



Health and Well Being in Rural India

A Statistical Analysis of
National Family Health Surveys

School of Public Policy and Governance
Tata Institute of Social Sciences, Hyderabad

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This report has been prepared by the Graduate Students (Batch 2020-2022) of School of Public Policy and Governance, Tata Institute of Social Sciences, Hyderabad in lieu of their Rural Experiential Learning which could not take place this year due to Covid-19 pandemic. Instead, the students had the opportunity to examine and analyze the recently released factsheets of National Family Health Survey (NFHS)-V and compare it with NFHS-IV for rural India in six thematic areas- Child Nutrition, Child Health and Mortality, Gender based violence, Marriage, Fertility and Family Planning, Maternal Health and Adult health and non-communicable diseases. The exercise was undertaken under the mentorship of Dr. Arvind Pandey, Assistant Professor, School of Public Policy and Governance, Tata Institute of Social Sciences, Hyderabad. The Gender based violence section of the report was completed under the mentorship of Dr. Khushboo Srivastava, Assistant Professor, School of Public Policy and Governance, Tata Institute of Social Sciences, Hyderabad.



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TABLE OF CONTENTS

EXECUTIVE SUMMARY

CHILD NUTRITION

Background

Nutritional Status and Early Initiation of Breastfeeding of Infants

Nutritional Status of Children under Age 5 Years

Relation between different indicators

Conclusion

CHILD HEALTH AND MORTALITY

Background

Relationship between Child Mortality and Institutional Care

Neonatal Fragility and Robust Institutional Care

Impact of C-Section on Early Breastfeeding and IMR

Full Immunization of Children

Conclusion

GENDER BASED VIOLENCE

Background

Indicators of Spousal Violence

Indicators of Women Empowerment

Indicators of Education

Conclusion

MARRIAGE, FERTILITY, AND FAMILY PLANNING

Background

Rural Fertility Rate and Replacement Level Fertility

Family Planning Methods in India

Unmet Needs, Total Fertility Rate, and Replacement Level Fertility

Education, Adolescent Pregnancy, And Reproductive Health

Conclusion

Policy Recommendations

MATERNAL HEALTH

Background

Registered Pregnancies

Institutional Births and C-section Deliveries

Skilled Health Personnel

Teenage Pregnancies

Out-of-Pocket Expenditure Per Delivery

Conclusion

ADULT HEALTH & NON-COMMUNICABLE DISEASES

Background

Body Mass Index and Obesity

Anaemia

Blood Sugar

Hypertension

Tobacco and Alcohol Consumption

Cancer Screenings

Conclusion

Way Forward

APPENDIX

Executive Summary

India lives in its villages. There were 6.4 lakhs villages in 2011 inhabited by 834 million of population which constituted 68.9 per cent of the total population of India (Census of India, 2011). A recent projection estimate by the Registrar General of India shows that a total of 884 million people lived in rural India in 2019 which comprised of 66.1 per cent of the country's total population (Census of India, 2019). As these figures evocate, the rural population of India is higher than the total population of countries like United States of America, Indonesia, Pakistan, Brazil and Nigeria, which are arguably the most populous countries after China and India. It is evident that the sheer size of rural population in India poses several challenges to the provisioning of infrastructure and service delivery. India is going through the phase of 'demographic dividend' and harnessing the full potential of this dividend is contingent on good health and well-being, quality education and decent employment opportunities among which health and well-being is the most important dimension for overall growth and development. The well-being of population includes state of being physically and mentally healthy and active.

In rural healthcare system of India, sub-centres, primary healthcare centres (PHCs) and community healthcare centres (CHCs) are the three pillars of healthcare management. Despite the inclination of political economy of development towards rural India since the inception of the First Five-Year plan, the level of rural health infrastructure and service delivery had not been adequate enough to cater to the needs of this section of the population. This scenario underwent significant changes with the launching of the National Rural Health Mission (NRHM) in 2005. The NRHM has played a crucial role in the improvement of health infrastructure and service delivery in rural India by addressing the seminal issue of adequate health infrastructure through construction/upgradation of sub centres/PHCs/CHCs. The NRHM has also given an impetus to the availability of critical manpower by introducing trained voluntary community health workers (ASHA), increasing the number of staff nurses, paramedical staffs, and auxiliary nurse midwife (ANMs). While the number of sub-centres, PHCs and CHCs have increased between 2005-2019, the optimum population covered by these health centres is yet to be achieved as per the norms laid down in NRHM i.e. one sub-centre per 5,000 persons, one PHC per 30,000 people and one CHC per 120,000 people in the plains. In tribal and hilly areas, the population coverage is even lesser than the plain area. Despite the increase in the number of health facilities, there continue to remain various gaps and shortfalls in the existing health facilities when compared to the norms laid put forth by NRHM.

Health Facilities	2005	2019	Addition	Growth Rate	Coverage In 2019 (Population Per Health Centre)	Shortfall of Health Facilities In 2019 As Per Norms Laid Down in NRHM
Sub Centre	146,026	157,411	11,385	7.80	5,616	19,393
PHCs	23,236	24,855	1,619	6.97	35,567	4,612
CHCs	3,346	5,335	1,989	59.44	165,702	2,032

Source: Rural Health Statistics in India 2018-19. Note- The data of year 2019 for SCs and PHCs contains the number of Health and Wellness Centres at the level of SC and PHC

According to Health and Family Welfare Statistics, 2019, there were 21,403 public hospitals (including CHCs) and 2,65,275 beds in rural India which is 2 hospitals (including CHCs) and 30 beds per 100,000 population. This indicates that the secondary and tertiary healthcare infrastructures in rural area are still inadequate to address the needs of the population. The estimates from 75th round of National Sample Survey (2017-18) which was related to households' social consumption on Health shows that out of the total hospitalization cases in rural India, 52 per cent were in private hospitals, 46 per cent were in public hospitals and 2 per cent were registered in hospitals run by Charitable Trusts or non-governmental organizations.. There is a direct impact of this utilization pattern on average medical expenditure for per hospitalization cases which was Rs. 27,347 in case of private hospital and Rs. 4,290 in case of public hospital. It indicates that there is an urgent need to create a more robust secondary and tertiary level healthcare infrastructure in rural India which can minimize the economic burden of rural households on ailments.

