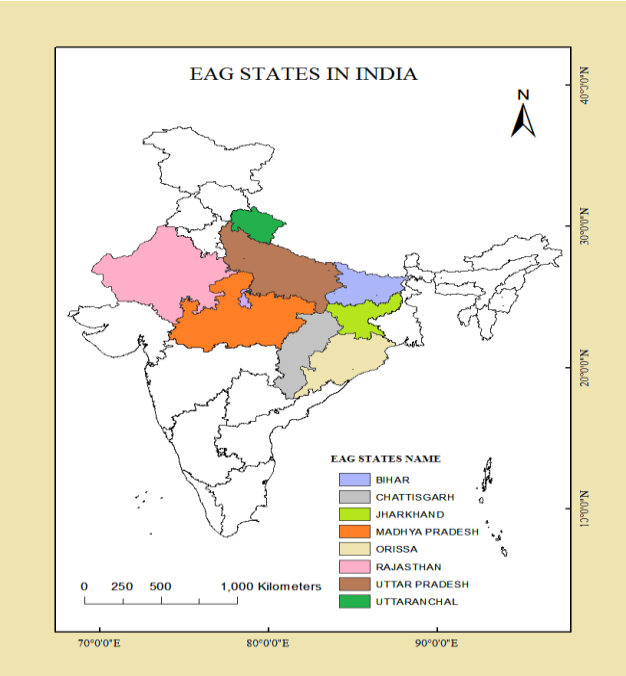

Figure 1. Location map of India and EAG States

4. Results and Discussions

Size, Growth and Distribution of Population in EAG States

The EAG states constitute 45.9 percent of the total population of India, where, as Uttar Pradesh obtains the highest rank and Uttarakhand obtains the lowest rank among the EAG states. During the period of 2001 to 2011, the population growth rate (20.92%) has been slowing down in EAG states. Population growth is the main problem in these states. Due to the high growth of population, population and resources are imbalance, which are distributed to achieve the goal of population saturation and sustainable development. In the context of rural and urban population, as reported in the provisional figures for 2011, Uttar Pradesh achieved the highest rank and Uttarakhand and the lowest among the EAG states. Bihar ranks second in the rural area, registering a population of 74,316,709 while in urban areas, the state ranks

fourth when it reports a population of 8,681,800 as shown in Table 1.

It is notable that, during the period 2001 to 2011, the population growth rate has decreased in all the EAG states, except in Chhattisgarh (+4.33). However, Rajasthan shows the highest negative (-7.01) growth of the population rate among EAG states. The state of Odisha records a low population growth rate compared to other EAG states and also the national average. Among the EAG states, Bihar is the most densely populated state, although; Uttarakhand and Chhattisgarh with a density of 189 each are the least densely populated states. Madhya Pradesh ranks fifth among the 8 EAG states with moderate density. Among the EAG states; Bihar, Uttar Pradesh and Jharkhand have a higher population density than the national average in 2011.

Table 1. Size, growth and distribution of population of EAG states, 2001 and 2011

EAG states	2001			2011			Growth Rate		
	Total	Rural	Urban	Total	Rural	Urban	1991-01	2001-11	Change
U.P.	166197921	131658339	34539582	199812341	155317278	44495063	25.91	20.1	-5.81
Bihar	82998509	74316709	8681800	104099452	92341436	11758016	28.62	25.1	-3.52
M.P.	60348023	44380878	15967145	72626809	52557404	20069405	24.26	20.3	-3.96
Rajasthan	56507188	43292813	13214375	68548437	51500352	17048085	28.41	21.4	-7.01
Odisha	36804660	31287422	5517238	41974218	34970562	7003656	16.25	14.0	-2.25
Jharkhand	26945829	20952088	5993741	32988134	25055073	7933061	23.36	22.3	-1.06
Chhattisgarh	20833803	16648056	4185747	25545198	19607961	5937237	18.27	22.6	+4.33
Uttarakhand	8489349	6310275	2179074	10086292	7036954	3049338	19.34	19.2	-0.14
INDIA	**1027015247**	**742490639**	**286119689**	**1210193422**	**833087662**	**377105760**	**21.34**	**17.64**	**-3.70**

Source: Census of India, 2001 & 2011.

