CHAPTER VII
SUMMARY AND CONCLUSION

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7.1 Introduction

One of the unique feature of India’s demographic transition is the large variation in fertility level among states and districts of India. Though the demographic transition began in 1970s (Roy and Parsuraman, 1996; Visaria, 1994), it is uncertain when the country will achieve the replacement level of fertility and stabilize the population. The population growth, largely resultant of natural increase due to high birth rate and low death rate, is now largely confined to four larger states of India, namely Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan. By 2013, about half of the Indian states have reached the replacement level of fertility while it continued to be higher in these four states. Along with demographic divide, the country is experiencing large regional inequality with respect to socio-economic development. Though studies have examined the fertility and mortality transition in states of India, there are a few studies that examined the nature of relationship of demographic and developmental indicators in the districts of Uttar Pradesh. Also, the demographic transition and its linkages with socio-economic development are critical to understand the future development plan and policies of the state. In this context, an attempt is made to study the linkages of socio-economic development and demographic change in the state of Uttar Pradesh.

7.2 Summary and Conclusion

The Chapter 2 briefly discussed the state of human development across districts and socio-economic groups in Uttar Pradesh. The Human Development Indices (HDI) are estimated for each district of Uttar Pradesh based on both (old and new) methodology of UNDP. The dimensional indicators, namely, life expectancy at birth, adult literacy rate, school life
expectancy, mean years of schooling and Per Capita Net District Domestic Product are estimated/computed/compiled for each district. Over the last two decades the highest improvement in health dimension was observed in districts of Sultanpur (30%) followed by Rae Bareli (28%), Hamirpur and Mahoba (27.7% in each district) and Jhansi (27.5%) district. While sluggish increase was observed in district of Chandauli preceded by Sant Ravidas Nagar, Varanasi, Saharanpur and Ambedkar Nagar districts. In knowledge domain, index was lowest in the district of Shrawasti (0.463) preceded by Balrampur (0.483) Bahraich (0.485), Budaun (0.501) and Rampur (0.527) in 2011. The districts showed the least decadal improvement in knowledge index were Baghpat preceded by Kaushambi, Jhansi, Sant Ravidas Nagar, Jalaun and Etawah. On income domain, the good performer districts were Gautam Buddha Nagar followed by Siddharthnagar, Chandauli, Sant Ravidas Nagar, Faizabad and Gorakhpur districts, while Chitrakoot was the worst performing district preceded by Gonda and Balrampur districts.

In terms of overall development, the state has made a significant improvement in the state of education, health and income as measured in human development index. There were considerable variations in the HDI levels and changes among districts. In 2011, the HDI was highest in the district of Gautam Buddha Nagar (0.709) followed by Kanpur Nagar (0.688). It was minimum in the district of Shrawasti (0.451) preceded by Balrampur (0.476) district. We found large variation in HDI across districts. The coefficient of variation of HDI was 12% in 1991, 10% in 2001 and 8% in 2011. In 2011, four districts had HDI of less than 0.50, 20 districts between 0.50-0.55, 29 districts between 0.55 -0.60 and 18 districts had HDI of more than 0.60. While, in 1991, none of the districts had HDI of more than 0.60, one district had HDI of 0.589, 4 districts between 0.50-0.55, and 66 districts had HDI of less than 0.50. Over the period, the state had marked 33% increase in HDI from 0.430 in 1991 to 0.572 in 2011 and 13% during 2001 to 2011. In general, it was observed
that districts that had lower HDI in 2001 did smaller progress in improving HDI during 2001-2011. These districts are Shrawasti, Balrampur, Siddharthnagar, Gonda, Maharjganj, Budaun, Kushinagar, Sitapur and Chitrakoot. On the other hand, districts that had a relatively higher HDI, many of these did a moderate progress in HDI. The changes in HDI during 1991-2011 was highest in the district of Sant Kabir Nagar (53%) followed by Budaun district (50.4%). A total of three districts recorded more than 50% increase in the HDI, 20 districts in the range of 40%-50%, 37 districts in the range of 30%-40% and 11 districts by less than 30% increase in HDI over the period. There are some good achievers, mainly western and central districts of the state, while most of the districts from eastern part of the state were poorly performers in human development especially Shrawasti, Balrampur, Bahraich, Siddharthnagar and Gonda districts.