Along with health infrastructure, the adequate human resources are essential for healthcare delivery. The following table shows that despite increase in the human resources in healthcare after NRHM, the shortfalls still exist in rural India. The rural CHCs suffer from unavailability of required specialists such as Surgeons, Obstetrician & Gynecologist, Physicians and Pediatricians as per the norms i.e., 4 specialists per CHC. The shortfall for specialists and pharmacists is highest among all categories of health personnel.

Manpower	Health Workers (Female) / ANM at Sub-Centres & PHCs)		Doctors at PHCs		Total Specialists at CHCs (Surgeons, OB&GY, Physicians & Pediatricians)		Pharmacists at PHCs & CHCs	
	2005	2019	2005	2019	2005	2019	2005	2019
Norms	One per each existing Sub Centre and PHC		One per PHC		Four Specialists per CHC		One per each PHC, HWC-PHC and CHC	
Years	2005	2019	2005	2019	2005	2019	2005	2019
Required	169,262	182,266	23,236	24,855	13,384	21,340	26,582	30,190
Sanctioned	139,798	209,633	24,476	32,824	7,582	12,597	21,072	27,867
In Position	133,194	234,220	20,308	29,799	3,550	3,881	17,708	26,204
Vacant	6,640	18,608	4,282	7,715	3,538	9,147	3,380	4,380
Shortfall	19,311	7,178	1,004	1,484	6,110	17,459	2,858	6,334
% Shortfall	11.41	3.94	4.32	5.97	45.65	81.81	10.75	20.98
Current status of the norms (in position manpower as per norms)	1	1	1	1	1	1	0.7	0.9
Per 100000 population (as per in position manpower)		26		3		0.4		3

Source: Rural Health Statistics in India 2018-19. Note- The data of year 2019 for SCs and PHCs contains the number of Health and Wellness Centres at the level of SC and PHC. OB&GY - Obstetrician & Gynecologist

The statistics on rural healthcare infrastructure and manpower as discussed above shows that despite the gap, the NRHM has made significant impact on health outcomes which can be observed from the estimates of different indicators between National Family Health Survey- III (2005-06) and IV (2015-16). There is a significant decline in infant mortality rate, neo-natal mortality rate, and maternal mortality rate, etc. during this period. Further, the registration of births, institutional deliveries, uses of family planning methods, and vaccination of children have improved significantly. The details of these estimates can be found in Health and Family Welfare Statistics in India, 2019-20 published by the Ministry of Health and Family Welfare.

National Family Health Survey (NFHS) is the most important data sources on maternal and child health along with fertility, infant and child mortality, use of family planning, nutrition, water, sanitation and hygiene (WASH), non-communicable diseases, gender-based violence, etc. It is part of a worldwide Demographic and Health Surveys (DHS) that are nationally representative household surveys which seek to capture a wide range of indicators in the areas of population, health, and nutrition & vital statistics. The first NFHS was conducted in 1992-93 and thereafter, four more rounds have been conducted in 1998-99 (NFHS- II), 2005-06 (NFHS-III), 2015-16 (NFHS-IV) and 2019-20 (NFHS-V). The first three NFHSs provided data at state level whereas NFHS-IV onwards, data has become available both at the state and district levels. The International Institute of Population Sciences (IIPS) which works under the aegis of the Ministry of Health and Family Welfare (MoHFA) is the nodal agency which conducts this survey on a regular basis. Recently, the factsheets of NFHS-V have been released by MoHFA for the Phase-I of NFHS-V (2019-20) which provides vital information on reproductive and child health, fertility and family planning, health insurance, nutrition, non-communicable diseases and gender based violence along with many other related issues for 22 States/UTs. A comparison of factsheets of NFHS-IV and NFHS-V for these 22 States/UTs is both useful and essential for it enables a holistic understanding of the progress made by rural India in the domains of health and family welfare along with nutritional status, immunization, non-communicable diseases and gender-based violence etc. and related issues.

The present report, prepared by the graduate students of School of Public Policy and Governance, Tata Institute of Social Sciences, Hyderabad, is an attempt to examine the status of health and well-being in rural India through a comparative analysis of the indicators provided in the factsheets of NFHS-IV (2015-16) and NFHS-V (2019-20) for the selected states, for which comparable data is available in both rounds. Since, the report relies on the estimates provided in the factsheets, the errors in the factsheets (if any) remain in the analysis provided in the report also. There are six thematic areas covered in this report to show the progress made in Rural India:

- 1- Child Nutrition
- 2- Child Health and Mortality
- 3- Gender Based Violence
- 4- Marriage, Fertility and Family Planning
- 5- Maternal Health
- 6- Adult Health and Non-Communicable diseases

The key findings of each of the themes are as follows:

KEY FINDINGS:

Child Nutrition

- The early breastfeeding of the rural children (breastfeeding within one hour of the birth) was highest in the north-eastern states as compared to other states/UTs in 2019-20.
- During 2015-16 and 2019-20, majority of the states/UTs (10 out of 18 states/UTs) have shown decline in the early breastfeeding of the rural children. Except Meghalaya and Nagaland, most of the states from north-east have also experienced decline in breastfeeding of children within one hour of birth during the period 2015-16 and 2019-20
- In contrast to the trend of early breastfeeding i.e. breastfeeding with one hour of birth, the breastfeeding of rural children aged 6 months has increased significantly in majority of the states /UTs (10 out of 18 States/UTs). In 2019-20, Maharashtra, Telangana, Andhra Pradesh, Himanchal Pradesh and Manipur were the states where more than 70 % children aged 6 months were exclusively breastfed.
- Despite an increasing trend during 2015-16 and 2019-20, the percentage of children aged 6-23 months receiving adequate diets is still very low in most of the states/UTs in rural India in 2019-20. Sikkim had the highest percentage of children aged 6-23 months receiving adequate diets (31.9 %) followed by Meghalaya (28.4 %), Kerala (25.4 per cent) in 2019-20. However, in other states, less than 25 % rural children aged 6-23 months received adequate diets.
- In majority of the states/UTs (11 out of 19 states/UTs), the stunting among rural children has increased during 2015-16 and 2019-20. In 2019-20, Meghalaya, Bihar and Telangana have the highest prevalence of stunting among children under 5 years of age. However, Sikkim, Manipur, Andaman & Nicobar and Kerala have relatively lower prevalence of stunting.
- The wasting among children under age 5 has also increased in rural India as 11 out of 19 states/UTs have reported increasing percentage of wasted children. Maharashtra, Gujarat, Bihar and Assam have the highest percentage of wasted children in 2019-20. However, Manipur, Mizoram and Meghalaya have the least percentage of wasted children.
- The underweight children under age 5 have also increased in 10 out of 19 states/UTs with Gujarat, Andhra Pradesh and Bihar have the highest percentage of underweight children. In opposite, most of the north-eastern states have less percentage of underweight children as compared to other part of rural India.
- In 2019-20, the obesity among rural children was highest in north-eastern states along with Lakshadweep, Himachal Pradesh and Andaman and Nicobar.
- The prevalence of anaemia among children 6-59 months is very high in rural India as half of the children in 12 out of 19 states/UTs were anaemic in 2019-20. Gujarat had the highest percentage of anaemic children (81.2 %) followed by Telanaga (72.8 %), West Bengal (71.3 %) and Maharashtra (70.7 %).

Child Health and Mortality

- SDG target (SDG 3.2.2) of reducing Neonatal Mortality Rate (NNMR) to at least 12 per 1000 live births by 2030 has already been achieved by five states: Andaman & Nicobar Islands, Kerala, Sikkim, Mizoram, and Nagaland.
- However, majority of the states/UTs in rural India are yet to achieve the SDG 3.2.2. In 2019-20, Bihar had the highest NNMR of 35.2 deaths per 1000 live births followed by Tripura (25.5 deaths per 1000 live births), Gujarat (24.8 deaths per 1000 live births), Assam (23.4 deaths per 1000 live births) and Manipur (22.1 deaths per 1000 live births).

- There was significant decline in the rural infant mortality rates (IMR) across states/UTs during 2015-16 and 2019-20. In 2019-20, Bihar had the highest IMR (47 deaths per 1000 live births) followed by Tripura (42 deaths per 1000 live births) and Gujarat (36 deaths per 1000 live births). The lowest IMR was observed in Kerala (5 deaths per 1000 live births)
- In 2019-20, six States/UTs- Kerala (lowest under five-year mortality rate (U5MR), Sikkim, Goa, Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu, and Jammu & Kashmir accomplished the SDG target of reducing U5MR to below 25 deaths per 1000 live births. The situation is worst in Rural Bihar (57 deaths per 1000 live births) followed by Tripura (49 deaths per 1000 live births) and Gujarat (44 deaths per 1000 live births).
- In 2019-20, Bihar, Tripura and Gujarat were top three states in terms of NNMR, IMR and U5MR.
- The children born at home who were taken to health facility for a check-up within 24 hours of birth is very low in rural India. In 2019-20, less than 15 % children who were born at home were taken to a health facility for a check-up with 24 hours of birth. The situation is worse in North-eastern states along with Bihar where the percentage of such children is less than 3 %.
- The percentage of children who received postnatal care from doctor/nurse/LHV/ANM/midwife or any other health personnel within 2 days of delivery has improved considerably in all the states/UTs with more than 60 per cent of children having received postnatal care in 2019-20. Only four states- Bihar (58.2 %), Meghalaya (42.5 %), Nagaland (34.9 %) and Mizoram (33.9 %) reported less percentage of children who received postnatal care.
- Except Nagaland, in all other states/UTs, more than 60 per cent rural child births were assisted by skilled health personnel in 2019-20. Goa, Kerala and Lakshadweep achieved full coverage of rural childbirths attended by skilled professionals. However, Sikkim, Andaman and Nicobar Islands, Andhra Pradesh, West Bengal, Telangana, Karnataka, Maharashtra and Gujarat had more than 90 % rural child births assisted by skilled health personnel.
- More than 65 % rural children aged 12-23 months across states/UTs were covered with full immunization in 2019-20. Dadra & Nagar Haveli and Daman & Diu achieved 100 % child immunization in rural areas. West Bengal (89.3%), followed by Himachal Pradesh (88.5%) and Goa (88.1%) were other states which achieved highest immunization coverage for rural children.
- There is an inverse relationship between U5MR and full immunization which shows that states with better immunization coverage have lower U5MR.

Gender Based Violence and Women Empowerment

- In 2019-20, six states- Karnataka (44.4 %) followed by Manipur (42.8 %) Telangana (42.3 %), Bihar (39.9 %), Assam (32.9 %) and Andhra Pradesh (30.5 %) reported highest percentage of ever married women facing spousal violence.
- During 2015-16 and 2019-20, majority of the states experienced decline in the spousal violence against ever married women except Maharashtra, Assam, Goa, Himanchal Pradesh, Karnataka and Sikkim.
- In rural India, the spousal violence against pregnant women is very low (less than 7 % across states/UTs). The percentage of pregnant women who reported spousal violence was highest in three states of south India- Karnataka (6.4 %) followed by Telangana (5.1 %) and Andhra (3.9 %).
- Land/house ownership is an important indicator for female empowerment. In seven states- Telangana (74.5 %), Meghalaya (70.1 %), Karnataka (69.7 %), Manipur (58.9 %), Bihar

(55.7 %), Andhra Pradesh (50.6 %) and Sikkim (50.6 %), half of the women reported land/house ownership.