Fertility and Mortality status in EAG states

The demographic characteristics of the EAG states are their high fertility rate, IMR, MMR, high population growth rate, low literacy rate. EAG states depict relatively higher fertility as compared with many other states in the country. Analysis shows that gender disparity is high in respect of Rajasthan, Jharkhand, Bihar, MP and Chhattisgarh. The demographic characteristics of the EAG states are their high fertility rate, infant mortality rate, high population growth rate. The Annual Health Survey 2012-13 reported that in these states under-five mortality ranges from 48-90 per 1000 live births.

According to the Census (2011), the population of Uttar Pradesh is 199 million and represents 16 per cent of the population of India. Uttar Pradesh and Bihar are lagging behind other states not only on the socio-economic front, but also in terms of their vital rates (CBR, CDR, etc.). Uttar Pradesh, Madhya Pradesh and Bihar main problem is heavy fertility and high number of child population, that's creating obstacle to upward stage of demographic transitions. Orissa have high poverty and high mortality due to shortage of food and nutrition, especially tribal groups.

Table 2. Crude birth rate and crude death rate, 2001 and 2011

EAG States	Crude Birth Rate		Crude Death Rate		Infant Mortality Rate	
	2001	2011	2001	2011	2001	2011
Bihar	31.2	27.1	8.2	6.7	62	44
Jharkhand	26.3	25	8.8	6.9	62	39
MP	30.8	26.9	10	8.2	86	59
Chhattisgarh	26.3	24.9	8.8	7.9	76	48
Orissa	23.4	20.5	10.2	8.5	90	57
Rajasthan	31	26.2	7.9	6.7	79	52
UP	32.1	27.8	10.1	7.9	82	57
Uttarakhand	18.5	18.2	7.8	6.2	48	36
India	25.4	21.8	8.4	7.1	66	44

Source: SRS data, 2001 and 2011.

Literacy status and Sex ratio

India consists of 28 States and 7 Union Territories. Among the states, Kerala tops the list with a total literacy rate of 94.0 per cent followed closely by Lakshadweep (91.85 %) and Mizoram (91.33%). Bihar accounts for the lowest literacy rate in India over the last decade. The literacy rates in these EAG states, according to the 2011 census are Bihar 63.8 per cent, Odisha 73.45 per cent, Rajasthan 67.1 per cent, Jharkhand 67.6 per cent, Madhya Pradesh 70.6 per cent and Uttar Pradesh 71.7 per cent against a national average of 74.04 per cent. All EAG states made relatively lower contributions to the

literate population relative to their contribution to the population of the country.

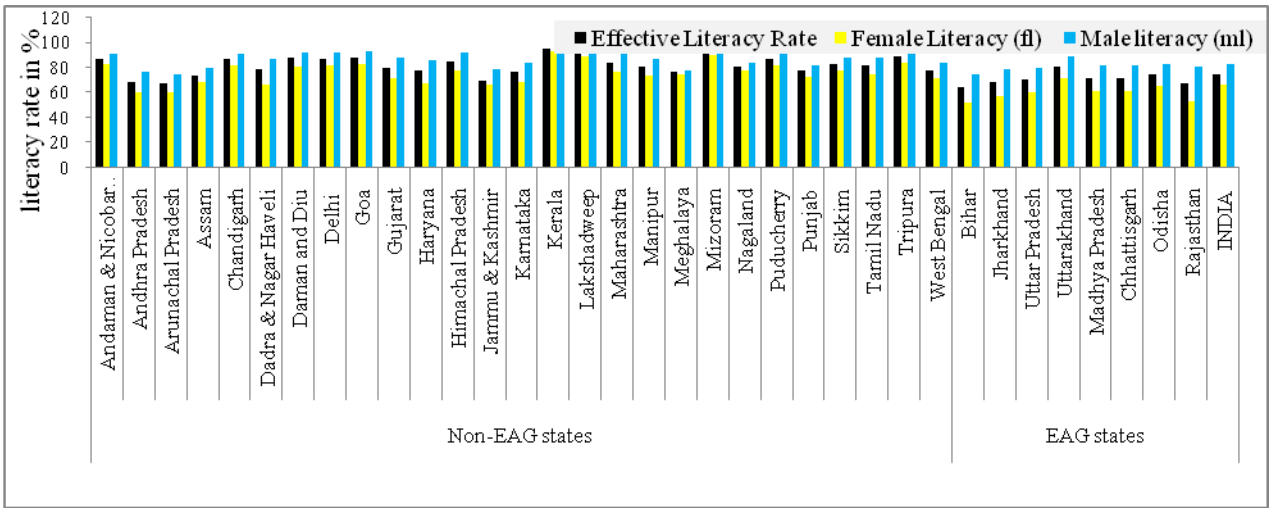

Figure 2. Effective literacy rates by sex in India and EAG states

Table 3. Literacy rate in EAG states (2011)

