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Editorial Note

I am pleased to share with the readers of Population Geography that the journal has already completed four decades of its regular publication (1979-2018). During this period, we could publish three special volumes: Volume 3(1981), Volume 5(1983) and Volume 25(2003). The former two were edited by Professor John I Clarke and Professor Maria Luisa Gentileshchi, respectively as the Guest Editors and the third one published as the Silver Jubilee Volume, by Professor Gopal Krishan. We always tried to maintain the quality of both the research works published and the design and printing of the journal. For this, the entire credit goes to my predecessors Professors late G.S.Gosal, Gopal Krishan, R.C. Chandna and late K.D. Sharma.

In the forty-first year of its publication, we have achieved another milestone of publishing the journal twice a year, June and December separately. Over time, we had also adopted a rigorous paper reviewing process and will soon move from single blind to double blind review process. Some other innovative ideas which we are going to introduce in near future include the publication of an electronic version of the journal, preparation of DOI (digital object identifier) file of the each published paper, and online submission and reviewing of manuscripts. We have also strengthened our editorial board to make it more broad based and diversified.

We have always tried to serve our readers in the best possible manner. In the Silver Jubilee year (volume 2003), we published the index of all the papers published during 1979-2003. In this number, we are publishing the index of all the papers published in the journal during 2004-2018.

We always look forward to your comments and suggestions to improve ever the quality of the journal. From time to time, we receive comments and suggestions. Recent one is worth sharing. Following is a message from Professor R. Vaidyanadhan, formerly Professor and Head of Geography, University of Waltair, Visakhapatnam, Andhra Pradesh, stating that: 'Received the June 2019 issue of Population Geography. I read most of the papers with considerable interest. These are well-researched and presented. I only wish the administrators in the respective areas read them and use those findings in framing regulations or rules for better living. Some sort of marketing is to be made! Otherwise it is only an addition to the list of the author's papers'. Certainly it is a well thought advice to be kept in mind while preparing any research paper.

Surya Kant
Editor

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PARTICIPATORY EVALUATION: THE KEY TO IMPROVED OUTCOMES

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Abstract: Participatory evaluation can productively complement conventional evaluation techniques. Assessing an intervention through the eyes of the beneficiaries and other stakeholders often highlights gaps in even the most carefully designed projects. This is particularly relevant when assessing project outcomes. Traditional evaluation examines adherence to project norms and the successful achievement of targets, but by its very nature is constrained by the given mandate. Participatory evaluation, being indicative rather than directive, can transcend these limits and help identify shortfalls or limitations, which are often hidden from the participants themselves but emerge in the process of discussion. This paper compares the findings of conventional and participatory evaluations of two nutrition interventions— the Mid-day meal scheme and the *Anganwadi* supplementary nutrition programme in sampled villages of Gumla District, Jharkhand, and Jaisalmer District, Rajasthan, respectively. The objective is to highlight the additional learning gained from the participatory process, which could provide significant inputs to enhance project outcomes.

Keywords: Participatory process, nutrition interventions, mid-day meals, *anganwadis*, project outcomes Rajasthan, Jharkhand

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“Participatory monitoring and evaluation is a process of collaborative problem-solving through the generation and use of knowledge. It is a process that leads to corrective action by involving all levels of stakeholders in shared decision making”. (Narayan 1993)

Introduction

Stringent evaluation is touted as the most effective means of assessing development projects and programmes, and proposing modifications, either mid-course or pre-replication. However, conventional evaluation is bound by pre-identified indicators and a set of norms, adherence to which implies success. While every effort is made to identify the most suitable indicators, there are quite often hidden issues, invisible to the evaluator, but having substantive impact on project outcomes. These, often minor issues, can only be revealed by careful investigation in a participatory format. Even stakeholder participation in a more structured format as in the case of direct interviewing of the participants may prove ineffective, as most often, the stakeholders themselves are unaware of the possible impact of such issues. Moreover, conventional evaluation formats are based on pre-identified questions. Against this, the participatory format is flexible and open-ended and initiates discussion generating a new set of questions, often those outside the scope of the study. Participatory evaluations thus,

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“offer opportunities for shaping an inclusive approach to a wide range of developmental activities... Because they are a collaborative effort, participatory evaluations enhance the potential for sustainable results that will directly benefit programme/project beneficiaries (CIDA 2001).

In the light of above statements, this paper attempts to highlight the differences between regular evaluation techniques and participatory methods using case studies from two Indian states: Jharkhand and Rajasthan. The shared goal of improving child nutrition levels in rural areas is the common thread between the two case studies.

The case studies were conducted in 2012–13 in two districts with diverse geographical settings, yet a common problem of high child undernourishment rate. The districts are Gumla, a heavily forested tribal district in the state of Jharkhand and Jaisalmer, located in the heart of the Thar Desert in Rajasthan. Both districts rank among the hundred focus districts, identified by UNICEF for special action based on a set of indicators.¹

The case studies are aimed at evaluating the performance and outcomes of the two most widely implemented nutrition interventions: the ICDS and the mid-day meals scheme (NPNSPE²). While the mid-day meals scheme was initially introduced to provide an incentive to increase school enrolment and attendance in rural areas, it gradually transformed into one of the best performing nutrition interventions in the country. The programme in its current *avatar* ensures the provision of a hot cooked meal fulfilling basic nutritional requirements (100 gms. of rice, 50 gms of dal, oil, vegetables, etc.) to every child on all schooldays (240 days in a year). In drought affected states, the meals are extended through the school vacation by Government directive.

Jharkhand

Four villages from Gumla district were selected for the participatory evaluation. The villages are inhabited by subsistence farmers living on the verge of food insecurity. Each of the villages has a primary school and an *Anganwadi* ensuring the provision of supplementary nutrition to pre-schoolers, school children, and expectant and nursing mothers. The villages lie at a distance of 6–14 kms from the Block headquarters— Palkot, but only one village, i.e. Keyound Tala is connected by metalled road.

Mid-Day Meals

The PACS survey (PACS 2007) rated Jharkhand as one of the best performing states with regard to the NPNSPE based on the responses of school children, with 90.0 per cent of the respondents affirming the regular supply of school meals. As regards the study villages, all the four have a functional mid-day meals scheme. However, the performance in various locations does reveal sharp variations (Table 1). Even the two largest villages with over 200 children on the rolls reveal sharp differences: Keyound Tala delivers daily meals to over three-quarters of the students, while in Tapwara, only a little over half the students’ receive the benefit. Similarly, in Lodhama, the meal reaches only 55.0 per cent of the school children.

¹The fourteen indicators; used reflect the three dimensions: (i) health and nutrition; (ii) cognitive development and education; and (iii) safety and overall child environment. The six poorest performing states with reference to child development indicators are Bihar, Jharkhand, Madhya Pradesh, Orissa, Rajasthan, and Uttar Pradesh.

² National Programme of Nutritional Support to Primary Education.

The worst performance is recorded in Khatgaon, where despite having only a small number of children on the rolls (39), the percentage of school meals recipients is dismally low (only 26.0 per cent). This poor performance may be attributed to the high dropout rate, accounting for the discrepancy between the number registered and the number receiving the benefit, or poor attendance rates.

Table 1: Gumla District: The Mid-day Meals Scheme in the Sampled Villages

Village	Number registered	Number provided with daily meals	% receiving benefit
Keyound Tala	250	180	72
Khatgaon	39	10	26
Lodhama	54	30	55
Tapkara	202	110	54

Source: *Field Survey*, October 2012 (Ramachandran 2014)

The infrastructure for cooking including a kitchen, cooking vessels and clean water supply are in place across all four sampled villages and a cook is employed to prepare the meal.

Based on conventional assessment of the scheme, it is evident that the mid-day meals scheme is fully functional in all the four villages. The proportion of children accessing the meal ranges between 25–75 per cent, and required infrastructure is in place.

However, focus group discussions (FGDs) with the mothers in each village revealed that the school menu does not follow government norms. The daily meal consists of rice alone and there is no change in the menu over the week.

This issue did not appear of relevance to the village women, as their own household diet consisted of only two meals per day composed of just rice or gruel made with a few handfuls of rice. Even this pitiable diet is reduced to a single meal during the food scarcity season.

While this flouting of government norms could perhaps be explained by the difficulty to access the nearest town/PDS shop for supplies, further investigation revealed more anomalies. As mentioned above, each of the sampled villages also has a functional *Anganwadi* (pre-school centre), where all registered pre-schoolers receive a meal. Table 2 details the meal served at each ICDS centre.

Table 2: Gumla District: Daily Menu at the Anganwadi Centre, Sampled Villages

Village	Food served at the Anganwadi Centre
Keyound Tala	Rice, soyabean, dal, vegetables
Khatgawan	Rice
Lodhama	Rice, <i>daliya</i> (porridge)
Tapkara	Rice

Source: *Field Survey*, October 2012 (Ramachandran 2014)

Once again, rice continues to be the basic food served at three of the four *Anganwadis*. However, the *Anganwadi* at Keyound Tala serves a full balanced meal consisting of rice, soyabean, dal and vegetables as mandated. If this is because Keyound Tala village is located on the highway and can easily access supplies, then the same logic should apply to school meals, but as stated above, school meals consist of rice alone in all four villages.

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Further discussion revealed that the *Anganwadi* also provides nutrition supplements to pregnant women and nursing mothers as a part of the lifecycle approach to nutrition. These women are given two kilos of rice, 500 gms. of pulses, 500 gms. of soybean, 250 gms. of oil and 250 gms. of sugar per month. The fact that complete food supplies are available at all the *Anganwadi* centres makes it curious that the mandated balanced diet is not provided to the child beneficiaries.

The Table below highlights the additional information which can be obtained through FGDs. Participatory evaluation can prove a useful supplement to conventional techniques making the evaluation more complete and highlighting issues which may be preventing the achievement of the expected outcomes.

Table 3: Gumla District: Conventional vs. Participatory Evaluation

Interventions	Conventional Evaluation	Participatory Evaluation	Additional Issues Identified
Villages: Keyound Tala, Khatgawan, Lodhama, Tapkara.			
Mid-Day Meals	Infrastructure in place, Mid-Day Meal provided to 25–75% of registered children	Only boiled rice provided in school meal	Why is the full meal not provided as mandated?
ICDS	Infrastructure in place, hot, cooked meals provided to all registered children, and take-home food rations to expectant/nursing mothers	The cooked meal consists only of rice or porridge in 3 of 4 villages. Only a single village provides the mandated balanced meal.	Why does only 1 of 4 <i>Anganwadi</i> s provide a full, balanced meal? If location (road access is the reason), then why does the primary school located in the same village not provide a similar complete meal?

Source: Field Survey, October 2012

Jaisalmer

Jaisalmer, the arid westernmost district of Rajasthan, also figures among UNICEF's 100 focus districts with poor performance on child development indicators. The Hungama survey (2011) of Jaisalmer district found about one-third (34.0 per cent) of the children below the age of 5 years underweight and about 11.0 per cent severely underweight. The situation is much better than in Gumla where about one-half (50.0 per cent) of the under-fives are underweight and about one-fifth (20.0 per cent), severely underweight.

A field survey was conducted in village Selat (Jaisalmer district) during May 2013. The village is a small one, consisting of only 37 households. The nearest access to a metalled road is by a 10 km stretch of mud track across a featureless semi-arid landscape dotted with scrub and clumps of grass. Located in the Thar Desert, the village routinely faces severe drought. About 60.0 per cent of the households store food-grain, but in most cases, the grain is only sufficient to supply household needs for a period of 1–3 months. All the households, however, consider themselves food secure.

Mid-day Meals

The village does not have an *Anganwadi*, but there is a primary school and the mid-day meal scheme is being successfully organised. The school has 28 children on its rolls (13 boys and 15 girls). Around 25 children eat the school meal on a regular basis. The meal follows the all India pattern of 100 gms. of grain together with lentils, vegetables, oil, spices and fruit. The menu is planned in accordance with local tastes having a variety of items (Table 4).

Table 4: Jaisalmer District: Weekly Menu for the Mid-Day Meal at the State Primary School in Village Selat

Day	Menu
Monday	Roti and vegetables
Tuesday	Rice and dal
Wednesday	Roti and dal
Thursday	Khitchdi
Friday	Dal Batti (Dal with baked dumplings)

Source: *Field Survey*, May 2013 (Ramachandran 2014)

The food is prepared by a local woman, paid Rs.1000. A kitchen with a storeroom has been constructed by the *Panchayat* (local administration) and cooking vessels were purchased with funds from the *Sarva Shiksha Abhiyan* (SSA)³. Water for cooking and drinking is obtained from rain water harvested in a tank, which is routinely purified.

While the Mid-Day meal is provided only when the school is in session, during severe droughts, there is a Government directive to continue with the MDM through the vacation.

Regarding mothers' assessment of the school meal, the response was positive with reference to regularity of supply, adequacy and quality of the meal.

The results of the evaluation were entirely satisfactory. Only a single nutrition intervention is implemented in the village and it is functioning satisfactorily and adhering to all the stated norms.

Concluding remarks

The focus group discussions with the women in the village reveal that there are a substantial number of pre-school children, who lack access to any kind of supplementary nutrition. As Government norms require at least 40 children of pre-school age (< 3 years) before an *Anganwadi* can be established, these children fall through the gap in this multi-window system of nutrition interventions. The nearest *Anganwadi* in village Lanela is at a distance of 10 kms. by paved road or 6 kms. cross-country, making it totally inaccessible to children of this age group or even to pregnant women and nursing mothers. As the ultimate goal of these interventions is improving the nutrition levels of children, the reasons why the desired outcomes are not being achieved, need to be investigated. As in the case of Gumla, new insights were acquired through participatory approaches (Table 5). Interaction with the villagers also brought to notice the existence of an almost forgotten hamlet "Govind ki Dhani", where at least 25 children (members of an extended family) live in isolation, without any access to either education or supplementary nutrition. The child population is not large

³ The *Sarva Shiksha Abhiyan* is the Government's countrywide Education for All Programme.

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enough to fulfil the minimum norms for an *Anganwadi* or a primary school. The existing primary school was closed down once the primary age-group fell below 40. As the children cannot reach the neighbouring village of Selat unescorted, they are all out of school with no educational opportunities, school meals or pre-school supplementary nutrition.

Table 5: Jaisalmer District: Conventional vs. Participatory Evaluation

Interventions	Conventional Evaluation	Participatory Evaluation	Insights
<i>Village Selat</i>			
Mid-day Meals	Infrastructure in place, fully functional	Complete satisfaction expressed	School could be used as a nodal point for supplementary nutrition for all age groups. Single window dispensation is more suitable in areas with small and scattered settlements
ICDS	Not Available	Large number of pre-school children and expectant/nursing mothers denied access to Supplementary Nutrition	Desired outcomes are not likely to be achieved if children of all age groups and expectant mothers are not provided access to supplementary nutrition
<i>Govind-ki-Dhani</i>			
Mid-Day meal/ICDS	Not available	Large number of school age and pre-school age children denied access to both education and supplementary nutrition	MGNAREGA ⁴ could be used to provide escorts for children to avail of school/ <i>Anganwadi</i> services in neighbouring villages

Source: *Field Survey*, conducted in May 2013

The two case studies discussed above indicate how participatory evaluation can often go beyond the given mandate and reveal not only the obstacles which prevent the attainment of planned outcomes, but also help suggest possible solutions to the problems identified. As such, the addition of a participatory segment to any evaluation may well provide significant value addition.

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⁴ The Mahatma Gandhi National Rural Employment Guarantee Act, which provides employment on demand for 100 days to one member of a poor family or payment in lieu of work.

GENDER IMBALANCES: A SERIOUS CHALLENGE TO SUSTAINABLE DEVELOPMENT GOALS IN INDIA¹

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Abstract: The word ‘sustainable’ before development connotes utilization and management of resources to meet the needs of humanity at present without compromising the potentiality for future generation. It encompasses social and economic dimensions along with the ecological concern. It is an attempt to combine emerging environmental issues with that of socioeconomic development. Such wider concept of sustainable development is propagated by the United Nations through the SDGs. The targets set for transforming world incorporate social, economic and environmental issues and concerns of wellbeing of societies. Gender equality is one of the objectives of SDGs. But the lives of women will be improved only if they are allowed to be born. They have been suffering from the curse of infanticide and foeticide since long, not only in most populous countries of the world but in several countries of east, south-east and central Asia, Eastern Europe and northern Africa, resulting in drastic decline of sex ratio at birth and the child population. Meta son preference over daughter, policy of small family and cheap and easy availability of imaging technologies are facilitating the selective abortion. The result is 910 girls per thousand boys born (SRB) against 918 child sex ratio and 943 total sex ratio in 2011 in India. The scarcity of females is disturbing the social processes along with creating social unrest. Under such situations, endeavouring for sustainable development may be futile.

Keywords: Sustainable development, missing girl, prenatal, abortion, infanticide, foeticide, imbalance, sex ratio, child sex ratio, sex ratio at birth, gender equality.

“Gender equality is more than a goal in itself. It is a precondition for meeting the challenges of reducing poverty, promoting sustainable development and building good governance.”

-Kofi Annan

Introduction

The word ‘sustainable’ before development connotes utilization and management of resources to meet the needs of humanity at present without compromising the potentiality for future generation (WECD 1987). This concept presumes balanced posterity, having parity in sex ratio. Initially the concept of sustainable development overemphasized the ecological concern but it encompasses social and economic dimensions along with the ecological concern, at present.

Now, emerging environmental issues are combined with socioeconomic ones. Such a wider concept of sustainable development is propagated by the United Nations through the SUSTAINABLE DEVELOPMENT GOALS (henceforth SDGs), constituting the part of “Transforming Our World: The 2030 Agenda for Sustainable Development” (UN 2015). In

¹ Paper is a revised and enlarged version of Professor late C.P.Singh memorial lecture, delivered at the 41st NAGI Conference held during 28-30 December, 2019 at Dr. Harisingh Gour University, Sagar (M.P.).

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all, universal set of 17 goals and 169 targets have been adopted to help, organise and streamline development actions for providing benefits of development to all by 2030. The targets incorporate social, economic and environmental issues and concerns of wellbeing of the societies. These three issues are termed as the three pillars of sustainable development. In all, 193 member countries including India have adopted these Goals. In consonance with this, the *Niti Aayog* (2018) of India has prepared *SDG India Index Baseline Report, 2018*.