The state of human development across castes and religion are also estimated in this chapter. The dimensional index of health among social and economic groups suggest marginal differences in indices by social groups and large differences by economic groups. Within castes and religion, health indices varied largely by wealth tertile. We found that there were no significant differences in indices among rich and middle section of SC/ST, OBC and Others. These differences in indices were large among poor and rich section of SC/ST, OBC and Others. Within castes by wealth tertile, health index was low among the poor belonging to OBC followed by poor SC/ST. Similarly, poor belonging to Muslims were the lowest in dimensional index of health, the rich Hindus were at the top of the index value. Similar result was also observed with respect to knowledge index. Results indicate that the educational indices vary directly with the economic status of the household. With respect to caste and religion, there were no significant differences in educational indices. The poor are alike in dimensional index of knowledge across social groups. The dimensional index of income is computed based on per capita income of the household.
using the India Human Development Survey data. Households with large families tend to have lower per capita income. Results indicate marginal differences in dimensional index of income among caste and religion groups. But the differences in dimensional index of income among poor and rich across social group was large.

The human development index varies largely among the caste groups by wealth tertile. We found that the poor belonging to Non-SC/ST has significantly lower HDI than the rich SC/ST, OBC and others. The HDI among poor in SC/ST/OBC and poor from non-SC/ST/OBC were similar. This confirms that poor are alike in the state of human development. The differential in HDI by religion suggested higher HDI value among Hindus compared to Muslims. We found that the disparity in the state of human development was more with respect to wealth/income and less by caste and religion. While there were no significant differences in HDI values among rich and middle wealth tertile by any caste and religion groups, such differences were large among poor and rich across the social groups.

In chapter 3 fertility transition and its development pattern was analyzed. At state level fertility, had declined by 48% during 1971-2011, and the maximum decline was noticed during last decade. During 1971-1991 fertility decline was more in urban areas and during 1991-2011, fertility decline was more in rural area in the state; confirming onset of fertility transition in rural Uttar Pradesh. The decomposition of fertility was done using Bongarts model. The result showed proportion of married women followed by induced abortion contributed large to fertility reduction in the state. In rural Uttar Pradesh, induced abortion followed by contraceptive use contributed more, while in urban Utter Pradesh reduced proportion of married women followed by induced abortion contributed more to fertility decline in state.
The district level estimates of TFR were derived using RSM on censuses over three period of time. At the district level, results depict large variation in fertility levels among the districts of Uttar Pradesh, varying from a highest of 4.99 in Bahraich district to 2.56 in Kanpur Nagar district in 2011. The coefficient of variation of TFR was 7% in 1991, 8% in 2001 and 11% in 2011. During 1991-2011, fertility decline was highest in the district of Etah (42%) and lowest in the district of Bahraich (6.2%). Out of 71 districts, one district experienced less than 10% decline in TFR, 10 district experienced decline in TFR between 10%-20%, 34 district experienced decline in TFR between 20%-30%, 26 districts experienced decline in TFR between 30%-40% and two districts experienced decline in TFR of more than 40%. Though the fertility decline was noticed for all districts, about one fifth of the districts still had TFR of more than 4 children per women in 2011.

We estimated the TFR across rural-urban districts in Uttar Pradesh. The differences in fertility levels across rural-urban within the district were large. In Bahraich and Sonbhadra district differences in rural-urban TFR were more than two children and in 36 districts these differences were in the range of one to two children per women. Targeted intervention narrowing rural-urban fertility gap will be helpful for further reduction of fertility in the districts. We found wide variations in fertility changes across rural-urban spectrum. During 1991-2011, the decline in TFR was highest in Varanasi district and lowest in Bahraich district in rural area. While in urban area, it was highest in Etah district and lowest in Siddharthnagar district. Over the same period, decline in TFR was little higher in urban compared to rural within the district. In rural areas, 11 out of 71 districts experienced less than 20% decline in TFR, 36 districts between 20%-30% decline, 22 districts between 30%-40% decline and two districts experienced more than 40% decline in TFR during 1991-2011. However, in rural areas, decline in TFR was less than 20% in 2 districts, 20%-30%
in 23 districts, 30%-40% in 42 districts and more than 40% in 4 districts during the same period.