	Literacy Rate, 2011				Literacy Rate, 2001	Change 2001-2011	LDI
	Persons	Male	Female	Gender Gap			
Bihar	61.8	71.2	51.5	19.7	47.0 (59.6*, 33.1**)	14.8	0.31
Jharkhand	66.4	76.8	55.4	21.4	53.6 (67.3*, 38.8**)	12.8	0.33
MP	69.3	78.7	59.2	19.5	63.7 (76.1*, 50.3**)	5.6	0.29
Chhattisgarh	70.3	80.3	60.2	20.1	64.7 (77.4*, 51.9**)	5.6	0.29
Orissa	72.9	81.6	64	17.6	63.1 (75.4*, 50.5**)	9.8	0.25
Rajasthan	66.1	79.2	52.1	27.1	60.4 (75.7*, 43.8**)	5.7	0.42
UP	67.7	77.3	57.2	20.1	56.3 (68.8*, 42.2**)	11.4	0.29
Uttarakhand	78.8	87.4	70	17.4	71.6 (83.3*, 59.6**)	7.2	0.22
India	**73.0**	**80.9**	**64.9**	**16**	**64.8 (75.3*, 53.7**)**	**8.2**	**0.22**

Note: Literacy Differential Index = (Male literacy-Female Literacy)/Total Literacy
Gender Gap=Male literacy-Female literacy, (* male, ** female)
Source: Calculation based on Census of India (2001-2011)

Among the EAG States, Uttarakhand occupies the top spot in terms of literacy rate and is well above the National literacy rate. The male and female literacy rate is also highest in Uttarakhand with 87.4 and 70.1 per cent respectively. But it is satisfying to note that male literacy levels in EAG states are comparable with those of Non EAG states. However this is not the case with female literacy; female literacy of EAG states is below the national average (64.64 per cent). Bihar also has recorded the lowest female literacy rate over the last decade (51.5 per cent). States that have literacy rates below the national average are Assam, Arunachal Pradesh, Andhra Pradesh, Jammu and Kashmir and all Empowered Action Group (EAG) states, excluding Uttarakhand.

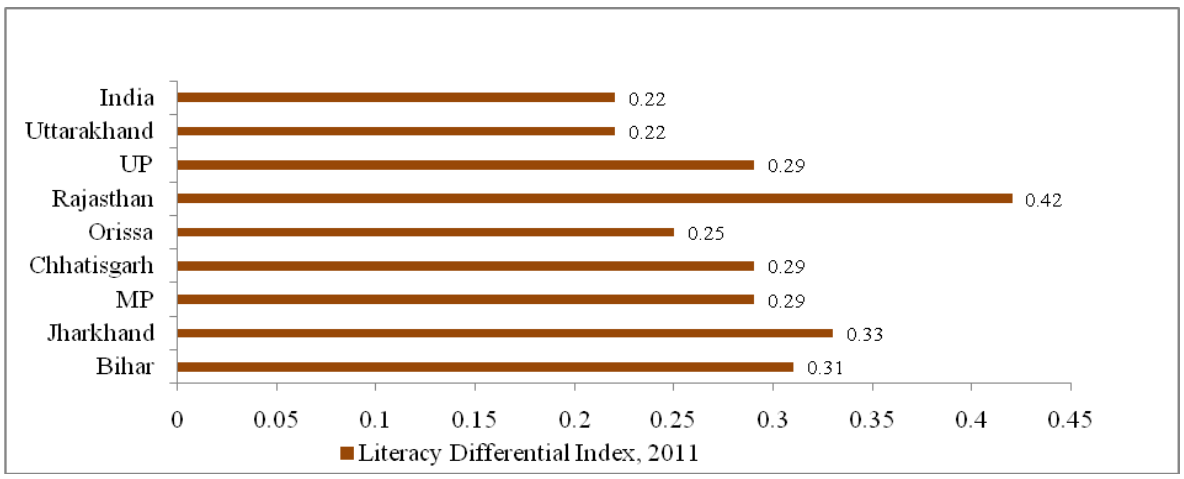

Figure 3. Literacy differential index of EAG states of India, 2011

Sex Ratio and Child Sex Ratio (0-6 age)

The sex ratio of the Indian population, especially the EAG states, has always been of topical interest to demographers, social scientists, research scholars, women's groups, and various planners and policymakers. The overall sex ratio of the nation is showing a trend of improvement, whereas the child sex ratio is showing a declining trend. The overall sex ratio of the country shows an improvement trend, while the child sex ratio (proportion of boys and girls) shows a downward trend. During the period 2001 2011, the proportion of children by sex decreased from 927 to 914, while the general sex ratio showed an improvement from 933 to 940.