‘Gender equality and empower all women and girls’ is listed fifth among the 17 SDGs. It is maintained that gender equality is also driver of the sustainable development in all its dimensions, ranging from ending hunger and poverty, promoting prosperity and building peaceful, just and inclusive societies (UN Women 2018). Therefore, providing equal opportunities and benefits to women and girls is crucial for achieving SDGs. Strangely, the goal concentrating on issues of women and girls fails to identify the expanding ‘gender imbalance’ accentuated by ‘missing girls’ as one of its targets. ‘Missing girl’, a concept formulated by Amartya Sen three decades earlier (1990), highlights a glaring fact that globally 100 million girls (40 million only from India) were prevented from seeing the light of the day. They are eliminated before the birth. It is called foeticide. Elimination of girls has been in practice since long, earlier in form of girl infanticides, neglect and ill treatment leading to their early death. With the advent of ultrasound and imaging technologies and machines and their wide spread use for sex determination of the foetus abortion increased phenomenally, resulting in skewed sex ratios at birth and increasing masculinity gradually. This problem is so serious that gender equality and consequently building peaceful, just and inclusive society cannot be imagined until this curse on unborn girls is removed.

Research objective

In the light of the above statements, this paper examines ‘Gender Equality’, which was enunciated by the UN General Assembly and accepted by most of the member states including India. However, one can avail the benefits of egalitarian development only if he/she is permitted to be born. It means sustainable development has meaning only in a balanced social structure, at least in terms of sex ratio parity. Here the probable process of declining sex ratio in general, and child population along with at birth especially in India in context of global call for sustainable development including the development of women has been investigated, highlighting the gloomy picture prevalent, in this regard, not only in India but also several other countries of East, South-East and Central Asia along with those in the Eastern Europe. In spite of legal provisions prohibiting sex selective abortion or girl foeticide, it is still unchecked. Effective measures of stopping heinous act of eliminating the girl child must be taken to make the goals of SDG relevant and meaningful so that Kofi Annan’s statement, stated in the beginning, get into the reality.

Methodology

The discussion here is based on secondary data published by reputed agencies such as United Nations, Census of India, National Crime Bureau of India, and a number of historical documents. By using different statistical and cartographic tools, the data acquired from these sources have been calculated, and presented in the form of tables, diagrams and maps before being analysed and interpreted.

Faltering Sex Ratio

Sex composition is considered an important social indicator to measure the extent of prevailing gender inequality in a society. Of total population of 1210.85 million in India, 623.27 million are males and 587.58 million females, yielding sex ratio of 943 females per thousand males in 2011. At the beginning of the 20th century, sex ratio was 972, declined to 930 in 1971, registering a decline of 42 points (Fig. 1). It increased slightly to reach 934 in 1981 but declined again to 926 in 1991. It has gradually increased thereafter to reach 943 in 2011.

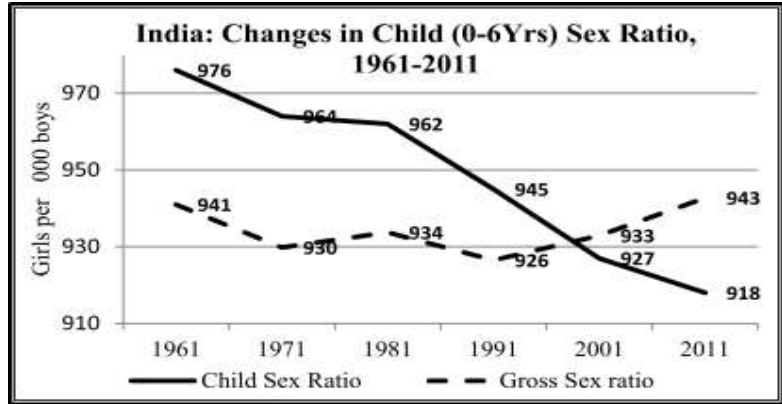


Fig. 1 Comparison of trend of gross and Child sex ratios

Sharp decline in child sex ratio (CSR)

The slight upward trend in total sex ratio after 1991 gives an impression that the sex ratio may improve in future. But it seems almost impossible if we see it carefully. It is because, the child (0-6) sex ratio is much lower (918) than the gross sex ratio (943) in 2011. Further, temporal changes in CSR have been very sharp, from 976 in 1961 to 945 in 1991 and 918 in 2011 (Fig.1). Even the absolute number of girl children declined from 78.8 million in 2001 to 75.8 million in 2011, recording absolute decline of 3 million girls in a single decade notwithstanding several motivational programmes launched by the government. from time to time including the latest *Beti Bachao Beti Padhao* mission. This decline is very unusual in view of rapid growth of population and does not seem natural.

On state level, 21 states and union territories witnessed sharp decline in child sex ratio, ranging from -3 in Assam and Meghalaya to -79 in Jammu & Kashmir during 2001 and 2011 (Fig. 2). Among them, states such as Jammu & Kashmir, Rajasthan, Uttarakhand, Uttar Pradesh, Madhya Pradesh and Maharashtra, presenting downward trend, also have low CSR. It

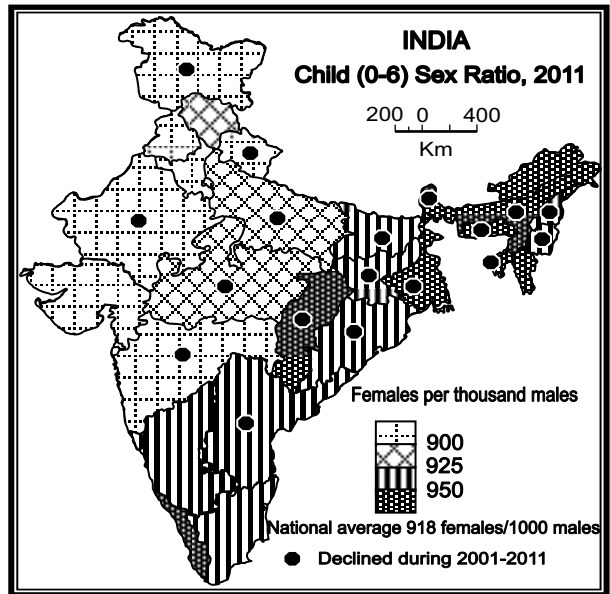


Fig. 2 India: Spatial Pattern of Child Sex Ratio

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indicates to a gloomy picture in these states in the future. Several states with medium and high CSR are also witnessing reduction in CSR during 2001-11. All north-eastern states except Arunachal Pradesh and Mizoram, eastern states and Andhra Pradesh also record decline in CSR. Contrary to it, 11 states and 2 union territories recorded an increase, ranging from 1 in Tamil Nadu to 48 in Punjab. It is good symptom that Haryana, Punjab, Chandigarh and Himachal Pradesh with low and very low CSR have registered a positive trend. Similar is the case with Gujarat. However, spatial extent of declining child sex ratio is much larger than that of increasing child sex ratio.

Further, district-wise analysis of change in CSR presents a clearer picture (Table 1). The Government has made several efforts to save girl child but failed to stop their declining share in total population. At the district level, nearly three-fourths (72.0 per cent) of them recorded decline in CSR during 2001-11. In seven districts the decline was of more than 100 points. Another one-third districts registered a decline between 20-99 points. In contrast, one-fourth districts registered increasing trend, majority adding up to a maximum of 20 points only. It means, not only the decline but also the rate of decline has much wider geographical coverage than the increase, hence difficult to get compensated in the near future.

Category of change	District		Category of change	District	
	Number	%age		Number	%age
Decrease	461	72.0	Increase	159	24.8
> 100 Points	7	1.1	≤ 10 Points	74	11.6
50-99 Points	31	4.8	11-20 Points	34	5.3
20-49 Points	178	27.8	21-30 Points	17	2.7
01-19 Points	245	38.3	31-49 Points	19	3.0
No change	20	3.1	≥ 50 Points	15	2.3

Source: Census of India (2011). *Child Sex Ratio in India*

Present scenario of child sex ratio

The spatial pattern of child sex ratio is highly uneven, the major portion of country being dominated by low CSR. It ranges from 972, being highest in Arunachal Pradesh to lowest 834 in Haryana. Out of 35 states and union territories during 2011 census, 13 have CSR below the national average of 918 (Fig. 2). They cover almost half of the northern and western parts of the country, extending from Jammu & Kashmir in north to Maharashtra and from Rajasthan in west to Madhya Pradesh. Out of them, in nine states and union territories child sex ratio is less than 900. Contrary to this, 21 states and union

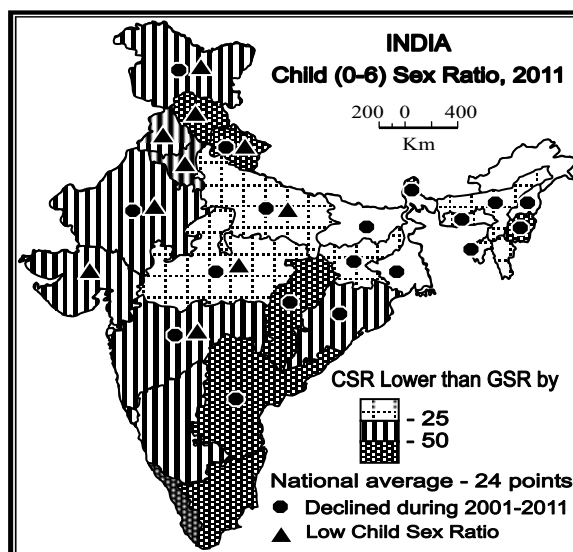


Fig. 3 India: Status and Trend of Child Sex Ratio and its difference from General Sex Ratio

territories, recording more than 925 girls for every 1000 boys, are distributed in south-eastern parts of the country. Most of the north-eastern states have high CSR. And thus, CSR declines from south-southeast to west and north direction in the country.

It is worth mentioning that CSR is lower than the gross sex ratio in 24 states, the difference ranging from -1 in Jharkhand to -120 in Kerala, the state with the highest total sex ratio in the country (Fig. 3). Among them, case of Punjab, Haryana, Rajasthan, Maharashtra, Gujarat, Jammu & Kashmir, Madhya Pradesh and Uttar Pradesh is worrisome because these populous states have low and very low gross as well as child sex ratio. Other states with lower CSR than the gross sex ratio have moderate and high total sex ratio, and therefore smaller CSR may not affect the total sex ratio much in future there. Among 11 states and union territories having higher CSR, six are union territories. Arunachal Pradesh, Assam and West Bengal recorded high on both the sex ratios but Bihar and Nagaland are the case of low gross sex ratio and moderate CSR. On the whole, the emerging picture is not very encouraging.

States exhibit wide intra-state differentials in child sex ratio. District-wise analysis may give more vivid picture of this creeping problem. There were 640 districts in the country in 2011 (Fig. 4). Nearly three-fourths (459 districts or 71.8 per cent) of them record CSR below 950. In another about one-third districts, it is lower than 900 girls per thousand boys. Much less number of districts than this has CSR above 950. Interestingly, the districts from higher classes of child sex ratio in 2001 moved down to lower classes in 2011, except the lowest class- which registered a decline in the number of districts (see Fig. 4). It is because of a rapid increase of CSR in Punjab, some districts moving to the upper class. It is suggestive that the areal extent of the very low, low and medium CSR is expanding at the cost of districts in high CSR category in 2001.

Abysmally low sex ratio at birth

The above discussion pin points that the problem of declining sex ratio in the country is in the early age groups. Child sex ratio is affected by several factors such as the neglect of female child in the early age, poor nutrition, high mortality, female infanticide and sex selective abortion. To narrow down the problem, it is therefore imperative to see the sex ratio at birth (SRB) which is supposed to be more robust indicator of the extent of the practice of gender biased sex selection in comparison of child birth rate (Census 2011). Biologically sex ratio at birth

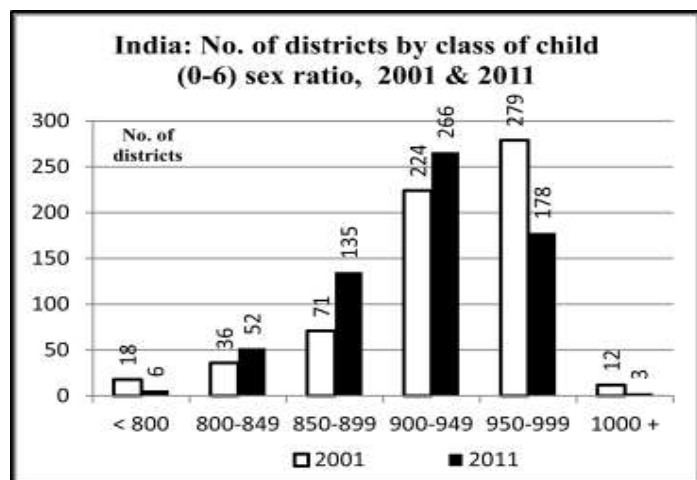


Fig. 4 India: District-wise changes in child sex ratio

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should be 953 girls per thousand boys (or 105 boys per 100 girls born alive). Information about SRB is available at the state level, varying from source to source. Three sources have been tapped for the present study. First is the Census of India 2011-Single Year Age data. Further, Chao and others (2019) examined the demographic records from 1950 to 2017 of 202 countries, calculated sex ratio at birth by fitting them in models, making corrections of possible errors, synchronising them to make comparable. It contains information about SRB in India also. Estimates of sex ratio at birth for bigger states of the country have been made by using Sample Registration System, published from the Registrar General of India.

Unlike CSR, which is affected by factors such as post birth mortality, selective neglect of girls and so on, the SRB provides information of abnormality at the time of birth itself. As mentioned earlier, number of girls is slightly lower than that of boys at birth, yielding normal sex ratio around 953. In this context, the deviation needs to be examined.

According to Chao and others (2019), SRB was 949 live-births of girls per thousand of boys in 1950, declining gradually to 941 in 1976 (Fig. 5), but rapidly declining thereafter

to reach all time low (898) by 1995 in the country. It is pertinent to mention that commercial use of the pre-natal diagnostic technologies started in 1970s in the country, facilitating large scale prenatal sex determination and selective abortion. It is reflected in sharp decline of SRB during

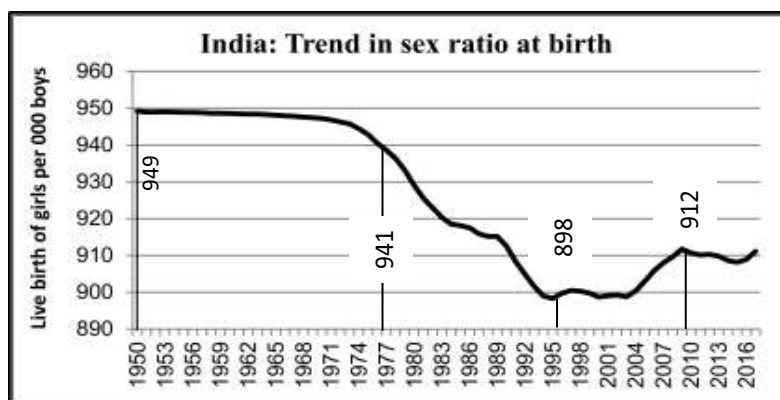


Fig. 5 India: Trend in sex ratio at birth (Based on Chao et al 2019)

the period following this. It remained unstable up to 2004 after which SRB improved slightly, reaching 911 in 2017 from 900 in 2000. This improvement is smaller in comparison to Taiwan and South Korea, countries suffering from declining SRB (Fig. 6), but better than China. It is a big challenge before the stakeholders in the planning and implementation agencies to stop the vicious circle of eliminating girl child before their birth and providing gender equality and women empowerment.

Spatial pattern of SRB can be visualized by utilizing Census of India Single Year age data and Sample Registration Survey data compiled by the Registrar General of India. There are 10.63 million male and 9.68 million female babies under 0 year of age in 2011, yielding sex ratio of 910 females per thousand males, called SRB. This is quite low in comparison of the normal biological standard sex ratio at birth. This SRB varies from only 779 in Jammu and Kashmir to 989 in Mizoram (Fig. 7).

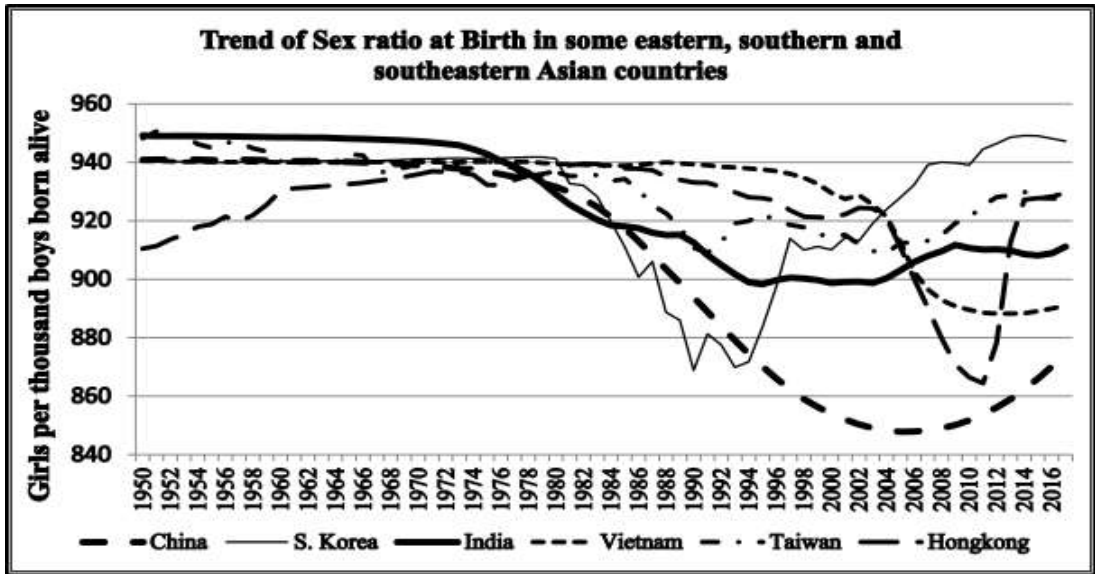


Fig.6 India: Comparison of sex ratio at birth with certain Asian countries

In 12 states and union territories, located in the northern and western part of the country, SRB is below 900 girls per thousand boys. Bihar, Himachal Pradesh and Madhya Pradesh possess lower medium SRB, between 900 and 925. In other seven states and one territory it is between 925 and 950. Most of southern and eastern states constitute this class. Contrary to them, Kerala in south, Chhattisgarh in east and almost all states of northeast have SRB above biological norm. Thus SRB declines from east to west and from south to north.