- There is a declining trend of land/house ownership in rural India as 11 out of 18 states/UTs reported considerable decline in the percentage of women owning land/houses of which four of them were from north-east.
- Holding a bank account and using it on regular basis is the first step towards economic empowerment of women. There is a sharp increase in the number of female bank accounts holders in rural India during 2015-16 and 2019-20. In majority of the states/UTs more than 70 % rural women had bank account in 2019-20 except Gujarat (67.5 %) and Nagaland (55.4 %).
- Women's participation in household decisions has also increased during 2015-16 and 2019-20. In 2015-16, the states/UTs in India had more than 75 % rural women participating in household decisions which increased to more than 80 % in 2019-20.
- The female literacy rate in rural India is increasing over time which has a direct impact on reduction of spousal violence. The NFHS-5 data shows a negative relationship between the variables of 'Ever- married women who have ever experienced spousal violence (%)' and 'women who are literate (%)', which indicates that with increasing female literacy rate, the cases of spousal violence decline in rural India.

Marriage, Fertility and Family Planning

- The rural India is heading towards achieving replacement level fertility (2.1). Majority of the states/UTs (11 out of 18) had achieved replacement level fertility in 2015-16. In 2019-20, three states- Gujarat, Assam and Nagaland achieved replacement level fertility and now, total 14 states/UTs have achieved replacement level fertility. Bihar, Manipur, Meghalaya and Mizoram are the states which had high TFR (>2.1) and yet to achieve the replacement level fertility.
- The overall pattern shows a decline in the rural fertility level across states/UTs during 2015-16 and 2019-20.
- It has been observed that among rural women, the usages of family planning methods are more inclined towards permanent contraceptive methods such sterilization.
- The responsibility of sterilization is largely shouldered by women in rural India, as the percentage of sterilized women outnumber the percentage of sterilized men in every state/UTs.
- There is a direct relationship between total fertility rate (TFR) and Unmet Needs of family planning methods which indicates that the TFR is higher among the states/UTs which have higher unmet needs of family planning methods, and vice versa.
- In 2019-20, states like Nagaland, Himachal Pradesh, and Telangana have performed exponentially well in reducing marriages of adolescent girls which could be attributed to the increasing level of female education in these states. However, the opposite trend was found in Bihar, Manipur, Meghalaya, and Mizoram where the marriages of adolescent girls are still high.
- There is an inverse relationship between schooling years of women and marriages of adolescent girls. The states/UTs which performed better in terms of schooling years of women have lower incidences of marriage of adolescent girls.

Maternal Health

- In 2019-20, more than 90 % rural pregnancies were registered across states/UTs (except Manipur (72 %), where mothers received a mother and child protection card which is very useful for record-keeping of services provided during pregnancy, and postpartum period. This card also registers the weight of child on regular interval and immunization record.
- Majority of the states/UTs (13 out of 18 states/UTs) reported more than 80 % institutional births in 2019-20 with a significant improvement during 2015-16 and 2019-20. Only in north-eastern states, the level of institutional births was low in rural areas with Nagaland registering the lowest institutional births (38.8 %) in 2019-20. Bihar is another state which had low level of institutional births (75 %) as compared to other states/UTs. Southern states like Kerala, Karnataka, Andhra Pradesh and Telangana have fared well with more than 95 % Institutional deliveries in 2019-20.
- There was an increase in the C-section deliveries across states/UTs (except Mizoram and Nagaland) during 2015-16 and 2019-20. Bihar, Meghalaya, Mizoram, and Nagaland were the only states that had C-section births lower than the global recommended level of 15%. However, the highest percentage of C-section deliveries in 2019-20 was reported by southern states- Telangana (58.4%), Andhra Pradesh (39.3%), and Kerala (38.7%).
- The percentage of C-section deliveries is significantly higher in private hospitals as compared to public hospitals. In 2019-20, the highest percentage of C- Section deliveries performed in private health facilities was reported in West Bengal (84.4 %) and the lowest in Gujarat (25 %). In case of C-section deliveries performed in public hospitals, Telangana had the highest percentage (44.3 %) whereas Bihar had the lowest percentage (3.5 %).
- The adolescent pregnancy is another important aspect of maternal health in rural India because majority of these pregnancies are unaccounted for in the record of the public healthcare system. Out of 18 states/UTs, 6 had shown more than 10 % adolescent pregnancies.
- In 2019-20, the adolescent pregnancies were highest in Tripura (20.7 %) followed by West Bengal (20.6 %), Telangana (13.8 %) Andhra Pradesh (13.2 %), Assam (12.5 %), Bihar (11.6 %) and Maharashtra (10.4 %). However, Kerala reported the least adolescent pregnancies (3.2 %).
- The cost of per delivery in rural India is significantly high in 2019-20 as out of pocket expenditure (OOPE) per delivery in public health facility increased across states/UTs, ranging Rs 1,535 in Gujarat to Rs. 13,565 in Manipur. North Eastern states (Manipur, Sikkim, Tripura, Assam and Nagaland) and Kerala are the top 6 states with regard to the OOPE per delivery in a public health facility.