During the 2001 to 2011 period, Uttar Pradesh and Madhya Pradesh had the largest increase in the overall sex ratio between EAG states. In EAG states last ten years child sex ratio declining a range 9 to 26, where 9 in Bihar and 26 in Rajasthan, median of declining child sex ratio is 19. The reasons for decline the child sex ratio are: (1) neglect of the girl child resulting in their higher mortality at younger ages (2) sex selective female abortions (3) change in sex ratio at birth and (4) high maternal mortality etc.

Table 4. Overall sex ratio and child sex ratio of EAG states of India

	Overall Sex Ratio			Child Sex Ratio		
	2001	**2011**	**Change**	**2001**	**2011**	**Change**
Bihar	919	916	-3	942	933	-9
Jharkhand	941	947	+6	965	944	-21
MP	919	930	+11	932	912	-20
Chhatisgarh	989	991	+2	975	964	-11
Orissa	972	978	+6	953	934	-19
Rajasthan	921	926	+5	909	883	-26
UP	898	908	+10	916	899	-17
Uttarakhand	962	963	+1	908	883	-25
India	933	940	+7	927	914	-13

Source: Census of India, 2001 & 2011.

Demographic Status of Scheduled Caste (SCs) Population in EAG states

The total SC population of India in the 2011 Census has been 201,378,372 where the EAG states contribute 97,829,738. In the period from 2001 to 2011, the SCs increased by 20.8 per cent and STs increased by 23.7 per cent. It is observed that the majority of the SC population lives in rural areas instead of urban areas. Table 5 shows that 84.0 per cent of the SC population lives in rural areas, however, only 16 per cent SC population live in urban areas.

The sex ratio of the total SC population is 925, which is below than the national average (945) for all SCs. Uttar Pradesh, Madhya Pradesh, Rajasthan and Bihar had shown the poor sex ratio as compare to EAG states average and also national average.

Table 5. Population distribution of SCs by residence in India and EAG States, 2011

	Scheduled Caste population, 2011							
	Total	**Rural**	**%**	**Urban**	**%**	**Male**	**Female**	**Sex Ratio**
Uttar Pradesh	41357608	35685227	86.3	5672381	13.7	21676975	19680633	908
Bihar	16567325	15344215	92.6	1223110	7.4	8606253	7961072	925
Madhya Pradesh	11342320	8268002	72.9	3074318	27.1	5908638	5433682	920
Rajasthan	12221593	9536963	78.0	2684630	22.0	6355564	5866029	923
Odisha	7188463	6218642	86.5	969821	13.5	3617808	3570655	987
Jharkhand	3985644	3152863	79.1	832781	20.9	2043458	1942186	950
Chhattisgarh	3274269	2511949	76.7	762320	23.3	1641738	1632531	994
Uttarakhand	1892516	1496665	79.1	395851	20.9	968586	923930	954
EAG States	**97829738**	**82214526**	**84.0**	**15615212**	**16.0**	**50819020**	**47010718**	**925**
INDIA	**201378372**	**153850562**	**76.4**	**47527524**	**23.6**	**103535314**	**97843058**	**945**

Source: Calculation based on Census of India, 2011

Demographic Status of Scheduled Tribes (STs) population in EAG states

The total ST population of India in the 2011 Census has been 104,281,034 where the EAG states contribute 53,376,767. It is observed that the majority of the ST population lives in rural areas instead of urban areas. Table 6 shows that 93.0 per cent of the ST population lives in rural areas, however, only 7 per cent ST population live in urban areas. The sex ratio of the total ST population is 992, which is higher than the national average (990) for all STs. The highest sex ratio found in Odisha (1029) followed by Chhattisgarh (1020) and Jharkhand (1003).