Registrar General of India, Census Operations also estimates sex ratio at birth for bigger states of the country by the Sample Registration System. These data are available for the period from 2002-04 to 2015-17. SRB ranges from 842 in 2002-04 to 896 in 2015-17, presenting addition of 54 points during this period. But this value is deplorably low and even increase did not present any consistent trend. Sudden increase of 19 points in the first year turned into decline of 10 points in last three years, presenting plateau shape. Average of these twelve figures is only 902. Even these figures present very gloomy picture.

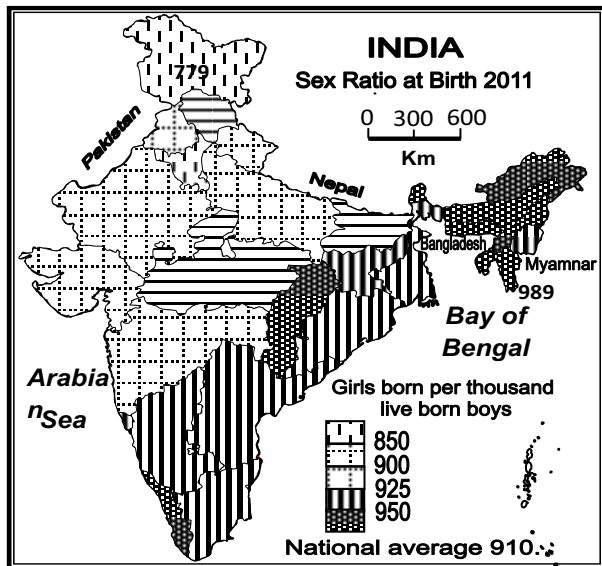


Fig. 7 India: State-wise Pattern of Sex Ratio at Birth, 2011 based on Census of India 2011 Single Year Age Returns Table

Fig. 7 India: State-wise Pattern of Sex Ratio at Birth, 2011 based on Census of India 2011 Single Year Age Returns Table

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Spatial pattern of SRB estimated by Sample Registration System is broadly similar to that of single year age return (Fig. 8); though value is lower in all major states than those of census data excepting four states. For Jammu and Kashmir difference is of +138 points where SRB as per census returns is only 779 girls per thousand boys while SRS estimate is 917. In Punjab, Himachal Pradesh and Maharashtra difference is positive. These are states of low gross sex ratio. Only in Chhattisgarh sex ratio estimated by this system is (961) more than 950. Other states of higher SRB by census data such as Karnataka, Assam and Kerala come in lower class of SRB by this estimate. Data for smaller states are not available.

Why is this happening?

All parameters of sex ratio are against females in general and girl child born or unborn in particular. Declining sex ratio itself is a manifestation of gender inequality and disparity. With other things, women do not have right of reproductive health in India, though women organizations world-wide struggled and acquired such rights. Behind this is the sole reason of ‘**meta son preference**’ over daughter (Govt. India, *Economic Survey, 2017-18*, pp.102-118) and other reasons revolve around it. Socio-economic development is not proving to be an antidote to this curse. It is widely accepted that ‘son preference’ leading to sex selective abortion and differential survival, has led to skewed sex ratios at birth and beyond, resulting in estimated 63 million missing women in the country. In the Indian social system,

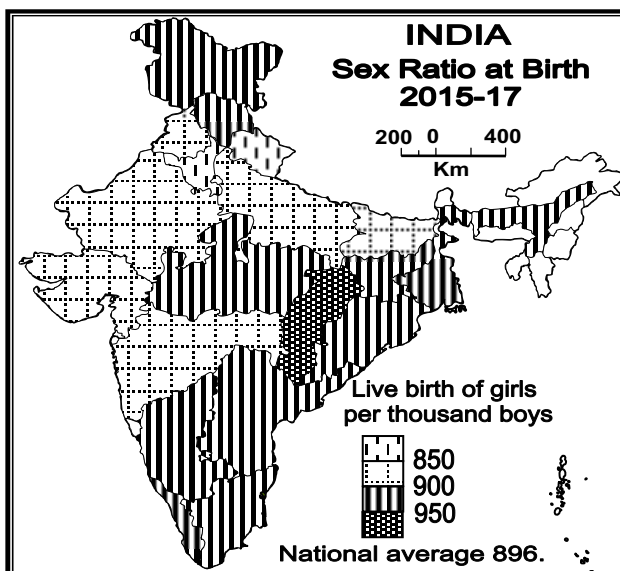


Fig.8 India: State-wise sex ratio at birth based on SRS data

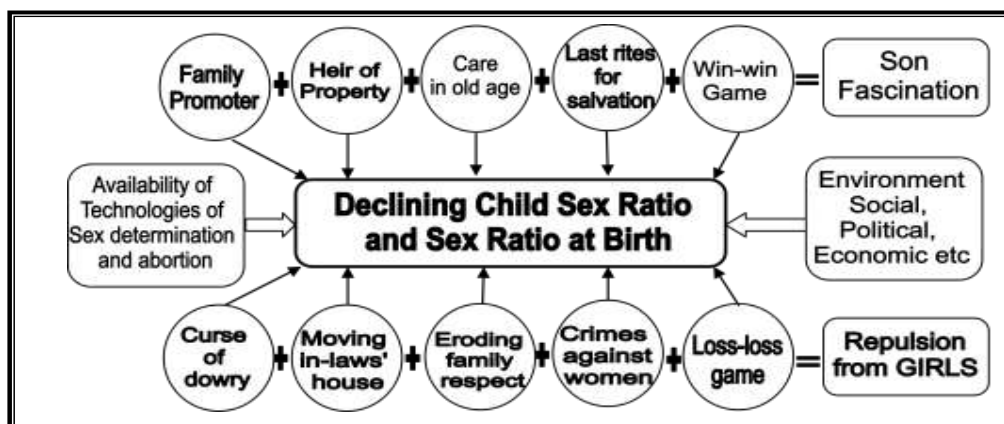


Fig. 9 Causes of son fascination and repulsion from girls & their relation with the declining sex ratios

son carries lineage, inherits ancestral property, looks after parents in old age and performs last rites leading to salvation and therefore investment in him is a win-win game (Fig. 9). On the contrary, caring for girl is supposed to irrigate plant of other's field since she goes to in-law's house after marriage and that too with dowry (Anand 2004, p. 5).

The facility of sex determination started on commercial scale around 1975 in the country which facilitated parents to fulfil their 'meta son' desire. Within the frame of family planning with undercurrent of son preference parents go to cheap and easily accessible facilities of sex deductive technologies, mushrooming everywhere, though all these are prohibited by laws in the country. Legal instruments, such as 'Medical Termination of Pregnancy Act 1971' and 'Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994' along with Indian Penal Codes, Art 312 to 316 are particularly enacted to check abortion except on certain grounds of health of mother. In spite of prohibition of sex determination and selective abortion, the number of abortions carried out in the country is increasing phenomenally as evident from the Table 2.

Year	Abortion	Year	Abortion		Year	Abortion	
	Number		Number	Rate @		Number	Rate @
1972	24,300	1987	584,870	na	2002	744,680	3.51
1973	44,800	1988	582,161	na	2003	763,126	3.54
1974	97,756	1989	596,357	na	2004	726,096	3.32
1975	214,332	1990	581,215	3.46	2005	721,859	3.26
1976	278,870	1991	636,456	3.72	2006	682,242	3.04
1977	247,049	1992	606,015	3.46	2007	642,174	2.83
1978	313,028	1993	612,291	3.42	2008	651,974	2.83
1979	358,002	1994	627,748	3.43	2009	689,534	2.96
1980	388,405	1995	618,373	3.31	2010	657,191	2.80
1981	500,624	1996	542,827	2.85	2011	625,448	2.63
1982	516,142	1997	512,823	2.64	2012	661,353	2.76
1983	548,239	1998	666,882	3.36	2013	667,279	2.76
1984	577,931	1999	739,975	3.66	2014	701,415	2.87
1985	583,704	2000	725,149	3.53	2015	721,381	2.93
1986	588,406	2001	770,714	3.69	@ Number of abortion per 1000 women of 15-39 age group.		

Source: Historical abortion statistics, India compiled by Wm. Robert Johnstone. Available on www.johnstonsarchive.net/policy/ab-india

Total number of spontaneous and induced abortion was estimated at 97.7 thousand in 1974 which jumped to 214 thousand next year. It crossed 500 thousand in 1981. By this time, ultrasound and other technologies of sex determination had been used widely in the country. In next decade it crossed 636 thousand and reached to 771 thousand in 2001. It shows declining trend up to 2013 but upsurges thereafter. Rate of abortion is about 3 per thousand women in 15-39 age groups since 1990. Most of the induced abortion is selective abortion of girls' foetus.

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Foeticide

Girls have been eliminated in a highly systematic way before crossing the first year of their life since long in the country. It is called infanticide. In certain districts of Rajasthan, western coast region of Gujarat and in eastern Uttar Pradesh infanticides was practiced since 1789. Even after Independence, the cases of infanticides have been reported from Tamil Nadu, Bihar, Odisha, Rajasthan and Maharashtra. With the advancement of sex determination technologies, infanticide is replaced by foeticide. The foeticide started in the North India. The most popular technique of sex determination, Amniocentesis, was first used by the All India Institute of Medical Sciences, New Delhi in 1974 for deducting abnormality of child in womb. Later on, it was banned because of its widespread misuse. However, the first clinic for sex determination was opened in Amritsar in 1979 and flooded throughout the country later on. In spite of agitation by women organizations the wave could not be stopped because the 'Medical Termination of Pregnancy Act 1971' gives right of the abortion of the foetus in certain cases of abnormality. This provision has been misused on a large scale and foeticide has spread like contagious disease throughout of the country.

To get rid of girls, foeticide is wide spread in all sections of the society. Foetus abortion is not only cheap and easily accessible but also safe from legal complications. It is because doctor conveys sex of foetus in sign or symbol language and performs abortion in lonely places avoiding witness or complainant. Mobile units are available on telephonic call, working day and night. As such very few cases of foeticides are reported. The information of reported on foeticides in the country and published by the National Crime Records Bureau is presented in Table 3.

Year	Foeticides	Infanticides	Year	Foeticides	Infanticides
2001	55	133	2010	111	100
2002	84	115	2011	132	63
2003	57	103	2012	210	81
2004	86	102	2013	221	82
2005	86	108	2014	107	121
2006	125	126	2015	97	91
2007	96	134	2016	144	93
2008	73	140	2017	115	73
2009	123	63	2018	130	60

Source: Government of India: *Crime Statistics, 2001-18*, National Crime Records Bureau (NCRB), Ministry of Home Affairs, New Delhi.

If the numbers reported were true, then they would have not affected the sex ratio at birth. In fact, reported cases of foeticides and infanticides are just an ice berg in the ocean. Even reported cases are increasing rapidly. A total 55 cases of foeticides were reported in 2001 which increased to 221 in 2013 but dropped to 130 in 2018. Among the states, Madhya Pradesh is at the top. Other states infamous for foeticides are Rajasthan, Punjab, Maharashtra and Uttar Pradesh. Incidence of foeticides and infanticides are declining in none of the states.

These are states with low and very low child sex ratio and SRB. Fig. 10 presents the trend in these five states. The curve of Madhya Pradesh is highest among all. This is supported by the conclusion of the Asian Centre for Human Rights which designated Madhya Pradesh as ‘state of female foeticides and infanticides’ (2016a) during the assessment of the impact of PC PNDT Act 1994; and observed that the country is ‘losing battle’ (ACHR 2016 b). Rajasthan in their eyes is the land of missing girls (ACHR 2017 a). It was believed that tribes were not involved in this heinous act of murdering girls in womb. But child sex ratio in these communities also recorded decline from 973 to 957 during 2001-11, indicating to female foeticides (Missing Girls, p.7).

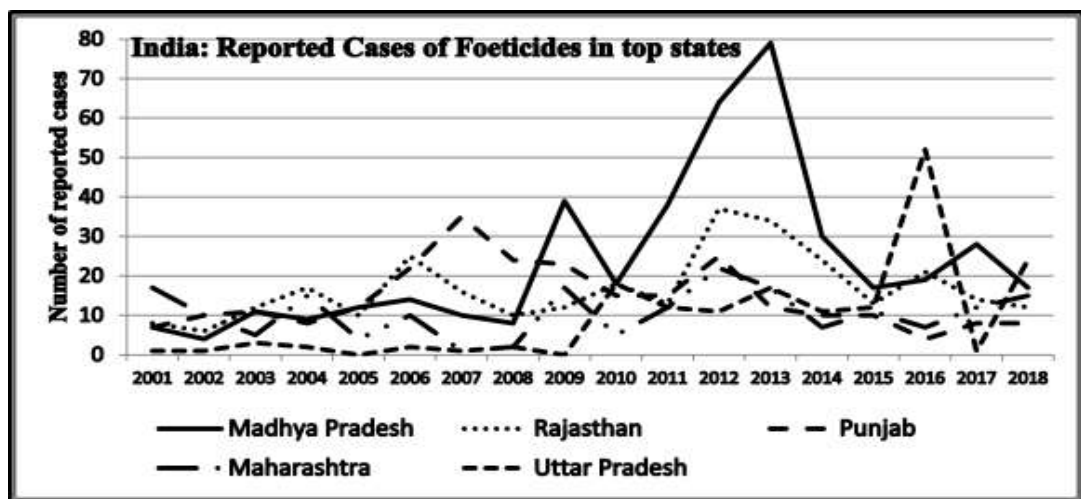


Fig.10 Trend in reported cases of foeticides in top states of the country

Findings of Certain Surveys

Surveys conducted by individuals and organizations have come to similar conclusions. According to the calculation made by the Central Statistical Organization (*Children in India 2012- A Statistical Appraisal*) about 29.9 lakh girls were missing during 2001-11. Surveys show that at least 5 lakh girls go missing every year because of sex selective abortion. A glaring example, published by the Hindustan Times in its 16 October 2015 issue, states that in 89 hospitals and nursing homes, located in Delhi, only 800 baby girls were delivered per 1000 boys during a year: ranging from 300 to more than 800. These averages are far from natural and prove that hospitals and nursing homes are indulging in a large scale sex selective abortion. Similarly Diaz (1988) conducted a study of a centre approved for abortion in Mumbai and found that this Centre facilitated 15,914 induced abortion and all were selective abortion. In another six hospitals in Mumbai out of 8,000 abortions 7,999 were female foeticides (Gangrade, 1988). This is happening across all the castes, religions, communities, educational and income levels of families and the parents.

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At present sex selection technologies are so advanced that pregnant ladies need not to go to hospital or nursing home; the hospital comes to them- illegal and unethical. Such practices conducted in unhygienic conditions have the increased risk of the life to the pregnant woman enormously. Bhattacharya and Singh (2016) reported the seriousness of such a case of a woman who was victim of incomplete abortion at home in the remote rural area by a mobile unit. They feel that the husband and family members of the woman decide the future fate of the foetus ignoring the sentiments of the pregnant woman. In their opinion, it is the question of identity.

Eklund and Purewal (2017) in a comparative study of induced abortion in China and India observe that criminalization of induced abortion has deterrent impact. The Indian Penal Code (1860) was the first legislation on prohibiting induced abortion leading to tremendous growth of illegal abortion. To pacify the agitating women organisations, the Medical Termination of Pregnancy Act 1971 was enacted, providing the limited right to pregnant of abortion (Visaria *et al.*, 2007). This right has been misused to the extent of becoming a menace at present.

Family Planning programme, started in 1970s in India, also accelerated the rate of induced abortion. As a consequence of which total fertility rate declined from 5.2 in 1972 to 2.3 in 2016. Further, under the policy of 'two children' and under social pressure of son preference, parents get the sex of foetus determined and terminated, if it is a girl. Earlier, parents used to have children until the desired number of sons is born and there was no need to adopt such means as ultrasonography and induced abortion of female foetus. Lisa Eklund and Navtej Purewal (2017) call it as bio-politics of population control and sex selective abortion.

The Fourth National Family Health Survey (NFHS 4) reported that nearly two-thirds (61.4 per cent) of the pregnant women went under ultrasound test. Out of them 6.1 per cent pregnancies were terminated, 8.1 per cent gave still birth, and 45.2 per cent gave birth to male child and only 40.4 per cent female child, yielding sex ratio at birth 894 girls per thousand boys (IIPS & ICF 2017, 224-225). It is quite low in comparison of the international standard.

It is a general notion that abortion particularly induced abortion can be controlled by increasing education. But it has proved wrong. During the 4th NFHS it is found that with the increasing level of education, the proportion of pregnant women opting for ultra-sound test and abortion also increased. About 84.4 per cent of mothers with schooling of 12 years and more got their foetus tested and 7.5 per cent got it terminated. These proportions are very high in comparison the national averages. Also, sex ratio among children born to such mothers is 890 girls per thousand boys, is very low. Contrary to such educated mothers, the shares of illiterate women opting for ultrasound test (36.9 per cent) and abortion (5.4 per cent) are comparatively low. In the case illiterate mothers, the sex ratio at birth (920) is also higher than the literate mothers. It leads to the conclusion that education instead of reducing this imbalance is increasing it.

Repercussions of declining sex ratio

Skewed sex ratio has several repercussions on social structure and social processes. Of these, bride trade, increasing number of unmarried males, girl child marriage, spurt in incidence of crimes against women particularly rape and degrading female life are worth-mentioning.

Deficiency of marriageable girls: Females are lesser in number not only in total population but also in the young and youth age groups. This deficiency has been continued for several decades resulting in dearth of girls in marriageable age groups. Number of never married males is 67.3 million as against only 25.4 million females in 25-80+ years age group. Consequently proportion of never married males is very higher (18.6 per cent) in comparison of females (7.2 per cent) in this age group. Contrary to it, the higher proportion (79.6 per cent) of females is married than males (77.6 per cent) in this age group.