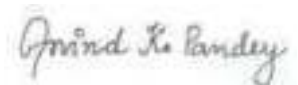
Adult Health and Non-Communicable Diseases

- There is a marked improvement visible in the declining percentage of males and females with low BMI in rural India during 2015-16 and 2019-20. In contrast, the obesity among rural males and females has increased in the same period. The obesity among female was lower than male in rural India in 2019-20.
- Gujarat, Bihar, West Bengal and Tripura were the states with highest percentage of anaemic women (non-pregnant, pregnant and total) (more than 60 per cent) in 2019-20.
- The prevalence of anaemia among rural women (non-pregnant, pregnant and total) in India has increased during 2015-16 and 2019-20 with north-eastern states experiencing highest increase during this period. As compared to females, the prevalence of anaemia among men was low across states/UTs in 2019-20. West Bengal (42.4 %) and Assam

(37.5 %) reported highest percentage of anaemic males in 2019-20, however, it was very low in Manipur (6.5 %).

- Majority of the states have reported increasing percentage of males and females with high blood sugar level and very high blood sugar level during 2015-16 and 2019-20.
- In majority of the states, the percentage of males and females with moderate to severely elevated blood pressure was less than 10 % in 2019-20. The occurrence of hypertension, both slightly above normal and moderate to severe, was higher among females than male in rural India. All 19 states/UTs have registered an increase in cases of moderate to severely elevated blood pressure among males and females during 2015-16 and 2019-20.
- Across all 19 states/UTs, tobacco and alcohol consumption among men is significantly higher than women. The consumption of tobacco among men has declined during 2015-16 and 2019-20. In contrast, female tobacco users have increased in most of the states with highest concentration in North-eastern states.
- The alcohol consumption among males is higher than females in rural India. However, all 19 states/UTs have reported decline in the consumption of alcohol among males during 2015-16 and 2019-20. In contrast, the alcohol consumption among females has increased in most of the states. Out of 19 states/UTs, 12 states/UTs have reported increase in the alcohol consumption among females.
- The cancer screening data for women aged 30-49 years in NFHS-5 have reported a low level of screening of cervical cancer (less than 5 per cent), breast cancer (less than 3 per cent) and oral cancer (less than 10 per cent) among rural women in India.

The COVID-19 pandemic has exposed the many fault lines that underpin the healthcare system of India, both in rural and urban settings. In this context, the present report would be helpful to understand the impact of the existing policies and programmes on indicators of health and well-being in rural India. It is a statistical account of the progress that has been made so far and also provides a glimpse of the future discourse that is required to achieve Sustainable Development Goals related to each of the six areas that have been grappled with in this report. The students have tried their best to provide accurate information based on the factsheets of NFHS-4 and 5, however, as the mentor, I bear responsibility for any inadequacies, drawbacks and limitations that remain in this work. All suggestions and criticisms are gratefully acknowledged.



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Child Nutrition

An analysis of nutritional status of children in rural India

Introduction

The nutritional status of diet plays an important role in the process of overall development of the children. Good nutrition remains at the fulcrum of a child's survival, performance and growth from fetal development to adolescence and further. A child's mental and physical health grows rapidly in the first few years, hence it's important to provide adequate nutritional supplements at an early age.

Picture Credit: Debarati Chaudhary

Sustainable Development Goal (SDG)- 2 adopted by the United Nations in 2015 recognizes a need for better nutrition and aims to 'end hunger, achieve food security and improved nutrition and promote sustainable agriculture' by 2030. The 2030 agenda set by the United Nations targets to end all forms of malnutrition. It also includes achieving internationally agreed targets on stunting and wasting in children under 5 years of age by 2025. As SDGs are not legally binding, governments are expected to take ownership and establish a national framework for their own country.

Globally, one out of every three children are the victim of various forms of malnutrition (UNICEF, 2019). According to UNICEF (2019), due to a wide developmental paradox, children residing in a rural part of the country are more vulnerable than their urban counterparts in terms of nutritional status. For better understanding of the phenomenon, the present section of the report has been divided into two parts. The first part comprises indicators related to children aged below 23 months age and the second part constitutes indicators related to children aged below 59 months. This section examines the current nutritional status of children in rural India and it's determining factors for both age-groups.

The objectives of the study are as follows:

1. To assess the nutritional level of children in rural areas of Indian states and UTs.
2. To determine the factors responsible for the nutritional level of children in rural India.