Table 6. Population distribution of STs by residence in India and EAG States, 2011

	Scheduled Tribe population, 2011							
	Total	**Rural**	**%**	**Urban**	**%**	**Male**	**Female**	**Sex Ratio**
Uttar Pradesh	1134273	1031076	90.9	103197	9.1	581083	553190	952
Bihar	1336573	1270851	95.1	65722	4.9	682516	654057	958
Madhya Pradesh	15316784	14276874	93.2	1039910	6.8	7719404	7597380	984
Rajasthan	9238534	8693123	94.1	545411	5.9	4742943	4495591	948
Odisha	9590756	8994967	93.8	595789	6.2	4727732	4863024	1029
Jharkhand	8645042	7868150	91.0	776892	9.0	4315407	4329635	1003
Chhattisgarh	7822902	7231082	92.4	591820	7.6	3873191	3949711	1020
Uttarakhand	291903	264819	90.7	27084	9.3	148669	143234	963
EAG states	**53376767**	**49630942**	**93.0**	**3745825**	**7.0**	**26790945**	**26585822**	**992**
INDIA	**104281034**	**93819162**	**90.0**	**10461872**	**10.0**	**52409823**	**51871211**	**990**

Source: Calculation based on Census of India, 2011

Urbanization in EAG States

As per 2011 census, the economically developed states in India, more or less show higher levels of urbanization as compared to EAG states (Bhagat, 2011). Based on 2011 census, the economically developed states more or less show higher levels of urbanization as compared to EAG states followed by Bihar (11.3 %), Orissa (16.6 %). But it is observed that among the eight EAG states, only two states have highest annual exponential growth rate (AEGR) i.e. Uttarakhand (3.5%) and Chhattisgarh (3.49%) in this decade. It also notably that, there was no negative AEGR recorded in 2001-2011.

Urbanization in India was mainly caused after independence, due to adoption of mixed system of economy by the country which gave rise to the development of private sector. Urbanization is taking place at a faster rate in India. The process of urbanization in EAG states is very low due to poor economic development. Similarly, the process of urbanization in Bihar has been very slow due to poor industrial development.

Table 7. Level of urbanization in India and EAG states

	% of urban population			AEGR*
	2001	**2011**	**Change**	**2001-2011**
Bihar	10.46	11.29	0.83	3.01
Jharkhand	22.24	24.05	1.81	2.8
MP	26.46	27.63	1.17	2.28
Chhattisgarh	20.09	23.24	3.15	3.49
Orissa	14.99	16.69	1.7	2.37
Rajasthan	23.39	24.87	1.48	2.57
UP	20.78	22.27	1.49	2.53
Uttarakhand	25.67	30.23	4.56	3.5
India	**27.82**	**31.16**	**3.34**	**2.76**

Source: Calculation based on Census of India (2001-2011)
**Formula of calculating AEGR: (log (p2/p1) *10)*

5. Policy Recommendations and Conclusions

To reduce gender inequality and also achieve greater socio-economic development of EAG states, the following suggestions and policy initiatives are recommended:

1. It has been argued that the concerns faced by EAG states are more to with the governance issues rather than the availability of funds. To overcome this barrier it is suggested to improve the conditions regarding management of human resources and logistics, assimilation of state and district level health societies, releasing funds at levels of operations, training and planning for department personnel's, autonomy at district and sub district level and linking of hospitals to Panchayat Raj Institutions.
2. Further, it is claimed that intrastate demographic divide has to be bridged with incremental investments which would ensure manpower improvements systematically. Similarly, it is the need of the hour to provide hospitals at district and sub district levels which would function twenty four hours and seven days in a week.
3. Reduce poverty by a community approach, on a self help group formula. To increase food production in a sustainable way that reduces the environmental loss and produce a long terms perspective.
4. Government need to a crude action among the female feticide and abortion case that increase child sex ratio in those states.
5. There is also a need to introduce special programes and schemes for development of SC/STs for improvement in their socio-economic status.

In concluding, it is clear that the future of India's population growth will largely be governed by the EAG states. These states show a steady decline in fertility, low reproductive, health of women and the relatively slower rise in contraceptive use. In the EAG states, concerted efforts are required to improve the education, health facilities, sanitation, urbanization, and income levels. The social and economic

development programs have to be designed which would reduced the fertility and mortality and improvement of the status of women would contribute to changing in the demographic patterns and growth rates of the EAG states of India.

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