Early marriage of girls- is another consequence of the low sex ratio. As per Census of India 2011, about 2.7 per cent of girls in age group of 10-14 years and 19.5 per cent girls of 15-19 years were married. In all, 23.0 per cent girls were married before attaining 18 years of age, the legal age of marriage. During 4th NFHS it is found that about 8.0 per cent of women aged 15-19 years have begun childbearing. Of course, there has been a decline in share of teenage childbearing between 2005-06 and 2015-16.

Crime against women - Spurt in incidence of crimes against women and degrading female life are also associated with the declining sex ratio. Total registered crime against women is 378.3 thousand in 2018, yielding crime rate of 58.8 per lakh population. Out of this, 33977 cases are of rape. Out of this 9433 (27.8 per cent) victims of rape are girl children up to age of 18 years. Girls have been suffering from the various forms of crimes.

Certainly such a situation is creating turbulence in the society; not conducive to attaining gender equality from any angle, as envisaged in the declaration of sustainable development goals by the United Nations.

Summing up

The core of sustainable development is human wellbeing which, among others, hinges upon balanced social structure. In fact, humanity is the pivot of the development and male and female are its two complementary components. It has been accepted by the United Nations that 'gender equality and empowerment of women and girls' is also the driver of sustainable development. Peaceful, just and inclusive societies can only be built with developing and empowering females (UN Women 2018). However, the situation in India and in several eastern, south-eastern and Central Asian and East European countries is against girls where majority of them are even prevented from taking birth. Consequently, their proportion in total population is declining. Under such an environment, the country can attain all developments but sustainable development. For sustainable development girl child must be protected by stopping girl foeticides for which law is in place but its implementation needed to be ensured. After all it is the quest of humanity and sustainable development.

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WOMEN AUTONOMY IN DECISION-MAKING AND THEIR FERTILITY BEHAVIOUR: A CASE OF SAGAR DISTRICT, MADHYA PRADESH (INDIA)

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Abstract: *Sagar, one of the socio-economically backward districts of Madhya Pradesh, ranks thirteen among the fifty districts in the state on account of female fertility. The present study examines the role of women autonomy in decision-making process at the household in terms of its effect on their fertility behaviour by making Sagar district, a case study.*

Based on primary data, collected from 900 sampled women in the fertility age-group and residing in the eleven villages and the three municipal wards of the urban areas of different physio-cultural settings, the study pressed into service statistical techniques such as correlation and regression analysis along with women autonomy index (WAI), calculated on the basis of female participation level in household decision-making process.

The study establishes that women autonomy in decision-making contributes significantly in their fertility behaviour.

Keywords: *Fertility behaviour, Women autonomy index, Education accessibility and personality development, Health, hygiene and nutrition accessibility*

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Introduction

An examination of the role that women's occupations and the freedom they enjoy in decision-making play in determining their fertility behaviour has been a theme of interest to demographers, sociologists, population geographers, and economists. Studies, which find a close association between women occupations and their economic status, state that their fertility behaviour is considerably influenced by these two factors (Saxena, 1965). A working woman contributes to family income, upgrading her family status with an indirect effect on her lifestyle and family interrelationship. All this is bound to have an effect on their fertility behaviour. Such a phenomenon, which remained confined to urban India for several decades is defusing towards the rural areas even in the less developed parts of the country. This amounts to a positive development in the direction of women empowerment especially in the Empowered Action Group (EAG) states of India including Madhya Pradesh. Other states included in this group are Bihar, Chhattisgarh, Jharkhand, Odisha, Rajasthan, Uttaranchal, and Uttar Pradesh.

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According to Cho and Kong (1988), the working women delay their age at marriage. For the better financial position, the unmarried women desire to extend single life, in comparison to the non-working. Most educated and least educated are more likely to have a work in comparison to the middle educated respondents, least engaged in work. A study of Thai women, conducted by Pecharamuni (1982) using multiple classification analysis, on their fertility behaviour in relation to occupational differences, reveals that housewives, sales workers, and agricultural workers have high fertility rates, and those in service, clerical jobs and professional works low fertility rates. In another study, Haavio-Mannila (1978) examined the relationship between fertility behaviour and economic activity of women in Europe to conclude that fertility decline and the increase of non-agricultural activity of women coincide in case of 16 out of 23 European countries, studied. The economic change has the highest role to play in reducing the family size, thus slowing down population growth, in comparison to other factors (Science Daily, 2013).

Dyson and Moore (1983), who took the position that women's autonomy is important for fertility to fall down, stated that autonomy, in turn, is the consequence of women education. In fact, the female education increases the value of their time in economic activities by rising labour productivity and wages, reducing the fertility (Subbarao and Raney, 1995; Som and Mishra, 2017; Som, 2018).

The working women have greater autonomy than their non-working counterparts, for being capable of decision-making due to economic self-sufficiency in their life style, food, nutrition, health and hygiene. Improved maternity and child health (MCH) services stimulate to produce good healthy human resources for future and reduce poverty due to an increase of income and promotion of the gender equality (PRB, 2014). Access to healthcare services is a multidimensional but complex system, which includes availability along with its geographic and financial accessibility (Al-Taiar *et al.*, 2010; Blanford *et al.*, 2012). Effective accessibility of health care services help to reduce fertility as well as mortality. Geographic accessibility can be reduced by the establishment or relocation of health care services (Som and Mishra, 2019). However, the financial accessibility depends on the income generation, an outcome of the occupation leading to women's autonomy also.

Taking a cue from the above statements, the present study examines the role of women autonomy in decision-making on their fertility behaviour in a backward region of the country by selecting the Sagar district of Madhya Pradesh state, as a case study. Sagar district, a part of backward Bundelkhand region of Madhya Pradesh, falls among the very high fertility areas of India. There is hardly any study examining fertility behaviour in this district systematically and comprehensively in the light of factors promoting high fertility or slowing down it. Moreover, the nature of association, if any, between the female occupation and autonomy, on one side, and their fertility behaviour, on the other, has been paid little or no attention by the academicians. The present study has been carried out to meet the following objectives:

Research objectives

The main objective of the present study is to analyse the fertility scenario in the Sagar district vis-a-vis decision-making autonomy of female population; followed by an examination of urban-rural and intra-regional variations in the district, on this count.

Data sources and research methodology

For accomplishing the present study, the following data sources and methodological tools and techniques have been pressed into service.

Based on primary survey, using stratified sampling technique, the study collected information from 900 sampled women belonging to the eleven villages located in different physio-cultural setting along with the three municipal wards of urban areas in Sagar district of Madhya Pradesh. The sampled villages were distributed in 11 community development blocks, and the three 3 municipal wards of 3 urban centres of the district (Fig.1). The sampling technique and the other methods used have been detailed in the following.

(a) Sampling techniques: In Sagar district, which had a population of 2.3 million persons in 2011, there were 445 thousand women in the reproductive age-group (Census of India, 2011). To refine the result and coverage, as stated above, this study has taken 900 samples (from among ever-married women) at 99.0 per cent confidence level and 4.3 per cent confidence interval.

(b) Women autonomy index: Women autonomy index, considered the best way to understand woman's status in a society and frequently used as an independent variable to show the status of reproductive health of women, has been used here. It is prepared on the basis of participation at household level in the decision-making process. Women's role in decision-making relating to buy household items, access healthcare facilities for self and children, sending children to school and visit to relatives house, in unison, define the level of women autonomy.

Table 1: Calculation of women autonomy index (WAI)

Sl. No.	Decision	Response of the (women) respondent	Score
1.	Decision to buy household items	Takes decision	2
		Sought	1
		Does not take decision	0
2.	Decision to health care for yourself	Takes decision	2
		Sought	1
		Does not take decision	0
3.	Decision to health care for children	Takes decision	2
		Sought	1
		Does not take decision	0
4.	Decision to send child to school	Takes decision	2
		Sought	1
		Does not take decision	0
5.	Decision to visit to relatives house	Takes decision	2
		Sought	1
		Does not take decision	0
Autonomy index ranged from 0-10: Low (0-4), Medium (5-7), High (8 and above)			

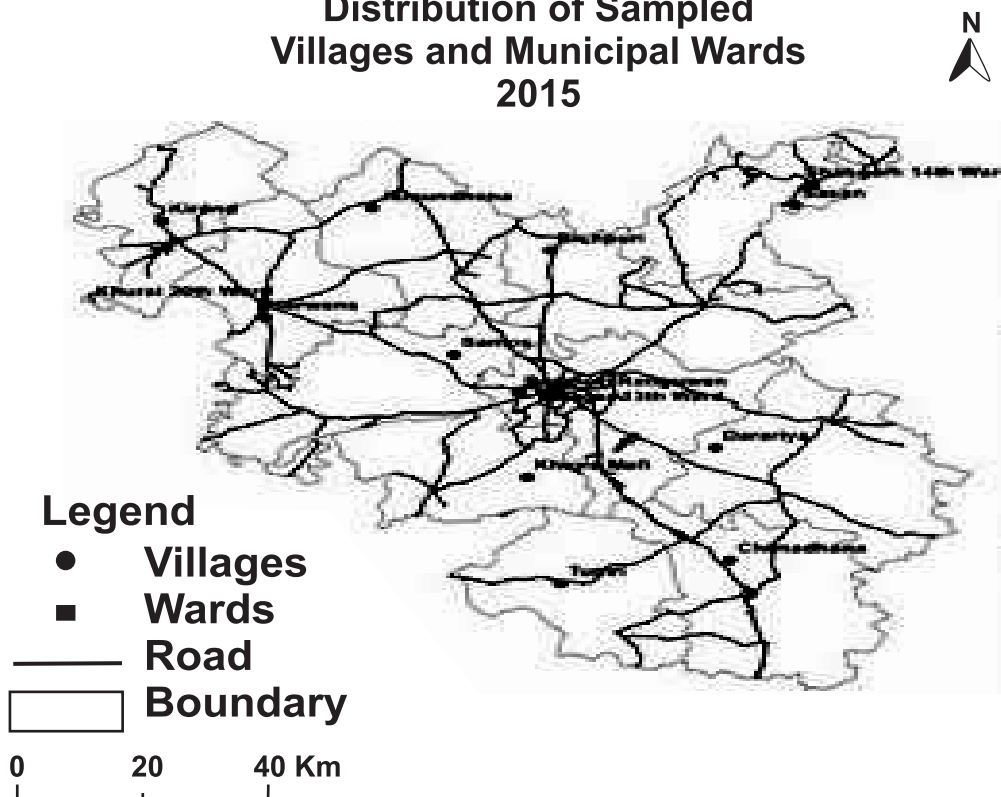
Source: Prepared by the corresponding/the First author

All the women respondent were asked whether they are able to take decision on their own or with the help of the other family members or does not have any role in decision-making process at the household level. ‘0’ score was assigned, if the woman is unable to take decision or have no role in family decisions; ‘1’ score is assigned when the woman takes decision with the help of other family members; and ‘2’ score when the woman has the sole responsibility to make the decision. After assigning the scores to individual responses, scores were summed up to make index of autonomy (see Table 1). The index ranging from 0 to 10; 0 stands for the least autonomy and the 10 for the highest autonomy. The women autonomy index has been divided into the three categories: (i) low (0-4), (ii) medium (5-7), and (iii) high (8 and above).

(c) Fertility measures: Fertility is measured by using the samples of currently married women in the reproductive age (15-49 years) and mean number of children ever born (MCEB). By using indirect method, total fertility rate is calculated from Census of India, 2011 (see Moultrie and Zaba, 2013). Regression analysis has been used to determine the relation between mean children ever born and the other factors.

**Sagar District
Distribution of Sampled
Villages and Municipal Wards
2015**

Fig. 1



Result and discussion

Occupational structure, which depends on the education, natural resources and vocational and industrial skills of population living in the area, speaks of demographic and socio-economic dynamism of an area. A higher occupational status of woman increases her autonomy, impinging upon fertility behaviour. The nature of occupation determines the family income and also women autonomy. In the following, TFR rates of women falling in the reproductive age-group have been presented in accordance the economic activities they are working in. TFR rate of women workers of the reproductive age-group in Sagar district has been compared with India and Madhya Pradesh (see Table 2).

Table 2: Total Fertility Rate (TFR) of women workers in reproductive age-group by farm and non-farm activities: Sagar district in comparison to India and Madhya Pradesh, 2011

Country/State/ District	Total Fertility Rate (2011)			
	Main Workers			Non-Workers
	Farm Workers	Non-farm Workers	Average	
India	2.95	2.16	2.74	3.03
Madhya Pradesh	3.61	2.67	3.47	3.31
Sagar District	3.81	3.28	3.87	3.62

Source: Calculated by the authors from Census of India (2011).

In India, TFR rate of non-working women is higher than those in the working women. The average, TFR rate for non-working women was 3.03 against 2.74 for the working women (Table 2). Within the female (main) workers, farm workers have a higher TFR rate than non-farm workers: 2.95 for the former and 2.16 for the latter. With a few exceptions, non-farm employment requires formal and better educational attainments and awareness and receives relatively higher wages than those working in the farm sector.

However, it is quite perplexing to note that female non-workers in Madhya Pradesh and Sagar district both have marginally lower TFR rate than the female (main) workers. However, the farm female workers registered higher TFR than non-farm workers in both the cases.

For having somewhat better understanding on this count, we classified the respondents on whom we collected data through the fieldwork into the six categories according to the nature of activity i.e. agriculture labour, household activities, cultivation, non-farm employment, regular/salaried work and other activities.

As stated earlier, Sagar district is a relatively backward district of Madhya Pradesh. Traditional social norms are still prevailing, especially in the countryside. Consequently, a majority of female population in the reproductive age-group stay back at the home engaged in domestic activities as housewives. Of course, some of the respondent females in the rural areas reported them as agricultural workers, mostly coming from low income lower caste households. Women agricultural workers earn low wages against those working as the regular salaried workers (Table 3).

As evident from Table 3, four-fifths or 561 of the total 698 rural female respondents were doing household activities, not considered economically gainful activities by the Census of India. Only a small proportion of less than 15.0 per cent was engaged in non-farm activities including household industry, construction work, and services. Only a marginal

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share, nine of total 698 women, was employed as regular/salaried workers. Of the remaining, 20 or less than 3.0 per cent were in the farm sector as agricultural labourers or cultivators. Obviously, economic status of women in the rural Sagar District was quite low.

Table 3: Rural Sagar: Classification of women respondents according to nature of work performed

Age Group	AL	HA	CUL	NAW	RSW	Others	Total
15-19	0	63	1	9	0	0	73
20-24	4	137	2	12	1	2	158
25-29	5	124	2	17	3	1	152
30-34	3	95	0	21	2	4	125
35-39	0	67	3	14	0	3	87
40-44	0	47	0	13	0	0	60
45-49	0	28	0	8	3	4	43
Total (15-49)	12	561	8	94	9	14	698

Source: Calculations based on data/information collected by the authors during field survey, 2015-16

Note: AL- Agriculture Labourer; HA-Household Activities; CUL-Cultivator; NAW-Non-agricultural Workers; R/WE- Regular Salaried Workers; Others-Remaining Workers

Quite surprisingly, the situation in urban areas also is not encouraging. Of the 202 samples picked up from three municipal wards of three towns in Sagar district, 175 or nearly 87.0 per cent of the women in the reproductive age-group were doing household activities without earning from the outside home. Of the remaining, only five women were engaged as regular salaried worker. Only nineteen or less than one-tenth were engaged in non-farm activities including construction activities, trade and manufacturing activities (Table 4). However, urban women workers in non-farm activities earn better wages and social status than their rural counterparts.

Table 4: Urban Sagar: Classification of women respondents according to nature of work performed

Age Group	HA	NAW	RSW	Others	Total
15-19	19	0	0	0	19
20-24	33	0	0	0	33
25-29	38	1	0	1	40
30-34	25	7	3	1	36
35-39	25	6	2	1	34
40-44	20	2	0	0	22
45-49	15	3	0	0	18
Total (15-49)	175	19	5	3	202

Source: Calculations based on data/information collected by the authors during field survey, 2015-16

Note: AL- Agriculture Labourer; HA-Household Activities; CUL-Cultivator; NAW-Non-agricultural Workers; R/WE- Regular Salaried Workers; Others-Remaining Workers

A cross examination between TFR rate and the activities/occupations the women of reproductive age-group in Sagar district is quite revealing. Regular salaried women worker have the lowest TFR among all the reproductive age-group women in the district followed by those engaged in household activities as housewives (Table 5). Against this, women engaged in 'other' activities like construction, small trade, and other commercial activities etc., followed by those in non-farm activities including manufacturing, and cottage and household

industry. Female cultivators and agricultural labourers, through very small in number fall in between these two groups. Housewives in Sagar district have a relative low TFR, even lower than the women engaged in non-farm occupations. It is, in fact, quite interesting to note and need further explanation. During the fieldwork it was noted that a majority of surveyed women, who stay at home and keeping busy with household chores belong to economically well-off, educated and well aware households, where the husbands are either engaged in well paid salaried jobs or doing business. Hence, there is no economic compulsion on married women to work outside the home in a society where the feudalistic social traditions still prevails.

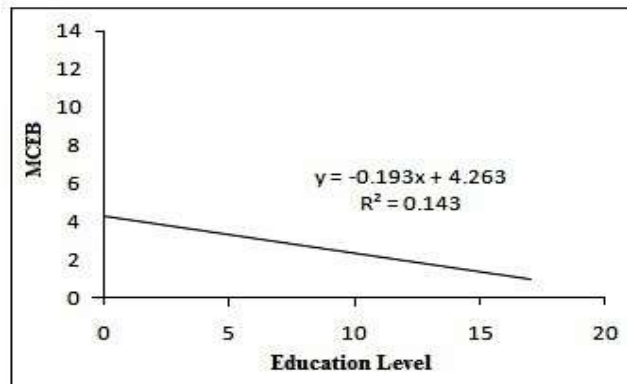
Table 5: Sagar District: TFR by nature of occupation/work activity of women respondents

	AL	HA	CUL	NAW	RSW	Others	Total
Total	3.75	3.12	4.25	4.51	2.43	5.00	3.36
Rural	3.75	3.24	4.25	4.57	2.67	4.86	3.48
Urban	0.00	2.78	0.00	4.21	2.00	5.67	2.94

Source: Calculated by authors from data collected through field work, 2015-16

Note: No agricultural labour or Cultivator women worker was reported in the urban areas.