Picture Credit: Debarati Chaudhary

NUTRITIONAL STATUS AND EARLY INITIATION OF BREASTFEEDING IN INDIA



Picture Credit: Mugdha Narkar



Picture Credit: Debarati Chaudhary

Children under age 3 years breastfed within one hour of birth

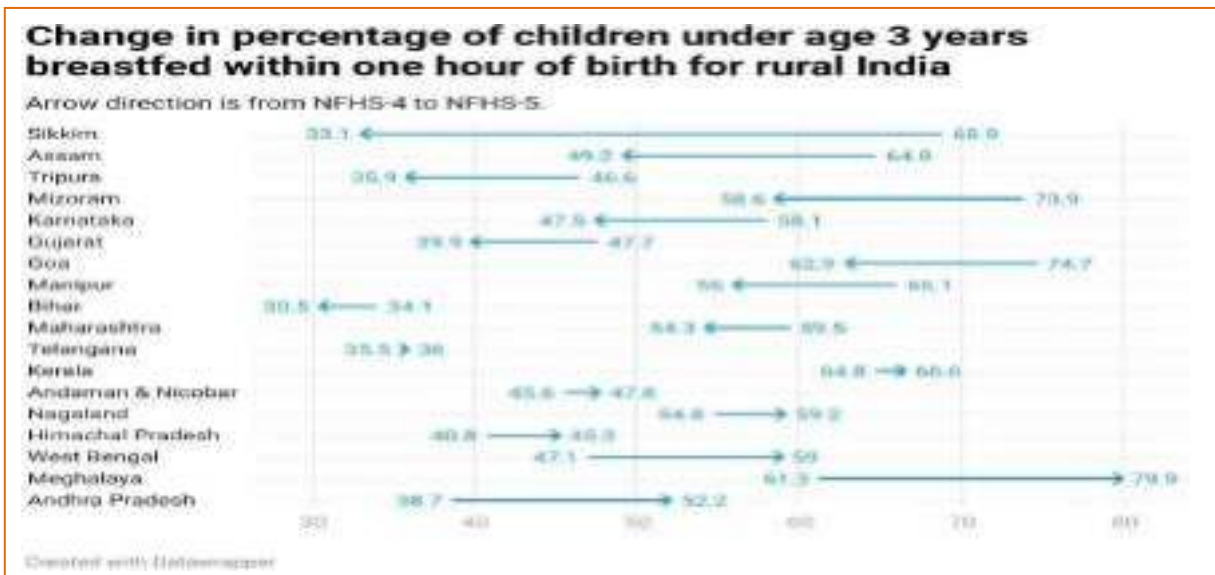


Figure 1.1

- Provision of mother’s breast milk to infants within one hour of birth is referred to as “early initiation of breastfeeding” and ensures that the infant receives the colostrum, or “first milk”, which is rich in protective factors (WHO, 2019).
- Breastfeeding is a vital source of nutrition that can save children’s lives and contribute to improved health outcomes for children and mothers. Breast milk contains all the nutrients which is essential for an infant in the first six months of life (Uwaezuoke et al., 2017).
- Breastfeeding is a central part of the 2030 agenda for Sustainable Development and is linked to many of the SDG such as Goals 2 and 3, which are related to hunger, health and well-being. Breastfeeding is also linked to critical equality issues including birth spacing and workplace rights and thus in line with Goal 5 of the SDGs.
- A significant increase in the prevalence of early initiation of breastfeeding was reported in Meghalaya followed by Andhra Pradesh, West Bengal, Himachal Pradesh, Nagaland and Andaman and the Nicobar Islands.
- As per the reported figures in NFHS-4 and NFHS-5, majority of the states experienced a decline in early initiation of breastfeeding.

Children under age 6 months exclusively breastfed (%)

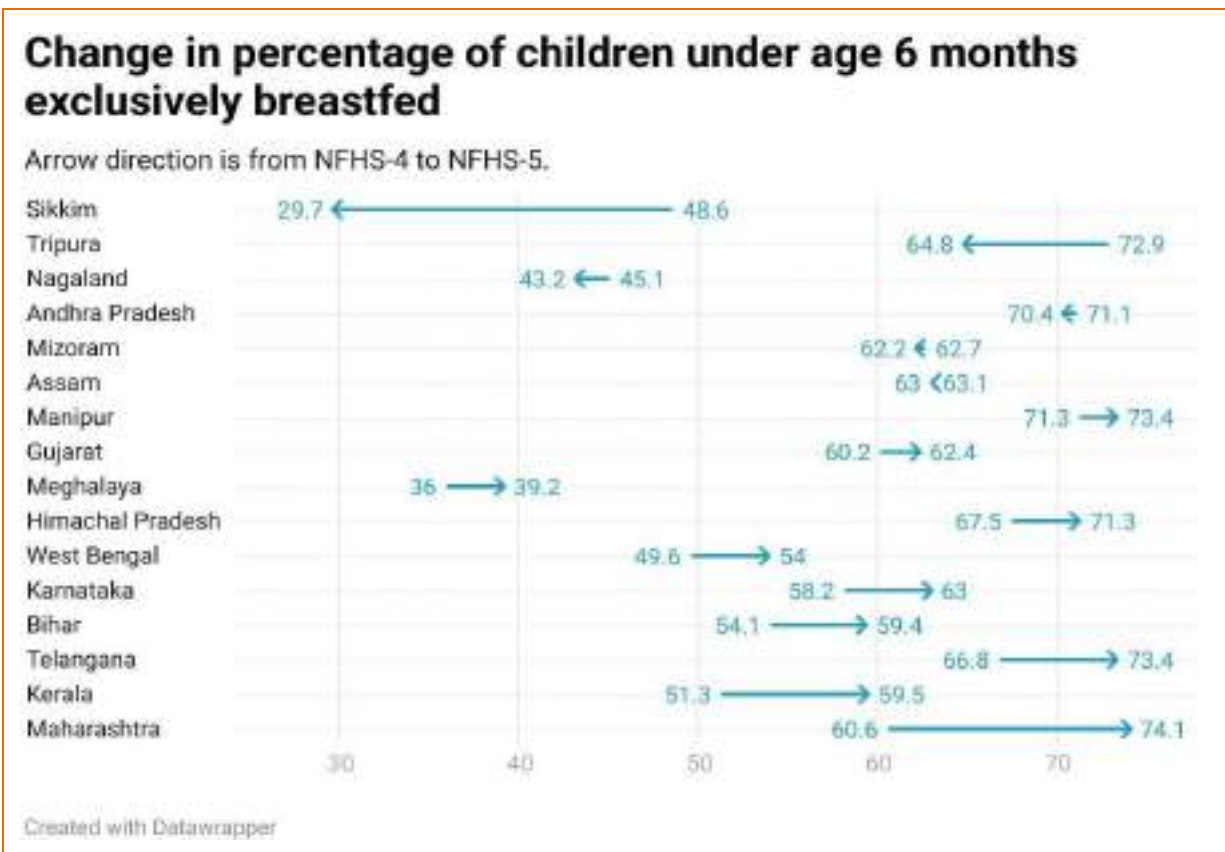


Figure 1.2

- Maharashtra, Telangana, Andhra Pradesh, Himachal Pradesh, and Manipur have performed well, with all of them having more than 70% of children under age 6 months being exclusively breastfed in 2019-20.
- Sikkim has shown the sharpest decline from 48.6 % in 2014-15 to 29.7% in 2019-20. Meghalaya and Nagaland are other two states, who have not performed well.