The association of development with fertility changes was examined using regression equations. The findings suggest significant negative effect of development (HDI) on fertility (TFR). In general, on an average 10% increase in HDI value will lead to 7% decline in TFR. The female literacy, female labour force participation rate, percentage of urban population, percentage of scheduled caste population, percentage of Muslim population and percentage of girls marrying below age 18 were significant predictors of fertility change during the last decade. The regional location and time have strong influence on fertility.

On β convergence, we found fertility convergence during 1991-2011 and fertility divergence during 2001-2011. Overall there was fertility convergence during 1991 to 2011. The conditional β convergence showed convergence for both piecewise and overall periods. While sigma (σ) convergence showed a diverging pattern in fertility over the period.

In Chapter 4, the Life Expectancy at Birth, Infant Mortality and Under-five Mortality are used to examine mortality trends. At state level, there was 47% increase in life expectancy at birth during 1971-2011. The annual increase in life expectancy at birth was more among females and in rural areas compared to their counterparts. The finding from decomposition suggest that improvement in life expectancy at birth was largely due to reduced infant and child mortality during 1971-2011. The reduction in adult mortality (15-55 ages) contributed less to improvement in LEB. Among all age groups, 35-40 age group contributed least to improvement in life expectancy at birth over the same period. The contribution made by
different age group to improvement in life expectancy at birth across rural-urban and across male female varied largely by level of contribution, while its pattern remains similar.

On Infant and child mortality, state showed more than half of the decline in IMR during 1971-2011. The reduction in infant mortality was relatively higher in rural areas and among males during the same period. At district level, inter-district variation in infant and child mortality were large. In 2011, five districts namely Shrawasti, Faizabad, Balrampur, Budaun and Siddharth Nagar had high infant mortality and the five districts (Kaushambi, Budaun, Sitapur, Hardoi, Barabanki) had high child mortality. Though the state marked significant improvement in mortality parameters, the reduction in infant and child mortality was not similar across the districts. During 1991-2011, 7 districts (Chaudauli, Sant Ravidas Nagar, Varanasi, Saharanpur, Jaunpur, Kheri, Ambedkar Nagar) observed less than 5% decline in infant mortality and 7 districts Ghaziabad, Ghazipur, Saharanpur, Mathura, Mau, Kushinagar, Ballia showed less than 20% decline in child mortality. The ten districts experiencing high infant and child mortality are Shrawasti Balrampur Budaun Allahabad Shahjahanpur Maharajganj Kaushambi Mirzapur Sitapur Hardoi. More than half of the districts had less than 10% reduction in infant and child mortality. Regression analysis revealed female literacy, percentage of women having birth order of 3 & above, percentage of women having safe delivery and percentage of girls marrying below age 18 were significant predictor of infant and child mortality reduction. The β convergence result of mortality, showed divergence in life expectancy at birth and convergence in infant and child mortality during 1991-2011. The sigma (σ) convergence results also confirmed similar pattern with respect to life expectancy and infant and child mortality.

In Chapter 5, we examined the effect of reproductive and child health services on Total Fertility Rate (TFR), Infant Mortality Rate (IMR) and Under-five Mortality Rate (U5MR) during the pre-and post-National Rural Health Mission (NRHM) period. We have used four
of the RCH indicators, namely, antenatal care, safe delivery, child immunization and contraceptive use and constructed RCH index. Results suggest large inter-district variations in the coverage of reproductive and child health services in the state of Uttar Pradesh. With regard to improvement in the four RCH services, during the post NRHM period, it was highest in safe delivery followed by immunization coverage and antenatal care and least for contraceptive use in most of the districts. The relative ranking of districts has not changed much over time. The inter-district variations in RCH services are large. In 2002, the RCH index was highest in Ballia (0.444) followed by Lucknow and least in Balrampur (0.127). By 2012, the RCH index was highest in Jhansi (0.755) and lowest in Shrawasti (0.257). In 2012, three districts had a RCH index value of less than 0.3, four districts had between 0.30-0.40, eighteen districts had between 0.40-0.50 and forty-six districts had a RCH Index of more than 0.50. While in 2002, none of the districts had a RCH index of more than 0.50, six districts had between 0.40-0.50, twenty-one districts had between 0.30-0.40, and forty-four districts had a RCH index of less than 0.30. Districts such as Kaushambi, Banda, Hardoi, Unnao, Chitrakootand Mahoba performed better in the RCH index over time while the districts of Ballia, Gautam Buddha Nagar, Kanpur Nagar, Varanasi, Sonbhadra and Lucknow remained poor.