Fig 2: Relationship of Female Education and Fertility in Sagar District



Source: Based on Field Survey conducted the authors during 2015-16

This is confirmed by a strong positive association ($r^2=0.86$) between the income level of the women respondents and their education level in the Sagar district. The same is further supported in Fig 2, showing a linear relationship between education and fertility of women respondents. As the level of female education increases, the number of children ever born (MCEB) decreases.

The higher level of financial resources helps in timely accessing the reproductive health services as well as to purchase the contraceptive, needed to protect the unwanted child. Reproductive health services accessibility and nutritional accessibility reduces the infant mortality rate, an outcome of higher occupational status and economic prosperity.

A cross tabulation of data on infant mortality and child ever born, collected from the fieldwork concluded during 2015-16, reveals a positive relationship in between the two. In the study area, infant mortality can be controlled by about 33.0 per cent of child ever born (Table 6). Higher the infant mortality rate, higher is the number of child ever born. This is

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controlled by the thinking that death replacement has to be fulfilled by the increase in family size (Som and Mishra, 2019). Sagar is among the districts of Madhya Pradesh, which have very high infant mortality rate (Som and Mishra, 2016).

Table 6: Relationship of Infant Mortality and Mean Children Ever Born

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	2.19008	0.05128	42.71	<2e-16 ***
Infant Mortality	1.37389	0.06560	20.95	<2e-16 ***
Signif. Codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
DF: 898, Multiple R-squared: 0.3282, Adjusted R-squared 0.3274, p-value: < 2.2e-16				

Source: Calculated by Authors from the data collected from the field survey, 2015-16

Women Autonomy in Sagar District

On the basis of the data collected on 900 women respondents, an index of women autonomy was calculated. Index value ranging between 0 and 10, 0 for the least and the 10 for the highest autonomy in decision-making, was sub-divided into the three categories: (i) low (0-4), (ii) medium (5-7), and (iii) high (8 and above).

Autonomy Level	Index Value	No. of respondents	% to total respondents
High	8 & Above	95	10.6
Moderate	5-7	271	30.1
Low	0-4	534	59.3

The dominant majority of women respondents have the low level of autonomy in decision-making process in their households. 534 or 59.3 per cent of total 900 women interviewed had the low level of autonomy to make decisions of their own. Against this, only 95 or about one of each ten respondents had high level of autonomy in decision-making. The remaining less than one-third or three of each ten women had moderate level of autonomy in decision-making (see Table 7a). This kind of situation is a clear indication of the fact that low level of women autonomy in family decision-making including bearing or non-bearing a child has been positively contributing to high female fertility rate in the district. Of course, there were wide urban-rural and inter-development block differentials on this count. Such differentials were having their role in differentiating TFR between urban and rural areas on the one hand and within rural areas, on the other hand.

Women Autonomy Level	Name of Development Block/ Municipal Ward
Low	Rahatgrah (3.42), Shahgarh (3.02), Banda (3.28), Kesli (3.14), Jasinagar (3.82), Malthone (3.03) TOTAL= 6
Moderate	Rehili (6.45), Deori (6.17), Bina (6.94), Khurai (6.96), Shahgarh NP Ward 14 (5.21), Khurai MC Ward 20 (6.28) TOTAL=6
High	Sagar (8.12), Sagar M. Corp. Ward 13 (8.54), TOTAL= 2

Note: Figures in the parentheses indicate to Women Autonomy Index (WAI) value

Among development blocks, women autonomy level value ranged from a low of 3.42 in Rahatgarh to a high of 8.12 in Sagar Development block. In case of municipal wards, it ranged from a low of 5.12 in Ward No.14 of Shahgarh Nagar Panchayat to a high of 8.54 in Ward 13 of Sagar Municipal Corporation. On the whole, six of the eleven blocks have low level of female autonomy, another four blocks and the two urban local bodies (Shahgarh Nagar Panchayat) and Khurai Municipal Council have moderate level, and remaining one development block (Sagar) and Sagar Municipal Corporation have high level of female autonomy (See Table 7b). As we move away from Sagar City towards the peripheral areas of the district, the level of female autonomy keep on declining.

Women autonomy and fertility rates

Like women autonomy level, mean number of children born (MCEB) per woman differ widely among development blocks and the municipal areas in the district. Among the development blocks, MCEB per woman varied from a low of 2.87 or less than three in Khurai development block to a high of more than four (or 4.37) in Shahgarh development block. Among the urban areas, it varied from a low of 2.55 in Sagar Municipal Corporation to a high of 3.56 in Shahgarh Nagar Panchayat (Table 8a). As expected, in general rural areas in Sagar district recorded higher MCEB per woman in comparison to urban areas. Secondly, rural and urban MCEB per woman in development blocks finds a close association with each other. In other words, if MCEB per woman is high in rural areas of a development block, the same is true for its urban areas.

On the whole, seven of the eleven development blocks and two of three urban local bodies in the district recorded moderate level of MCEB per woman. Against this, only one block and one urban local body registered low level of MCEB per women. The remaining, four developments of Shahgarh, Banda, Kesli and Malthone have high level of MCEB per woman in the district (Table 8a).

Mean Children Ever Born (MCEB) Level	Name of Development Block/ Municipal Ward
Low	Khurai (2.87), Sagar M. Corp. Ward 13 (2.55) TOTAL= 2
Moderate	Rahatgrah (3.50), Rehili (3.42), Deori (3.25), Bina (3.06), Sagar (3.17), Khurai MC Ward 20 (3.28), Shahgarh NP Ward 14 (3.56), Jasinagar (3.60) TOTAL= 8
High	Shahgarh (4.37), Banda (4.20), Kesli (4.18), Malthone (4.35), TOTAL=4

Note: Figures in the parentheses indicate to Mean Children Ever Born (MCEB) Index value

Level of Women Autonomy	Mean number of Child Ever Born (MCEB) per women (Fertility rate)
Low	3.87
Medium	3.47
High	2.69

Source: Calculated from the data collected by the authors through field survey, 2015-16

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Association between woman autonomy and MCEB per woman is quite revealing. Both find an inversely relationship with each other in the study area. Higher women autonomy lower is the female fertility rate. If the level of women autonomy is low, the mean number of children even born (MCEB) per woman in the fertility age-group is nearly four (or 3.87). Against this, if the female autonomy level is high the mean number of children even born (MCEB) per woman in the fertility age-group is less than three (or 2.69). The medium female autonomy level was linked with 3.7 mean children ever born per woman (Table 8b).

Spatial Association between woman autonomy and fertility

Here an attempt has been made to find out the spatial correspondence between woman autonomy and female fertility. Development blocks and the urban areas having index values high than the average in woman autonomy index (WAI) as well as in mean number of children ever born (MCEB) has been assigned the high level and those below the average the low level. This is to understand the nature of association between the two at the spatial level.

Table 9: Association between levels of women autonomy and mean children ever born (MCEB) to them, 2015-2016	
<i>Level of WAI/MCEB</i>	<i>Name of Block/Ward</i>
High-High	Rehili TOTAL=1
High-Low	Deori, Bina, Khurai, Sagar, Sagar M. Corp. (Ward No. 13), Khurai MC (Ward No.20) TOTAL=6
Low-High	Rahatgarh, Shahgarh, Banda, Kesli, Jasinagar, Malthone, Shahgarh NP (Ward No.14) TOTAL=7
Low-Low	- Nil-

Note: For this table, development blocks and Municipal Wards falling above the average for WAI and MCEB have been taken high and vice versa.

It is interesting to note that four development blocks, namely Deori, Bina, Khurai, and Sagar and two urban areas of Sagar Municipal Corp. (Ward No. 13), and Khuria MC (Ward No.20) where woman autonomy is high the mean number of children born per woman is low. In other words, higher the level of woman autonomy in a development block or municipal ward lower is the level female fertility in Sagar district.

On the other side of the scale, in six development blocks, namely Rahatgarh, Shahgarh, Banda, Kesli, Jasinagar and Malthone along with one urban area of Shahgarh Nagar Panchayat (Ward No.14), where woman autonomy is low, mean number of children ever born (MCEB) is high. In other words, lower the level female autonomy in a development block or municipal area higher is the level of female fertility. There is only one development block of Rehili, where in spite of high level of autonomy the female fertility level is high. In this way, 10 of the 11 development blocks, representing the rural areas, and the two of the three municipal wards, representing the urban areas in Sagar district, confirm that woman autonomy in decision-making has a vital role to play in their fertility behaviour.

Conclusions

Given the traditional social background of the study areas, the status of women, in general, is quite low in both the rural and urban areas of Sagar district. More than four-fifths of total 900 women covered in the study were engaged in household chores, staying at home. However, the educational level and the household income level of the non-working women

was relatively good. Their husbands were having either a good job, public or private, or engaged in business. This is why non-working women in the reproductive age-group, on an average, had lesser number of children ever born (MCEB) per woman than the working women of this age-group. However, among working women those engaged in farm sector were having larger MCEB per woman than those working in non-farm sector.

There were, however, wide urban-rural and intra-regional differentials in woman autonomy in decision-making and MCEB per woman. The status women and the MCEB per woman was relatively low in urban areas in comparison to their rural counterparts. The presence of Sagar City, the largest town in the district also acting as the district headquarters, registered an important role spread of modernization process in the district. Areas in the close proximity to Sagar City displayed higher level of woman autonomy than those located in peripheral areas to it. In general, as one moves away from the Sagar City, the level of woman autonomy keep on declining and MCEB per women increasing.

In sum, the findings of the study confirm that woman autonomy in decision-making has a vital role to play in controlling their fertility behaviour. The study based on a sample of 900 women in the reproductive age-group selected through stratified sampling techniques and data collected from through the primary survey in 11 development blocks and three urban local bodies of Sagar district in Madhya Pradesh reveals a high degree of correspondence between woman autonomy and mean number of children ever born per woman. The findings of the study have strong policy implications. The policy-makers must focus on measures relating to enhancing the woman autonomy in decision-making if the aim is to control the female fertility rate among the women falling in reproductive age-group.

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CHANGING AGE-SEX STRUCTURE AND POPULATION AGEING IN UTTAR PRADESH

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Abstract: *The study examines the changing age-sex structure of population in Uttar Pradesh during 1971-2011 to understand the growth of elderly population and its demographic and socio-economic implications. Making district as a unit of data analysis, the study picks up data from decennial population census reports published by the Census of India. For analysing the changing elderly population demography at the district level by residence and time, the study calculated indices such as old age dependency ratio, potential support ratio and ageing index. Findings of the study suggest that the proportional share of elderly population in Uttar Pradesh has considerably increased during 1971-2011: from 6.8 per cent to 7.8 per cent. It is worth noting that, the population of 80 years and above age-group increased more than five-folds during this period. It emerges that old-age dependency ratio marginally declined from 13.0 per cent in 1971 to 12.0 per cent in 2011. There are wide inter-district differentials in change of age-structure and increase of share of elderly population in the state. While old age dependency ratio finds a broad association with socio-economic development in the state, proportional share of elderly population in total population at the district is controlled by a variety of factors.*

Keywords: Population Ageing, Demography, Age-Sex Structure, Potential Support Ratio, Ageing Index.

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Background

Population ageing, brought about by both declining fertility and prolonged longevity, is the process of rise in share of the elderly and a consequent decline in that of the young population, (Sagaza, 2004). The population in the world has passed through the remarkable phenomenon of demographic transition from high to low birth and death rates. For this transition, there has been a growth in the number and proportion of older persons. Such a rapid large and ubiquitous growth has never been seen in the history of civilization (Norman and Henderson, 2003). The share of aged population (60 years and more) in the world, which was 205 million (8.2 per cent) in 1950 rose to 606 million or 10.0 per cent by 2000, and is projected to reach about two billion persons or 32.0 per cent by 2050, making it equivalent to the total child population (0-14 years). Such a situation will be unprecedented one, wherein the size of the child and the elderly population in the world is going to be the same (United Nations, 2006). Definitely, such a situation is full of implications, needing attentions of the academics and policy-makers both at the different spatial scales.

In the light of the above statements, the present study attempts an examination of the salient demographic characteristics of population in an Indian state of Uttar Pradesh, which has not only the largest population size among all the Indian states but also known as mini-India for its vast physical and socio-economic diversity.

Research objective

The object of the study is to focus on discernible demographic, economic and social changes experienced by the elderly population during post-Independence period, using the secondary data available from the decennial census reports published from the Census of India for the five census decades from 1971 to 2011. An attempt has been made to analyze the changing demographic characteristics of the elderly population in the state in terms of the space (districts), time (1971-2011), residence (rural- urban), using age composition, dependency ratio, potential support ratio and ageing index as the analytical techniques.

Data sources and Methods

For accomplishing all this, the study uses data/information available from the decadal census reports of the five census decades: 1971 to 2011. For data analysis, appropriate cartographic techniques, such as choropleth maps, charts, and diagrams have been pressed into service. The category, ‘Age not stated’, in decennial Census reports has been smoothed to construct population pyramid for different census decades. Ageing index and dependency ratio has been computed. In addition, median age has also been computed to analyse the overtime changes taking place in the age structure.

Ageing index: Ageing index has been calculated as the number of persons in 60 and plus age-group per hundred persons of the total population in under 15 years age-group.

$$\text{Ageing index} = \frac{\text{No. of persons 60 years old or more}}{\text{No. of persons in the under age 15 group}} \times 100$$

Old age dependency ratio: The old age dependency ratio is the number of persons in 65 years and above age-group per one hundred persons in 15 to 64 years age-group.

$$\text{Old age dependency ratio} = \frac{\text{No. of persons 65 years and above}}{\text{No. of persons in 15 to 64 years age-group}} \times 100$$

Potential support ratio: The potential support ratio is the number of person 15 to 64 years age per every hundred persons aged 65 years or above.

$$\text{Potential Support Ratio} = \frac{\text{No. of persons 15 to 64 years age}}{\text{No. of persons 65 years and above}} \times 100$$

RESULTS AND DISCUSSIONS

A. Changing age-sex structure of population in Uttar Pradesh

Classification of total population of Uttar Pradesh into the three major age-groups, (i.e. age in years 0-14, 15-59, 60 and above), presented in tables 1 and 2 for 1971 and 2011 decades, is quite revealing. The proportion of population in the 0-14 years age-group has dropped sharply, with simultaneous increase in the proportion of population in the working (15-59 Years) and older age-group (60 years and above) during 1971-2011. The share of the former

age-group, which was 41.8 per cent in 1971, dropped to about 41.0 per cent in 2001 and further to around 36.0 per cent in 2011. The same trend is visible in rural and urban areas, separately. However, the share of 0-14 age-group dropped more sharply in urban areas than the rural areas. In rural areas, the share of 0-14 age-group dropped only by 4.6 per cent: 42.0 per cent in 1971 to 37.4 per cent in 2011. Against this, the share of this group of population in urban areas dropped by 10.2 per cent: 41.1 per cent in 1971 to 30.9 per cent in 2011.

On the other side, the proportional share of elderly population (60 years and above) was about 6.8 per cent in 1971, increased to 7.0 per cent in 2001 and then to 7.8 per cent in 2011, as per the SRS Statistical Report. Separately for rural and urban areas, these shares in 1971 were 7.0 per cent and 5.5 per cent, respectively, increasing to 8.1 per cent and 6.8 per cent, respectively by 2011. However, the gender differences in age-group change between 1971 and 2011 were negligible. In the age-group of 0-14 years, the share of male population was 42.1 per cent, against 41.6 per cent for females in 1971. These shares changed to 36.3 per cent and 35.7 per cent, respectively by 2011. Similarly, for 60 and above age-group, percentage share for male population was 7.0 per cent in 1971, increased to 7.8 per cent in 2011, for female population these shares were 6.5 per cent and 7.8 per cent, respectively. The respective shares of male and female populations in the 60 and above age-group remaining the same in 2011 (7.8 per cent and 7.8 per cent), but female population increased by 1.3 per cent against 0.8 per cent for male population during 1971-2011. Evidently, female population share in old age-group grew faster than that of the male population during this period. A higher proportion of males and females in the working age group (15-59 years) live in urban areas as compared to rural areas.

Briefly, there has been a rapid increase in the share of elderly population in Uttar Pradesh during 1971-2011. This has happened for male and female population both. The share of elderly population in case of females has increased relatively faster in comparison to males. This is not only full of policy implications but also requires in-depth academic and professional scrutiny so as to plan things well in advance.

Table 1: Percentage distribution of Population by broad age groups by sex and residence, Uttar Pradesh, 1971

Residence	Sex	0-14	15-59	60+
Total	Total	41.8	51.4	6.8
	Male	42.1	50.9	7.0
	Female	41.6	51.9	6.5
Rural	Total	42.0	51.0	7.0
	Male	42.5	50.2	7.3
	Female	41.3	52.0	6.7
Urban	Total	41.1	53.4	5.5
	Male	39.3	55.1	5.6
	Female	43.3	51.4	5.3

Source: Computed from Census of India (1971). *Population by Single-Year Age Groups and Sex-Table-C4*, Registrar General and Census Commissioner, New Delhi.