Children age 6-23 months receiving an adequate diet

- An adequate diet is one which fulfills all the nutritional needs of the person (Maynard, 1959). It promotes the well-being and increases the learning capacity. It is also essential for growth and development of children and protects them from various diseases.

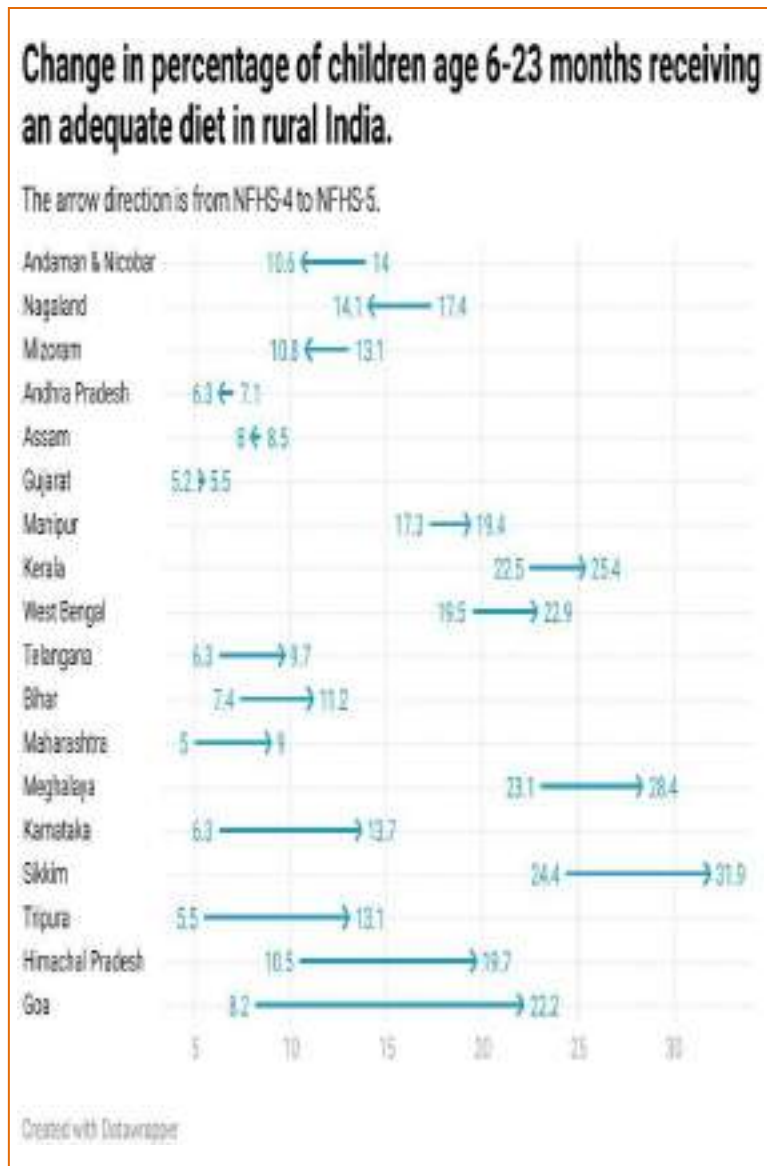


Figure 1.3

- Thirty-five percent of all childhood deaths are attributed to under nutrition, which is the largest single contributor to childhood mortality worldwide (Horton, et al. 2010).

From NFHS-4 to NFHS-5, states like Goa, Tripura, Karnataka, Maharashtra, Himachal Pradesh, Telangana and Bihar have shown significant progress, whereas the percentage of children getting an adequate diet has declined in Nagaland, Mizoram, Andhra Pradesh, Assam and Andaman and Nicobar.

- The states like Sikkim, Meghalaya and Kerala are the top three performers in NFHS-5 and states like Gujarat, Andhra Pradesh and Assam are at bottom.



Picture Credit: Debarati Chaudhary

NUTRITIONAL STATUS OF CHILDREN UNDER AGE 5 YEARS



Picture Credit : Amol Kadam



Picture Credit: Debarati Chaudhary

Stunting

- Stunting is the impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation. Children are considered as stunted when their height-for-age is at least 2 standard deviations (SD) below the median for the WHO Child Growth Standards (WHO, 2015; NFHS, 2019-20).