We found that the RCH index exerts greater influence on the reduction of infant and under-five mortality, while female literacy exerts greater influence on the reduction in TFR. Results of the hybrid model suggest that a 10 percent change in RCH index would lead to a 3 point decline in IMR and a 10 percent increase in female literacy would lead to a 0.2 point decline in TFR.

In chapter 6, population projection was carried out till 2040 under alternative policy options. The social and economic implications of population growth under alternative policy options were examined. The projected social and economic indicators may be
viewed as an approximation for future. The demographic, social and economic projections were close under each alternative scenario. The state population was projected to increase by 37% in optimistic, 42% in realistic and 48% in pessimistic scenario. The age structure of population depicts large proportion of population in adult age group. It was projected that more than two third of the population will be in the age group of 15-49 by 2040 under realistic scenario. On economic front, the per capita GSDP is likely to increase by more than thrice under each alternative scenario by 2040. The per capita income of the state will be 500 rupees higher in optimistic scenario compared to pessimistic scenario. It is required to create 60 million additional employment for achieving full employment of the state.

On education, it was projected that the children of primary school age will decline by 25% under optimistic scenario and 18% under realistic scenario and 7% under pessimistic scenario in 2040. It was projected that about 102 thousand primary schools will be required under realistic and 116 under pessimistic in 2040 from 100 thousand in 2011 if school enrolment ratio of 100 percent is achieved. On the other hand, the children of secondary school age will increase from 18.9 million to 16.6 million and 18.5 million in optimistic and realistic scenarios respectively however it will increase to 20.4 million under pessimistic. The requirement of secondary schools will be 25 thousand and required teachers will be 188 thousand in 2040 from 19 thousand and 142 thousand respectively in 2011, under realistic assumption.

With respect to health, the state will require more health infrastructures and health manpower by 2040. The increased population and required health infrastructure will reduce the per capita income in the state. The per person health expenditure will increase over time due to large population, inadequate health infrastructure and higher proportion of population at high health risk. This indicate that though the health care services in state are
there but focus should be more on the vulnerable section who are deprived or less utilizing the health care services so that the proportion of population at higher health risk can be reduced.

7.3 Policy Implications

Based on findings it may be recommended for targeted intervention in backward districts in reducing fertility and mortality in the state Uttar Pradesh. The divergence in fertility trends is major obstacle in the path of sustainable human development. Efforts on increasing the demand and use of modern contraception and strict enforcing of the marriage age would help to reduce fertility level. Second, districts with lower coverage of RCH services should be given priority. Third, given high degree of association of demographic and human development indicators, investment on health and education should be accorded high priority to improve the quality of the people of the state. Efforts should be made to providing adequate inputs and to utilize the available human resources to accelerate economic growth and overall development. Policies focused on improving levels of female education, reducing infant and child mortality and improving family planning services will be helpful to further fertility decline.

7.4 Limitation of the study

We put forward the following limitations of the study. First, we have adjusted the estimates for newly created districts during 1991 to 2011. The estimate for a district created from a single district is considered as the same as in its parent district, while that for a district created from multiple districts is derived by taking the simple average of the estimates of its all parent districts.

Second, this study compiled/estimated indicators for three point of time. A few of the indicators were not available uniformly and from one source, we have used the data for
nearing period and related estimates with census period. We have correlated the data of 2002-04 from DLHS with 2001 and data of 2012-13 from AHS with 2011. Similarly, the NSS estimates for 2004-05 and 2009-10 are related with census year of 2001 and 2011 respectively.

Third, we have computed human development index using UNDP new methodology. While this index was estimated for two point of time at district level and one point of time across social and economic groups due to data constraint.