Table 2: Percentage distribution of Population by broad age groups by sex and residence, Uttar Pradesh, 2011

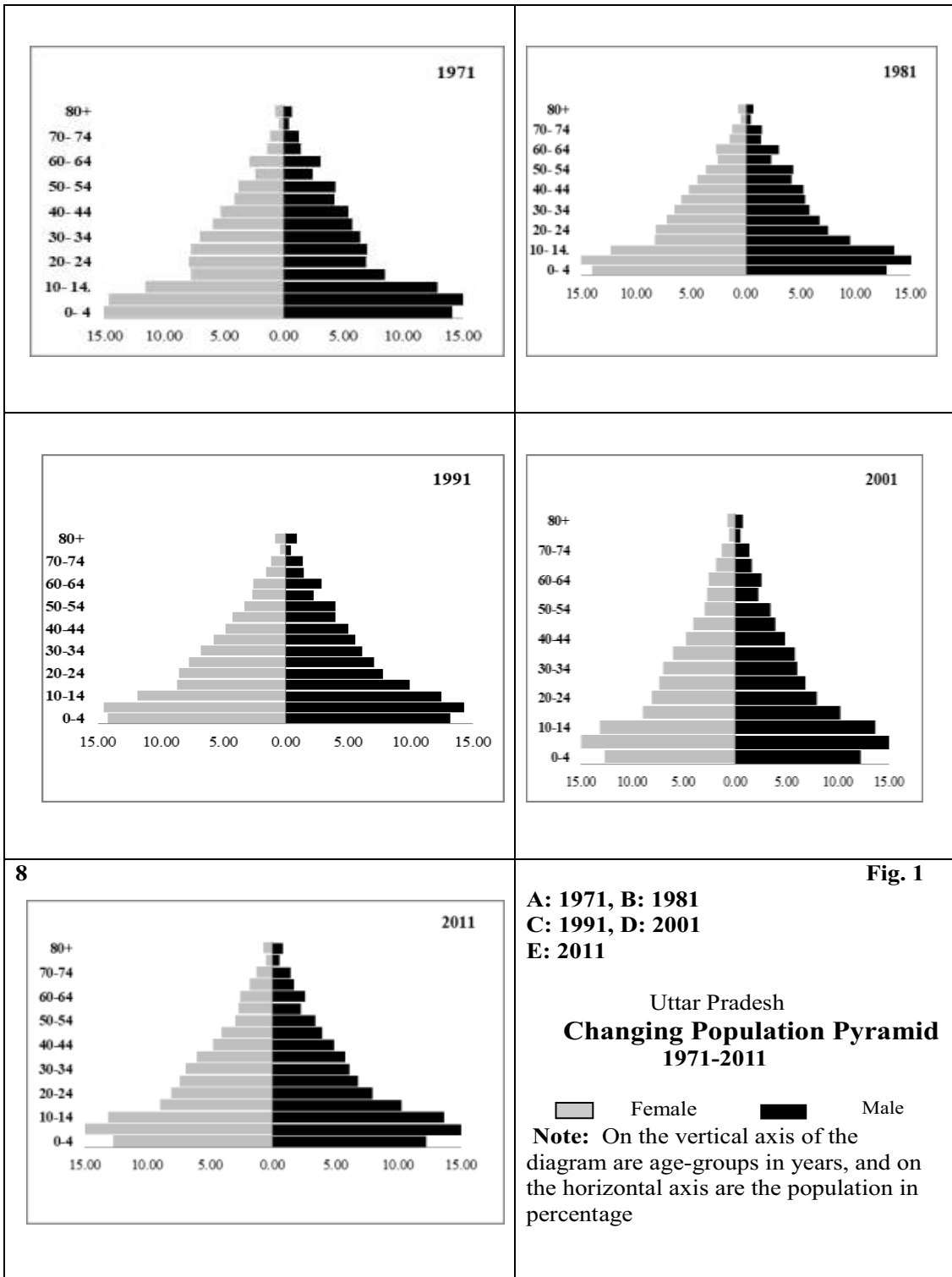
Residence	Sex	0-14	15-59	60+
Total	Total	36.0	56.2	7.8
	Male	36.2	56.0	7.8
	Female	35.7	56.5	7.8
Rural	Total	37.4	54.5	8.1
	Male	37.8	54.2	8.0
	Female	37.1	54.8	8.1
Urban	Total	30.9	62.3	6.8
	Male	31.2	62.1	6.7
	Female	30.6	62.5	6.9

Source: Source: Computed from Census of India (2011). *Population by Single-Year Age Groups and Sex-Table-C4*, Registrar General and Census Commissioner, New Delhi.

In the following, an attempt has been made to depict changing age-sex composition of population in Uttar Pradesh with the help of age-sex pyramid. With each census decade, population share in age-groups of 0-4 and 5-9 is declining with subsequent increase in the shares upper and middle age-groups. The share of the former age-group, which made 14.7 in 1971, came down to 10.2 in 2011, and of the latter age-group from about 15.0 per cent to about 13.0 per cent during the same period. This implies that population in working age-group as well as in the old age-group is gradually increasing with each census decade. Population ageing will, on the one hand, require creation of health and other kind of infrastructure for the elderly persons, and the growth of population in the working age-group the recreation of the new jobs and skill development facilities.

Population Ageing in Uttar Pradesh: Responsible Factors

The changes in the age-structure of the economically less developed states of India, leading to the population ageing, are primarily due to the long term downward trend in the birth rates. Secondly, there has been a substantial improvement in the life expectancy. This is particularly due to the reduction in child mortality, reflecting the improvement in public health and medical facilities- preventing several fatal infectious diseases during the childhood. Since mortality level of the economically developed states was already low and life expectancy at birth was very high, further improvement in mortality condition in these states affected the older age-groups, leading further population ageing. On the other hand, the age structure of the developing states has remained virtually unchanged because birth rates have remained more or less at high levels, though death rates have been declining since the 1950s. These developing states have also started experiencing a fall in their birth rates since the last two to three decades. The relatively faster decline in birth rates as compared to the death rates in less developed states like Uttar Pradesh is a recent phenomenon.



40 Changing Age-Sex Structure and Population Ageing in Uttar Pradesh

Fertility decline has been the primary determinant of population ageing (United Nations, 2002). Table 3 depicts the crude birth rate and total fertility by residence in Uttar Pradesh. Total fertility rate (TFR) declined from 6.6 per cent in 1971 to 3.3 per cent in 2011. It has declined further, 3.1 per cent in 2018. There are, of course, rural-urban differences in TFR. Rural rate is higher than the urban for all the years.

Crude death rate (CDR) combined with crude birth rate (CBR) determines population growth rate. CDR is the number of deaths in a year/1000 persons in the mid-year. It registered a decline from 20.1 deaths/1000 persons in 1971 to 7.7 deaths/1000 persons in 2011. The maximum decline in CDR was observed first during 1971-80. A comparison of CDR between rural and urban areas reveals that though the CDR declined in both rural and urban areas, but differently. The CDR decline was higher in rural areas as compared to the urban. Control on famines, better management of natural disasters, improvement in medical facilities and public health and sanitation facilities have resulted in decline of widespread deaths due to epidemics like cholera, and tuberculosis. In addition, spread of education and immunization programmes helped in bring down CDR in the state of Uttar Pradesh.

Table 3: Birth Rate, Death Rate, and Total Fertility rate by Place of Residence

Year	Crude Birth rate			Crude Death rate			Total fertility rate		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
1971	44.9	46.3	34.7	20.1	21.1	13.1	6.6	6.9	4.9
1975	43.1	44.5	33.9	22.6	23.7	14.8	6.6	6.9	4.8
1981	39.6	40.8	31.5	16.3	17.3	9.9	5.8	6.1	4.1
1985	37.6	39.0	31.6	15.8	17.2	9.6	5.6	5.9	4.2
1991	35.7	37.2	29.0	11.3	12.0	8.3	5.1	5.4	3.7
1995	34.8	36.0	28.8	10.3	10.8	8.3	5.0	5.2	3.9
2001*	32.1	33.2	27.0	10.1	10.6	7.8	4.5	4.8	3.4
2005*	30.4	31.3	26.5	8.7	9.1	6.8	4.2	4.5	3.3
2013*	27.2	28.1	23.3	7.7	8.1	5.9	3.1	3.3	2.5

Source: Census of India (2001). *SRS Statistical Report*. Census Commissioner and Registrar General, Govt. of India, New Delhi.

* Projected figures

Elderly Population in Uttar Pradesh: Trends and Pattern

a) Trends during 1971-2026

In table 4, the changing percentage shares of the elderly population (aged 60 years and above) in India, as a whole, and Uttar Pradesh during 1971- 2016 have been presented. It is to be noted that the share of the elderly population in India has gradually increased from 6.0 per cent to 8.6 per cent during 1971-2011, registering an increase of 2.6 per cent points. During the same period, the share of the elderly population in Uttar Pradesh increased from 6.8 per cent to 7.8 per cent, registering an increase of 1.8 per cent points. Evidently, there has been a faster increase in the share of elderly population in India, as a whole, in comparison to Uttar Pradesh. The same is reflected in the case of projected population of the elderly population for India and the state. For the country as a whole, the share of elderly population is projected to reach 12.4 per cent by 2026, against only 9.8 per cent for Uttar Pradesh. Evidently, the share of elderly population is not only higher but also growing faster than in the country, as a

whole, in comparison to Uttar Pradesh. However, it is true that the share of elderly population has steadily increased in India, as a whole and Uttar Pradesh both.

Year	India	Uttar Pradesh	Year	India	Uttar Pradesh
1971	6.0	6.8	2011	8.6	7.8
1981	6.3	6.5	2016*	9.3	8.2
1991	6.6	6.6	2021*	10.7	8.7
2001	6.9	6.8	2026*	12.4	9.8
2006	7.5	7.2	Elderly population figures are in percentage * Projected figures		

b) Inter-district differentials in share of elderly population, 2011

There are, of course, wide inter-district variations in percentage share of elderly population in Uttar Pradesh. Among the 71 districts in the state at the time of 2011, the percentage share of elderly population in total ranged from a high of 9.5 per cent in Hamirpur district of southern zone adjoining Madhya Pradesh to a low of only 5.9 per cent in Moradabad districts located in the northern upper part of the state. On the whole, less than one-half or 34 of the 71 districts in the state had this share equal to or less than the state average, while the remaining majority or 37 districts had higher than the average. The state average share being 7.8 per cent, on the basis of elderly population share in the total population, the districts have been grouped into the three categories: **High** (share of elderly population being more than 9.0 per cent); **Moderate** (share between 7.0 and 8.99 per cent); and **Low** (share less than 7.0 per cent).

In ten or 14.0 per cent of the districts in the state, the share of elderly population was high. Majority or six of the ten such districts, namely Jaunpur, Ghazipur, Deoria, Sultanpur, Ambedkar Nagar, and Ballia were located in the eastern zone. Of the remaining four districts, the three namely Jalaun, Mohaba, and Hamirpur were in the southern zone, a part of traditional cultural region of Bundelkhand- falling in the category of economically backward districts in the state. The remaining one district of Kapur Dehat (rural) was located in the Central zone, a transitional zone between the northern and eastern zones.

On the other side of the scale, in thirteen or less than one-fifth of total districts the share of elderly population was low. With the exception of one district of Sonbhadra, all other districts of the category were located in the Northern Upper part of the state. These districts included Moradabad, Rampur, Ghaziabad, Gautam Budh Nagar, Agra, Bareilly, Budaun, and Jyotiba Phule Nagar (Amroha). All these districts fall in the category of relatively more developed districts in the state. For details, see Appendix-I.

Remaining forty-eight or more than two-thirds of the total districts have moderate share of elderly population. The majority of such districts were located in the Central and Eastern zones, having low to moderate level of socio-economic development. A group of such districts was also located in the North Upper part of the state, having relatively high level of socio-economic development.

42 Changing Age-Sex Structure and Population Ageing in Uttar Pradesh

Briefly, the distributional pattern of the share elderly population in Uttar Pradesh does not find a strong association with the level of socio-economic development in the state. Districts having relatively low level of socio-economic development have been found having high share of elderly population and vice versa, requiring a further in-depth analysis of the nature of association between the two.

c) Changing elderly-young ratio, 1971-2011

Population ageing index has been calculated to find out the changing ratio between the ageing population and the young population the state. The ageing index, calculated as the ratio between the number of elderly persons (60 year and above) and the number of young persons from (0 to 14), is highly revealing. As revealed in increasing index value from 1971 to 2011, the ratio of elderly population to the young population is increasing steadily in the state. While the ageing index value made 16.2 per cent in 1971, it rose to 21.7 per cent by 2011, registering an increase of 5.5 per cent points during 1971-2011 (Table 5). Notably, there has been a quantum jump during the recent census decade (2001-2011), when it increased to 21.7 per cent from 17.2 per cent in 2001. Earlier, there has been a slow increase in the index value. In other words, the share of elderly population in the state is increasing in relation to young population, an indication of increasing economic burden on young population- the future working age-group population, especially during the recent decade. This increase has been noticed both in case of male and female population, but with a differential. The change remaining slow for the female population in comparison to males during 1971-2001, the index value rose faster in case of females than the males during 2001-2011.

Census Year	Total	Male	Female	Census Year	Total	Male	Female
1971	16.2	16.6	15.7	2001	17.2	17.2	17.1
1981	16.4	16.9	15.9	2011	21.7	21.4	22.0
1991	17.0	18.0	15.9	Figures are in percentage			

Source: Computed from Census of India. *Population by Five-Year Age Groups and Sex: Tables C4 & C6*, for 1971, 1981, 1991, 2001 and 2011, Registrar General and Census Commissioner of India, New Delhi.

d) Inter-district differentials in ageing index

Ageing index value differs widely among districts in the state. The index value ranged from a high of 31.1 per cent in Kanpur Nagar to a low of only 15.4 per cent in Moradabad district, differing by more than twice. In other words, while there were more than three old aged persons after each ten children (age below 15 years) in Kapur Nagar district, this ratio was only three behind each twenty children in Moradabad district. Evidently in coming time there will be higher burden of elderly population on the forthcoming working age-group in the former district and vice versa. The state average being 21.7 per cent in 2011, districts have been classified into the three categories: (i) **High** (index value more than 25.0 per cent); (ii) **Moderate** (index value between 20.0 and 25.0 per cent); and (iii) **Low** (index value less than 20.0 per cent).

Twenty-four or one-third districts in the state have low ageing index value. In other words, the burden of aged population on the forthcoming working force in all such districts was low. A majority of such districts was located in the Northern Upper part of the state.

Some of the important districts included in this category are Agra, Ghaziabad, Gautam Budh Nagar, Rampur, Bareilly, Aligarh and Saharanpur (see Appendix-I).

Against this, 15 districts, making one-fifth in total districts of the state, registered high ageing index value. In other words, there has been a higher burden of aged population on the forthcoming working population in such districts. The dominant majority of such districts were located either in the Eastern or Southern parts of the state. These included Unnao, Jaunpur, Pratapgarh, Deoria, Sultanpur, Ballia, and Ambedkar Nagar in the Eastern part, and Jhansi, Hamirpur, Jalaun, and Mohaba in the Eastern part.

In remaining thirty-two or more than two-fifths of the districts ageing index value was of moderate level. Geographically these districts were distributed in all parts of the state. However, the majority of the districts belonged to the Eastern and the Central parts of the state.

Briefly, the ratio between elderly population and the child population find its broad association with the level of socio-economic development in the state. Districts having relatively higher level of socio-economic development displayed low level ageing index value and vice versa.

Old-Age Dependency in Uttar Pradesh: Trends and Pattern

a) Trends during 1971-2026

The old-age dependency ratio, which stands for the ratio between the older-aged population (60 years old and above) and working aged-group population (15-59 years), has been calculated to understand the burden or dependency of the old aged population on the working population in the state. It is usually interpreted as the proportion of dependent elderly population per 100 working age population, suggesting the extent of economic burden on the working group of the elderly population. It is interesting to note that old age population dependency ratio, which was higher in Uttar Pradesh (13.3 per cent) than the national average (11.5 per cent) in 1971, gradually gave way to the national average to overtake the state average by 2001. While there has been a marginal increase in the case of national average between 1991 and 2001, the average for Uttar Pradesh declined sharply during the same period. Thereafter, the national average remained not only higher than that of Uttar Pradesh but also grew much faster than the state average. During the projected period, the increase in dependency ratio for the country as a whole kept on growing faster than that of the Uttar Pradesh. The gap between the two averages, the national and the state, has been projected to increase by more than 3.0 per cent points in 2026 (See Table 6).

Briefly, old age dependency is increasing over the period and also projected to increase further both in Uttar Pradesh and the country, as a whole. However, old age dependency ratio is growing faster for the country as a whole than Uttar Pradesh. This indicates that old age dependency, which is growing relatively fast in more urban-industrial and demographically developed states like Kerala, Goa, Gujarat, and a number of union territories is contributing significantly to speed up old age dependency ratio at the national level in comparison to socio-economically and demographically less developed state of Uttar Pradesh.

Table 6: A comparative picture of old-age dependency ratio (in per cent) between India and Uttar Pradesh, 1971 to 2026

Year	India	Uttar Pradesh	Year	India	Uttar Pradesh
1971	11.5	13.3	2011	13.2	12.2
1981	11.6	12.8	2016*	14.6	13.1
1991	11.8	12.6	2021*	16.7	14.4
2001	11.9	11.5	2026*	19.2	16.0
2006	12.4	12.0	* Projected figures		

Source: Computed from Census of India: *Population by Five-year Age Groups and Sex: Table C*, for 1971,1981,1991,2001 and 2011. Registrar General and Census Commissioner of India, New Delhi.

b) Inter-district differentials in old age dependency ratio, 2011

There are, however, wide inter-district differentials in old age dependency ratio in the state. It varied from a low of 8.4 per cent in Rampur district, located in Northern Upper part of the state, to a high of 17.1 per cent in Mathura district, located in Northern Lower part. Interestingly, both the districts, which present the contrasting picture regarding old age dependency ratio are located in the Northern part of the state, which is considered relatively more developed part of the state. However, these two districts differ widely in literacy rate. The literacy rate of Rampur district was 53.3 per cent and that of Mathura it was 74.4 per cent. The average dependency ratio being 12.2 per cent for the state of Uttar Pradesh, the districts are divided into the three categories on the basis of old age dependency ratio: **High** (more 13.0 per cent); **Moderate** (11.0 to 13.0 per cent); and **Low** (less than 11.0 per cent).

The eighteen or one-fourth of the total 71 districts in the state had low old age dependency ratio. In other words, old aged population's burden on the working age group population in such districts of the state was low. These districts were distributed in all parts of the state. In some of the districts included in this category, such as Kapur Nagar (Urban), Agra, Saharanpur, and Jhansi, the degree of urbanization was relatively higher. Other districts included in this category are Pilibhit, Jyotiba Phule Nagar, Rampur, Muzaffarnagar, Farrukhabad, Sonbhadra, Kannauj, Lalitpur, Shahjahanpur, Sultanpur, Etah, Auraiya, Kanshiram Nagar, and Bahraich (See Appendix-I).

Against this, another eighteen or one-fourth districts in the state had high old age dependency ratio. These districts were also distributed in all parts of the state. However, a majority of such districts were located in the Central and Eastern parts of the state. Included in the this category are the districts of Baghpat, Pratapgarh, Budaun, Kaushambi, Mau, Hamirpur, Deoria, Azamgarh, Ambedkar Nagar, Unnao, Kushinagar, Ballia, Barabanki, Mohaba, Jaunpur, Ghazipur and Mathura. These districts differed widely in their socio-economic and demographic development.

Remaining thirty-five or one-half of the districts had moderate level of old age dependency ratio. These districts were distributed in all parts of the state. However, a large number of districts in this category belonged to the Central and the Eastern parts of the state. Some of the relatively more urbanized and developed districts, such as Ghaziabad, Meerut, Lucknow, Varanasi, Allahabad, Bareilly, Gorakhpur, and Gautam Budh Nagar also fall in this category. It seems that a variety of factors are responsible to increase or decrease the old age dependency ratio.

c) Inter-district differentials in potential support ratio

Potential support, referring to a ratio between 65 plus and 15-64 age-group population and calculated per hundred persons, differ widely across districts in the state. State average being 7.2 per cent or less than one person in the age-group of 65 plus age-group behind each ten persons in 15-64 years age group, ranged from a high of 10.1 per cent in Kanpur Nagar to a low of 5.9 per cent in Mohaba district. Evidently, inter-district differentials on this count were the lowest of all the four indices relating to elderly population examined here. On the whole, 42 or nearly three-fifths of the 71 districts has this ratio lower than or equal to the state average, and the remaining 28 or two-fifths of the districts displayed higher than the state average. More urbanized and developed districts have this ratio higher and vice versa. In other words, the more developed districts have a higher number of elderly persons to be supported by the 15-64 years age-group population against the less number of persons in less developed districts of the state.

Conclusions

The share of elderly population in Uttar Pradesh increased sharply during 1971-2011: from 6.8 per cent in 1971 to 7.8 per cent in 2011, and is projected to reach 9.8 per cent by 2026. This has happened for male and female population both, but the share of elderly female population increased relatively fast in comparison to males. It is worth noting that, population of oldest-old (80 years and above) increased more than five-folds during 1971-2011, suggesting that Uttar Pradesh is undergoing ageing of the older population. Another important finding relate to sex composition of the elderly population, suggesting that 'Feminization' of ageing population is underway in the state. Of course, there are wide inter-district differentials on this count. The districts in the eastern and central parts of the state have witnessed faster growth in share of sixty plus age cohorts than those in the northern part.

Old age dependency ratio differs widely among districts, varying from a low of 8.4 per cent in Rampur district, located in Northern Upper part, to a high of 17.1 per cent in Mathura district, in Northern Lower part. Interestingly, both districts, representing the contrasting picture regarding old age dependency ratio are located in the Northern part, considered relatively more developed part of the state. However, these two districts differ widely in literacy rate: Rampur district (53.3 per cent), Mathura district (74.4 per cent).

An important implication of the rise in elderly population share is the increased economic stress on working population. The rise in elderly population share not only entails economic compulsion for elderly households but also affect communities at large owing to increased expenditure on health care for elderly and low saving and investment rates.

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Appendix-I

A. Uttar Pradesh: Classification of districts according to their share of aged population to total population, 2011	
Share in %	Name of district
Low	Moradabad (5.9), Rampur (6.0), Ghaziabad (6.2), Gautam Budh Nagar (6.2), Agra (6.4), Bareilly (6.4), Budaun (6.4), Joytiba Phule Nagar (6.5), Bijnor (6.7), Saharanpur (6.8), Firozabad (6.8), Sonbhadra (6.9), Shahjahanpur (6.9) Total=13
Moderate	Meerut (7.0), Aligarh (7.1), Pilibhit (7.1), Kanshiram Nagar (7.1), Muzaffarnagar (7.2), Mathura(7.2), Farrukhabad (7.2), Shraswasti (7.3), Lalitpur (7.3), Kheri (7.3), Bahraich (7.4), Hathras (7.4) Balrampur (7.4), Bulandshahr (7.5), Etah (7.5), Allahabad(7.6), Sitapur (7.7), Gonda(7.7), Sant Ravi Das Nagar (7.7), Kaushambi (7.8), Maharajgang (7.8), Kannauj (7.8), Lucknow (7.9), Hardoi (8.0), Varanasi (8.0), Mirzapur (8.0), Kushinagar (8.1), Chitrakoot (8.1), Barabanki (8.2), Mainpuri (8.2), Basti (8.3), Chandausi (8.4), Auraiya (8.4), Baghpat (8.5), Kanpur Nagar(8.5), Gorakhpur (8.5), Mau (8.5), Jhansi (8.5), Unnao (8.6), Rae Bareli(8.6), Fatehpur (8.6), Siddharthnagar (8.6), Etawah (8.6), Faizabad (8.7), Sant Kabirnagar (8.7), Banda(8.7), Pratapgarh (8.9), Azamgarh (8.9) Total=48
High	Ghazipur (9.0), Kanpur Dehat (9.1), Deoria (9.1), Sultanpur (9.1), Ballia (9.1), Jaunpur (9.1), Ambedkar Nagar (9.3), Jalaun (9.3), Mohaba (9.4), Hamirpur (9.5) Total=10
B. Uttar Pradesh: Classification of districts according to dependency ratio , 2011	
Ratio in %	Name of district
Low	Rampur(8.4), Agra (8.8), Saharanpur (9), Pilibhit (9.2), Joytiba Phule Nagar (9.3), Farrukhabad (9.3), Sonbhadra (9.6), Kanpur Nagar (9.9), Kannauj(10.2), Lalitpur (10.3), Shahjahanpur (10.4), Muzaffarnagar (10.8), Sultanpur (10.8), Etah (10.8), Auraiya(10.8), Kanshiram Nagar (10.8), Bahraich (10.9), Jhansi (10.9) Total=18
Moderate	Kheri (11.0), Firozabad (11.1), Ghaziabad(11.2), Allahabad(11.2), Shraswasti (11.2), Sant Ravidas Nagar(11.2), Balrampur (11.3), Meerut(11.5), Bijnor (11.6), Rae Bareli(11.6), Mirzapur (11.6), Bulandshahr (11.6), Etawah (11.6), Mainpuri(11.6), Lucknow (11.7), Chandauli (11.7), Aligarh (11.7), Varanasi (11.8), Moradabad(11.9), Sitapur (11.9), Hardoi (11.9), Fatehpur (12), Gonda(12.1), Siddharth nagar (12.2), Basti (12.2), Kanpur Dehat (12.3), Jalaun (12.3), Bareilly (12.5), Gautam Budh Nagar (12.6), Sant Kabirnagar (12.7), Banda (12.8), Chitrakoot (12.8), Gorakhpur (12.9), Maharajgang (12.9) Total=34
High	Baghpat (13.1), Pratapgarh(13.1), Budaun(13.1), Hathras (13.2), Kaushambi (13.4), Mau (13.4), Hamirpur (13.4), Deoria (13.6), Azamgarh (13.7), Faizabad(13.9), Ambedkar Nagar(14.5), Unnao (14.6), Kushinagar (14.6), Ballia (14.7), Barabanki(15.2), Mohaba (15.4), Jaunpur (15.5), Ghazipur (15.7), Mathura (17.1) Total=19
C. Uttar Pradesh: Classification of districts according to ageing index, 2011	
Index Value	Name of district
Low	Moradabad (15.4), Rampur (15.5), Budaun (15.6), Bareilly (17.0), Joytiba Phule Nagar (17.1), Sonbhadra (17.8), Shahjahanpur (17.8), Shraswasti (18.1), Kanshiramnagar (18.1), Agra(18.2), Balrampur (18.3), Bahraich(18.5), Firozabad (18.6), Bijnor(18.7), Ghaziabad (18.7), Gautam Budh Nagar(18.8), Lalitpur (19.1), Kheri (19.1), Pilibhit (19.4), Saharanpur (19.5), Aligarh(19.6), Farrukhabad (19.6) Kaushambi (19.7), Mathura (19.7) Total=24
Moderate	Etah (20.0), Muzaffarnagar (20.1), Gonda (20.1), Sitapur (20.2), Siddharthnagar (20.2), Sant Ravidas Nagar(20.4), Hathras (20.4), Chitrakoot (20.5), Maharajgang (20.7), Meerut (20.9), Bulandshahr (21.0), Hardoi (21.4), Kannauj(21.6), Kushinagar(21.7), Mirzapur (21.7), Allahabad (21.8), Barabanki (22.1), Sant Kabirnagar (22.7), Mainpuri (22.7), Mau (23.0), Basti (23.1), Chandauli (23.3), Banda (23.3), Azamgarh (24.1), Fatehpur (24.3), Varanasi (24.4), Auraiya (24.5), Ghazipur (24.6), Baghpat(24.7), Gorakhpur (24.7), Faizabad (24.8), Rae Bareli (24.9) Total=32
High	Unnao (25.1), Jaunpur (25.1), Pratapgarh(25.3), Deoria(25.5), Sultanpur (25.5), Etawah (25.7), Ballia (25.8), Ambedkar Nagar(26.7), Mohaba(26.9), Lucknow(27.3), Kanpur Dehat(27.6), Jhansi(28.3), Hamirpur(28.6), Jalaun (29.6), Kanpur Nagar (31.1) Total=15
D. Uttar Pradesh: Classification of districts according to potential support index , 2011	
Index Value	Name of district
Low	Mohaba (5.9), Deoria(6.0), Ambedkar Nagar(6.0), Jaunpur (6.0), Hamirpur (6.0), Sultanpur (6.1), Siddharth nagar (6.1), Sant Kabirnagar(6.1), Azamgarh(6.1), Ghazipur (6.1), Ballia(6.2), Banda(6.2), Kanpur Dehat (6.3), Pratapgarh (6.3), Basti(6.3), Jalaun(6.3), Chitrakoot(6.4), Faizabad(6.5), Fatehpur(6.6), Chandauli (6.6), Unnao (6.7), Rae Bareli(6.7), Barabanki (6.7), Kushinagar (6.7), Etawah(6.7), Baghpat (6.8), Kaushambi (6.8), Gorakhpur (6.8), Maharajgang (6.8), Hardoi(6.9), Mirzapur(6.9), Mainpuri (6.9) Auraiya (6.9), Bahraich (7.0), Shraswasti (7.0), Gonda(7.0), Sitapur (7.1), Sant Ravidas Nagar (7.1), Balrampur (7.2), Jhansi (7.2), Kannauj (7.2) Total: 41
High	Etah (7.4), Kanshiram Nagar (7.4), Allahabad (7.5), Mau (7.5), Lalitpur (7.5), Kheri (7.5), Bulandshahr (7.6), Hathras (7.6), Mathura (7.7), Muzaffarnagar (7.9), Lucknow(7.9), Shahjahanpur (7.9), Farrukhabad (7.9), Sonbhadra (8.0), Aligarh (8.0), Pilibhit(8.0), Budaun (8.3), Firozabad (8.4), Bijnor (8.5),Varanasi (8.5), Saharanpur (8.6), Joytiba Phule Nagar (8.6), Meerut (8.6), Bareilly(8.8), Agra (9.0), Rampur (9.3), Moradabad (9.4), Gautam Budh Nagar (9.7), Ghaziabad (9.9), Kanpur Nagar (10.1) Total=30

Source: Computed from Census of India, *Social and cultural Tables- C-14: Distribution of Persons by Five Year Age Groups by Residence and Sex*, for 2011, published from Registrar General and Census Commissioner of India, New Delhi.

SIKH WOMEN IN MALAYSIA **(Early Immigration history and the Current Status)**

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Abstract: The paper traces the historical developments in the process of Sikh emigration in Malaysia with a focus on female population followed by a detailed discussion on changing female-male ratio, and changing social status of the Sikh women in Malaysia. By analyzing data/information picked up from various sources including the police records, accounts of the travellers, the Census records, and personal interviews and discussions, the author concludes that acute shortage of females among the Sikhs, in the initial stage, resulted in sale of the female folks like a property and the clashes between Sikh groups over their possession in a few cases. They were sold and resold. Over the period, there has been, however, a drastic change in the situation. they are now well-educated, professionally qualified, liberal, and modern. Some wear western dresses, speak English, marry outside the religion, consume alcohol in parties and cut hair. Their faith in Sikh religion is getting eroded with time.

Keywords: Punjabi-Sikh, British Malaya, Female migration, Imbalanced sex-ratio.

Introduction

The Punjabi-Sikh nexus is very close. Almost ninety-nine per cent of the Sikhs, all over the world, are Punjabis by ethnicity. Not all Punjabis, however, are Sikhs. Muslim Punjabis, mostly in Pakistan, vastly outnumber Sikhs in India, who in turn outnumber Hindu Punjabis. All the three shades of Punjabis have, however, common elements of cultural traits.

Traditionally, the role of women in Punjabi culture has been conservative. Until recently, they normally played a passive or rather a submissive role in the male dominated Punjabi society. Till the closing years of the 20th Century, most of the Punjabi women of all the three religious groups, remained secluded from society and frequently wore a 'chadur' to cover their head or even a 'burka' (to cover the face), especially amongst Punjabi Muslims.

Therefore, the women seldom ventured to distant lands of their own as the migrants. As a rule, they always followed their men folks on the maiden journey outside the Punjab after their men had established themselves in foreign lands. Such was the case of Punjabi Sikh women coming to Malaysia.

Sikhs in Malaysia

The records reveal that the first Sikhs to enter SE Asia were political prisoners. Bhai Maharaj Singh and Kharkh Singh were transported to Singapore, under armed guard. They were remanded during the Anglo-Sikh wars, ending in the annexation of Punjab by the British

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rulers¹. First large batch of ordinary Sikhs to land in British Malaya was brought by Captain Speedy in early 1870s for police work in Larut district of Perak State (Map 1).

As most Sikh migrants came to distant Malaya, leaving behind their families in Punjab, with a view to make money before returning home. This was true of other immigrant groups such as the Chinese and South Indians too. Thus, it is not surprising that female migration started much later, even then as a trickle. By 1900, sex-ratios were highly imbalanced for the non-Malays in the British Malaya. There were barely 10 females per 100 males amongst the non-Malays. The Sikh sex-ratios were probably even more skewed.



Map 1

As revealed in the accounts of Isabella Bird's journey through Peninsular Malaya in 1879, the first Sikh female came to Malaya in the late 1870s. Isabella states, she met with the wife of a Sikh sergeant in Kamunting, a small mining town at that time. Probably, she was the only Sikh woman in the regiment, and Isabella Bird described her as 'the woman of the regiment'. Earlier Isabella had described the Sikh policemen of the 'Armed Forces' stationed at Taiping under the command of Major Swinburne. The Sikhs with their 'large blue turbans, scarlet coats, and white trousers' were generally 'devoted to the accumulation of money, and many of them being betrothed to little girls in India, saved nearly all their salary earned, in order to buy land and settle there' (Bird, 1883).

It is clear from the above statements that the Sikh men, as a rule, seldom brought with them their women folk to Malaya in the Nineteenth Century. By the turn of the century, there were probably less than 10 women per 100 men amongst the small Sikh community in Malaya. By the time, the first unified census was taken in British Malaya in 1921, the sex ratio amongst Sikhs had improved to 23 females per 100 males (Table 1), further improving to 31 females per 100 males in 1931. The female-male ratio remained low up to the 1950s; and the highly imbalanced sex-ratio giving birth to serious social problems in the community. However, the Sikh sex ratio had become almost normal by 1980: 97 females per 100 males.

During the Pre-World War II, there were at times fights amongst Sikh men over women. An article published in Malayan Police Magazine in 1940 by M.L.A. points out that 'Owing to the shortage of women in the Punjab, it is sometimes extremely difficult for a Jat

¹ The colonial authorities were fearful of hanging the Sikh saint, Bhai Maharaj Singh, as he had a big following in Punjab; a rebellion could have broken out.

Sikh, especially for the one who has not a reasonable amount of property or a host of relatives, to get married'. The situation was sometimes exploited by unscrupulous persons. 'Occasionally a low-caste woman is brought out to this country under false pretenses. Once she is in this country, she passes as a Sikh woman and is sold to be the wife of some willing purchaser, often of advanced age. She is generally enticed away from him and sold to another man elsewhere. This procedure is repeated as often as it works, and at times leading to disputes between the purchasers and the vendors- each party having a few supporters. The women are generally ignorant of their rights and are easily coerced' (M.L.A. (1940). Such situations did exist in the pre-Second World War period.

State	1921		1931		1980		Females/100 males		
	Male	Female	Male	Female	Male	Female	1921	1931	1981
Penang	355	50	881	232	1205	1192	14	26	99
Malacca	98	14	173	52	271	286	14	30	105
Perak	2961	881	4638	1695	4745	4738	30	37	99
Selangore	1612	350	2987	976	6685	6349	22	33	95
N. Sembilan	462	100	717	196	1123	1188	22	27	106
Pahang	490	58	754	163	609	512	12	22	84
Johore	268	25	641	108	1068	1038	9	17	97
Kedah	250	49	440	112	578	518	20	25	90
Perils	33	4	320	31	105	84	12	10	80
Kelantan	202	18	8	0	161	139	9	0	86
Trengganu	5	0	31	8	55	36	0	26	65
Total	6736	1549	11,590	3573	16,605	16,080	23	31	97

Sikh Women in Malaysia: Ethnic composition and female-male ratio

Following the partition of British India into India and Pakistan (in mid-August, 1947), there were several instances of Muslim women, who were left behind in East Punjab as their families fled to the newly created Pakistan in the turmoil, taking place soon after the partition. Several of such women were married to Sikh bachelors from Malaysia who had gone to India after the end of World War II. In most cases these women adjusted to their husband's religion and integrated with the local Sikh society. This was made possible as these women spoke the same language for living side by side with their Sikh neighbors in the pre-partition Punjab. Then, there were cases of several Sikhs staying in the Malay states bordering Thailand (Siam) who married local Thai women. Marriages between Sikh men and Malay women were indeed rare as the Malays are predominantly Muslims; a small number did marry Malay women and got converted to Islam after marriage. A few Malaysian Sikhs married Tamil/Telegu women. There were also cases of Sikh men marrying Chinese women. Some Sikhs men educated abroad did return with European spouses; most of them were professionals.

The sex ratios were not only low for the Sikh population but also for the entire Indian population living in Malaya, the majority made of the South Indians. For example, the overall Indian sex-ratio in 1921 was 42 women per 100 men, rising to 88 per 100 by 1970 (Census Reports, 1921, 1931, 1980). This was better than that of Sikh sex ratio, because the Indian Emigration Act of 1922, passed by the Government of India, requiring female-male ratio of 2:3 among the emigrants. Since most of the emigrants affected by these rules were estate contract labourers, it resulted in improving sex-ratio in rural areas to a large extent as

compared to urban areas (Sandhu, 1969, p. 156). Besides the joint-family system in India frowned upon independent female emigration, but restraining wives and families from emigrating, was considered probably the best way to secure the return of the male emigrants.

Imbalanced sex-ratio, issues and societal problems

In the early years, sex-ratios were low not only for the Indians, but also for the Chinese immigrants in British Malaya. The Chinese sex-ratio was 37 women per 100 men in 1931. The acute shortage of women in British Malaya did create serious social problems. Brothels spread in most urban areas and were largely run by the Chinese. Sex workers were required to get regular checks at government hospitals. Though some Sikh men did visit these places but Sikh women were not known to work in the brothels. The reliable sources state that only a solitary case of a Sikh involved in an illegal business of operating a brothel in south-west coastal town of Pontian in the late 1960s; he employed Chinese and Indonesian sex workers. However, of late, many Sikh girls from the lower castes have come as immigrants, to work as domestic workers.

One of the serious problems facing the Malaysian Sikhs is the rising rate of divorce. Till the 1960s divorce was the rare thing to happen amongst Sikh couples. In 'the good old days, according Dr. Pola Singh, the in-laws did everything they could to save marriages from breaking down (*The Star*, 11 Oct. 2014). This had a positive effect on the marriage by pacifying their son and daughters to 'make up', by urging their children to forgive and forget and be more tolerant and compromising. However, the times have changed; nowadays, the in-laws encourage their sons or daughters to fight back, worsening the situation and leading to break-up of the marriages. In the past, the man was the sole bread winner, putting food on the table while the wives stayed at home. Conditions have changed. Nowadays, most of the girls go to school and some make it to the university and become independent women- not solely dependent on their husbands for support. The woman expects the man to meet all the family expenses even though the woman maybe working; this leads to frequent tiffs between the couple and ultimately ends in breakup of the marriage, with the children ending up as innocent victims. To prevent a breakdown of the marriage, Pola Singh suggests that the couple should talk over certain issues prior to marriage: who will perform household chorus and look after the children; what will be their contribution towards the household budget; and how to maintain their relationship with in-laws to avoid any interference from in-laws side.

Today, many Sikh women prefer to stay single. When a Sikh scholar asked an educated and working Sikh woman as to why she did not get married? She was frank enough to say, 'I could not find a Sikh boy who did not take alcohol. The men I came to know often boasted about how much whiskey or beer they could drink. This put me off. It is better to remain single than marrying a drunkard'. The author of this note interviewed the two eminent doctors, Dr. Harbans Kaur Virik, a well-known child specialist and Datuk Paduka Ranjeet Kaur, a gynecologist- both in their nineties now. The former stated 'did not meet the right man', the latter said 'I was married to my work'. The majority of Sikh spinsters in Malaysia are graduates or post-graduates, financially independent, and enjoying life. By the time they reach their 30s, they find it more and more difficult to find someone equal in status. The problem is compounded by the fact that many Sikh doctors who study in India find wives

from there. Likewise, several Sikh lawyers studied in the U.K. married Caucasian women. Rather than remaining single their entire life, women have a choice of marrying with less educated men. Several Malay lady lecturers in local universities are marrying school teachers. A lady associate professor and the dean of a large faculty in Sintok married an ordinary hawker, could be seen selling iced drinks during the Muslim fasting months. In desperation, some Sikh women have married Tamil men; the more enterprising ones marry European men and then migrating to husband's country (Singh, 1971; Singh, 1977).

Sikh women in Malaysia: Some success stories

There are several very successful Sikh women in Malaysia. Dato' Dr. Baljit Kaur (consultant ophthalmologist) and Dato' Sather Kaur (consultant anesthesiologist) are prominent doctors, married to equally prominent Sikh doctors. The owner of one of the biggest and successful chain of Gulati cloth stores-located all over the country-is Madam Karpal Kaur, an immigrant from Rawalpindi, in Pakistan. Her father brought her first to Singapore then to Malaysia. Premjeet Kaur is a successful CEO of her father's sports goods firm. Also, there are successful Sikh women lawyers including Dato Rina Bhar (a politician and a senator at one time), Harwant Kaur (retired Sessions Court judge), Kirenjit Kaur (the first woman to become District Governor of Rotary International, District 330) and Minderjit Kaur, a compassionate family lawyer helping countless Sikh women abused by their husbands.

Emerging Social Norms

Nowadays, many younger Sikh women wear Western dress, like jeans, trousers, and skirts; use lip-stick, perfume and dye hair. Except for elderly Sikh women, sleeveless dress is common amongst the younger groups. Women in sleeveless dress can even be seen serving *deg* during *Akhand Path*- an acceptable norm even to the priests. Tattoos on back, arms and legs are fashionable now. Many women are cutting hair. A majority of Sikh men have removed their turbans. Drinking alcohol has become a status symbol amongst the wives of professionals; in most cases initial encouragement coming from their male partners.

Several women do not bring the head cloth to the *gurdwara*; borrowing scarfs kept in front of the *gurdwara*. There is an argument against discriminating between cut hair and turban Sikhs in attending *gurdwaras*. It is also argued that if any Sikh girl wants to marry a non-Sikh boy and vice versa, such couples must be permitted to get married in the *gurdwaras* without insisting that the non-Sikh partner take the *amrit*. Because, any Sikh girl refused permission to get married in the *gurdwara* may develop hatred for Sikhism and stop visiting the *gurdwara* altogether. Therefore, the Community needs to be more tolerant and accommodative in such cases. It may happen that such Sikh girls are able persuade their life partners to embrace Sikhism, eventually.

The number of Sikh women marrying the South Indian men and vice versa is on increase now. Several Sikh women have been visiting 'Bomohs' (practitioners of black magic) to get charms done to harm fellow Sikhs, usually family members they dislike or purely out of jealousy.

With the exception the elderly women, most young Sikh women converse in English rather than in Punjabi. As such, their children grew up and are unable to speak Punjabi properly. Most young Sikh children converse amongst themselves largely in English; some

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converse even in Bahasa Melayu (Malay language). This is not surprising as most subjects in government schools are taught in the Malay language. In recognition of this, free Punjabi classes are held in the *gurdwaras* on weekends. However, it is to be noted that the Malaysian government is ready to teach Punjabi in schools provided there are at least the fifteen students per class and enough teachers to teach. However, there are only a few Punjabi students (not even a dozen) in a single school in Malaysia (reported in *New Straits Times*, April 13, 2012).

Before 1960s most Sikhs (including women) used to travel by sea, often via Calcutta. In the late 1960s the air route from Delhi to Kuala Lumpur became popular; the Sikhs have become wealthy and more importantly, it cuts travelling time. While the sea route used to take some thirteen days, air travel takes only a few hours. More recently, the Kuala Lumpur-Amritsar route has also become popular with Sikhs going to the Punjab.

Concluding remarks

During the 1960s and 1970s scores of young Sikh girls having completed Senior Cambridge or the Malaysian Certificate of Examination went to England to be trained as nurses. After completing training, many of them stayed back in England after getting married to the white men. Some others did return back in Malaysia to join their families. They were independent female emigrants. In recent years, many Sikh women have emigrated from Malaysia to UK, Canada, USA, Australia and New Zealand in search of greener pastures. They were not independent migrants but emigrated together with their spouses and children. These emigrants felt that their children would have a better future in these liberal democracies; many fear insecure as most government jobs in Malaysia are taken up by ethnic Malays and the fear of creeping Islamization of the country and the implementation of Islamic (Syariah) law in certain states of Malaysia. Owing to continued emigration, the overall Sikh population in Malaysia has been stagnating over the last few decades. In addition, the present generation of Punjabi women is reluctant to have large families. Briefly, the old order is crumbling, giving way to the new. Living in a cosmopolitan country, such changes are bound to occur. In schools and universities, the Sikh boys and girls mingle with other races. Furthermore, the influence of the media, especially the television, cannot be denied in influencing the thinking of the new generation born locally.

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DISPERSAL OF ASSAMESE SPEAKING PEOPLE IN INDIA OUTSIDE THEIR HOME STATE, 2011

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In Indian context, the dispersal of a linguistic community away from their home state can confidently be taken as an indicator of its engagement with the mainstream. This establishes its spatial link with other linguistic communities in terms of mutual interdependence, economic participation and cultural interaction. A sentiment of wider territorial affinity gets strengthened. The cause of nation building is promoted in the process.

Why certain linguistic communities remain confined to their native hearth while others are highly prone to spread? The question does not allow an easy answer. This may call for an invocation of all theories of migration. A parallel requirement would be to move away from the conventional emphasis on determinants of outmigration and immigration and look for factors which would explain 'why people stay on and stick to their native abode'?

As a case, among various linguistic communities, in conformity with the scheduled languages in the Indian Constitution, the Assamese speaking are most home-bound (Table 1). As per the 2011 Census of India, there are 15.31 million Assamese speaking people, and 15.10 million or 98.6 per cent of them reside in their home state of Assam. Hardly 0.22 million or 1.41 per cent of the total are sprinkled around in other states and union territories of India (Map 1).

Among Assamese speaking people outside Assam, 0.12 million or 52.0 per cent are concentrated in the neighbouring states of Arunachal Pradesh, Meghalaya, Nagaland and Mizoram (Table 2). All of these were earlier a part of the Assam Province or State. The presence of Assamese speaking people here can be construed as a product of internal migration in the past.

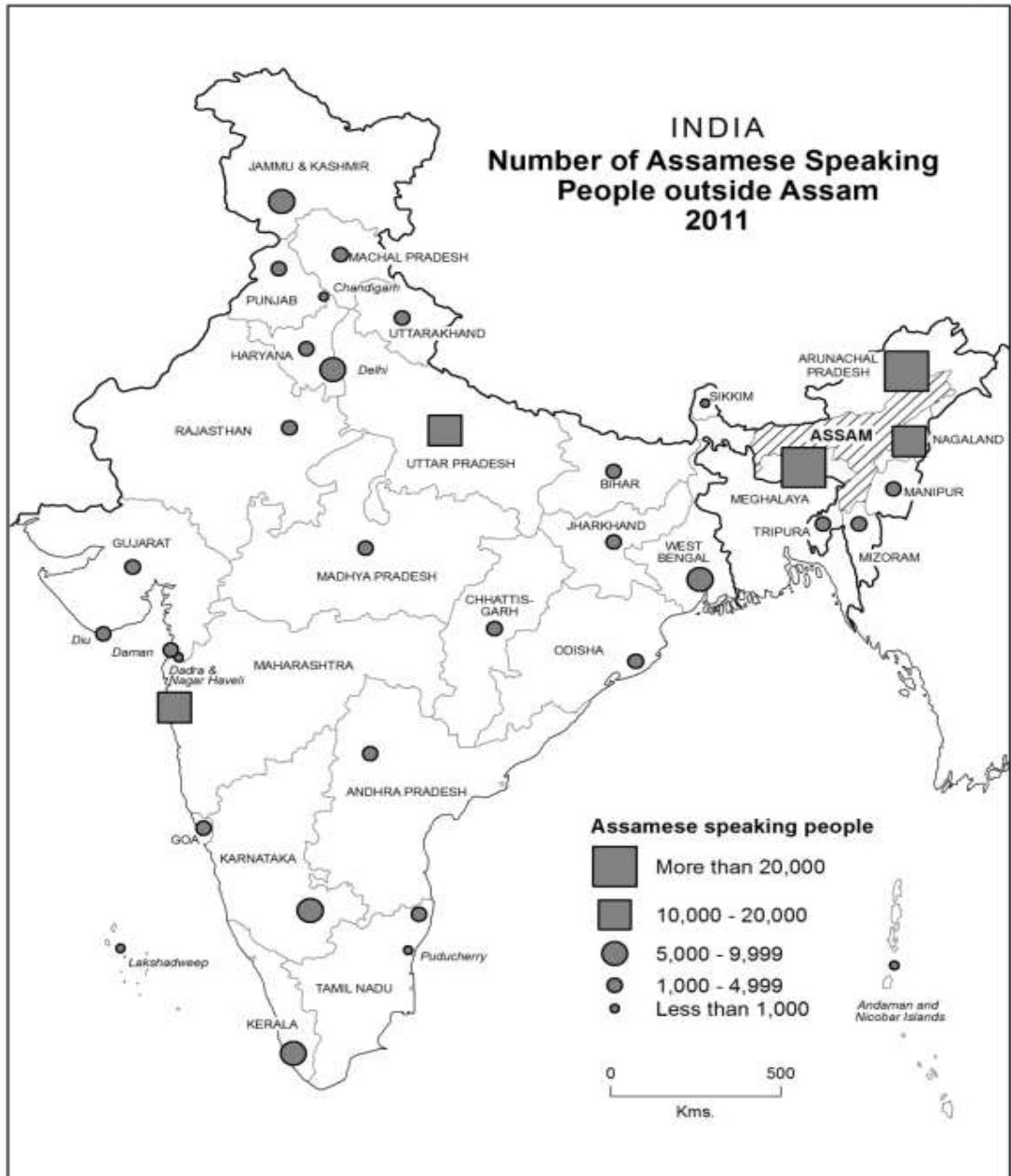
Beyond these states, the Assamese speaking people are located in states and union territories with major cities, such as Mumbai, Bengaluru, Delhi, Kolkata, Lucknow and Hyderabad. They number here around 0.07 million, accounting for about one-third (32.9 per cent) of the Assamese speaking people outside Assam. This cityward outflow is of educated persons who got a job in the organized sector and of students admitted in educational institutions. Some component of these people is noted for an entry into informal sector jobs of all variety.

The case of Jammu and Kashmir deserves a special mention. This state recorded a presence of around eight thousand Assamese speaking persons in 2011. Most of them

54 Dispersal of Assamese Speaking People in India outside their Home State, 2011

belonged to defence forces and were here on their routine posting. In any case, the number involved is not very large.

MAP - 1



* Courtesy : Mr. Mohan Singh, Cartographer, for designing the map.

** Among different linguistic groups, the Assamese are most home based in India.

Notably the union territory of Daman and Diu is the only one which did not record even a single Assamese speaking person. Lakshadweep had just one. Sikkim, a sister state of Assam, had less than one thousand persons.

It follows that the outflow of the Assamese speaking people from their home state, in whatsoever small number, was linked to the pull factors of absorption in a formal sector job for educated persons and an entry into reputed institutions for young students. Among the push factors, the recurrent floods and consequent displacement induced some of them to move out not only within the state but also to big cities in other parts of India for any available job. A growing disenchantment of the youth with agriculture as an occupation also led to some mobility on their part.

On the whole, Assamese speaking people remain home bird, by and large. What explains such a tendency on their part? Are they content with their ecological milieu, livelihood base, and cultural affinity? Do they find the outside world as incompatible with their life dreams? Or did they remain handicapped by a poor connectivity of Assam with other parts of India? A confident answer to such questions calls for a serious research. Ironically most of the studies on Assam demography remained focused on the issue of excessive inflow of non-Assamese into Assam. The process of outflow of Assamese speaking people in reverse direction received scant attention. This is an unattended fertile field which researchers can reclaim to their benefit.

Table 1
India: Percentage of various linguistic groups living outside their home state, 2011

Assamese	1.41
Kashmiri	1.72
Dogri	3.20
Maithali	3.87
Bodo	4.50
Gujarati	6.37
Marathi	6.70
Malayalam	6.97
Kannada	6.99
Odia	7.49
Tamil	7.64
Telugu	12.89
Mainpuri	13.57
Bengali	19.07
Punjabi	24.78
Santali	55.62
Konkani	57.27
Nepali	60.52

Source: Census of India, 2011 (State-wise Distribution of Population by Scheduled Languages in India, Part I).

Note: Hindi, Sindhi, Sanskrit and Urdu have not been taken into consideration since these were not specific to any single state in terms of their affiliation.

Table 2: Assamese speaking people outside Assam in India, 2011

State/Union Territory	Number	Percentage in total
Arunachal Pradesh	53,951	25.03
Meghalaya	39,628	18.38
Nagaland	17,201	7.98
Maharashtra	12,842	5.96
Uttar Pradesh	10,356	4.80
Karnataka	9,871	4.58
Delhi	8,573	3.98
Jammu and Kashmir	8,340	3.87
West Bengal	7,342	3.41
Kerala	5,796	2.69
Haryana	4,204	1.95
Punjab	4,090	1.90
Gujarat	3,935	1.83
Rajasthan	2,877	1.33
Andhra Pradesh (including Telangana)	2,648	1.23
Tamil Nadu	2,594	1.20
Manipur	2,453	1.14
Tripura	2,129	0.99
Bihar	2,087	0.97
Madhya Pradesh	1,870	0.87
Uttarakhand	1,656	0.77
Chhattisgarh	1,595	0.74
Jharkhand	1,324	0.61
Mizoram	1,266	0.59
Daman and Diu	1,201	0.56
Odisha	1,123	0.52
Goa	1,107	0.51
Himachal Pradesh	1,049	0.49
Dadra and Nagar Haveli	957	0.44
Sikkim	848	0.39
Chandigarh	435	0.20
Andaman and Nicobar Islands	115	0.05
Puducherry	90	0.04
Lakshadweep	1	0.00
Total	215,554	100

Source: Census of India (2011). *State-wise Distribution of Population by Scheduled Languages—Part I*. Registrar General and Census Commissioner of India, New Delhi.

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