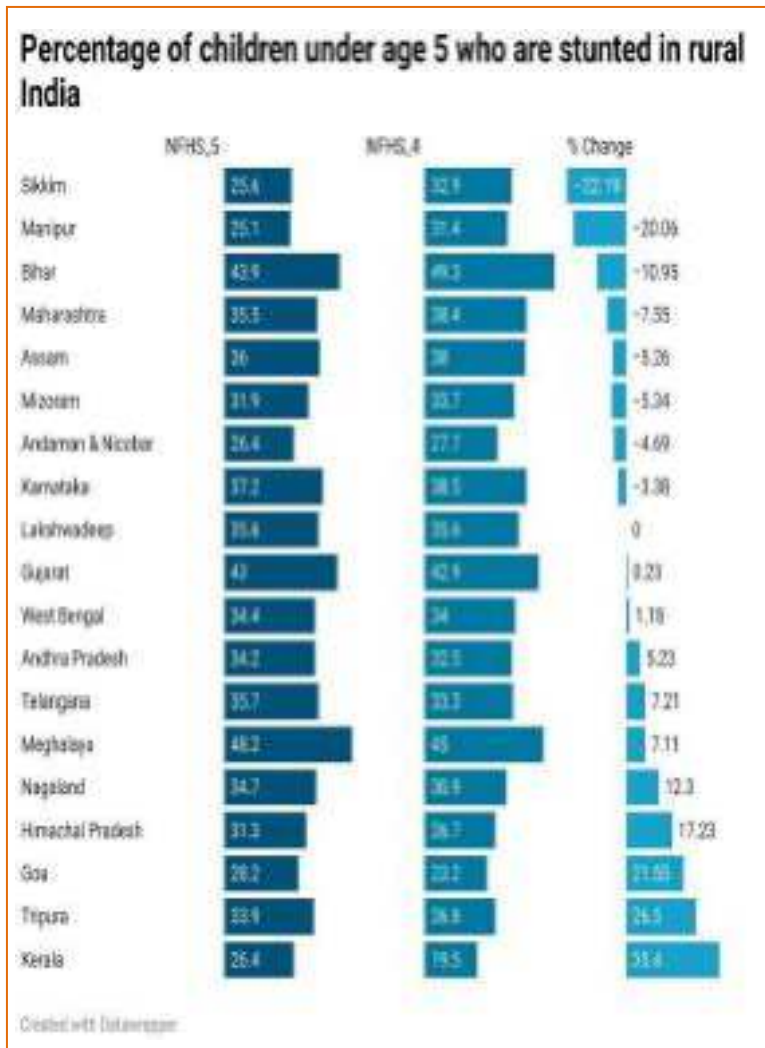


Figure 1.4

like Sikkim, Manipur, Maharashtra, Karnataka, Bihar, Assam and Andaman and Nicobar have shown improvement between 2015-16 and 2019-20 with decline in the percentage of stunted children. At the same time, stunting among rural children in Kerala and Tripura have increased.

- Stunting is caused due to an inadequate diet, poor nutrition, continuous infections and various other psychological reasons. It affects a child throughout life in the form of poor performance in academics, decreased cognitive capacity and delayed motor development (UNICEF, 2007).

- Comparing the estimates of states in NFHS-5, Sikkim, Manipur, Andaman & Nicobar and Kerala have relatively lower prevalence of stunting. On the other hand, Meghalaya, Bihar and Telangana have the highest prevalence of stunting among rural children.

- As per the reported figures in NFHS-4 and NFHS-5, states

Wasting

- Children are considered as wasted when their weight-for-height is at least 2 standard deviations (SD) below the median for the WHO Child Growth Standards (NFHS, 2019-20).

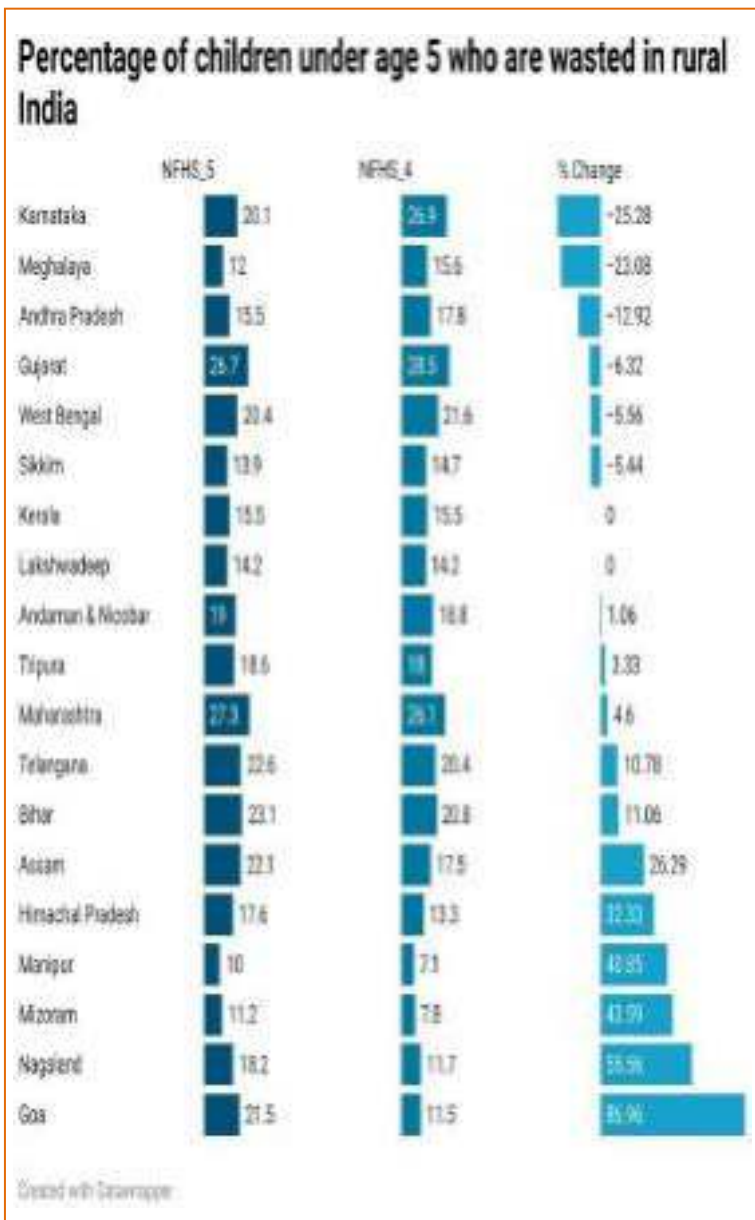


Figure 1.5

- Manipur, Mizoram and Meghalaya have the least percentage of wasted children in 2019-20. On the contrary, Maharashtra, Gujarat, Bihar and Assam have the highest number of wasted children in same year.
- The comparative figures of NFHS-IV and V show that Goa followed by Nagaland, Mizoram, Manipur and Himachal Pradesh are the states where per cent of wasted children increased during this period.

- Inadequate diet, acute food shortage, low-calorie intake, nutrition loss due to any disease or infection, etc. lead to wasting in children. It is one of the major causes of under-5 mortality (UNICEF, 2007).

- It leads to weight and appetite loss, weakness, fatigue, low energy level and loss of strength. It serves as a door to several diseases like chronic diarrhea, tuberculosis, etc. resulting in weakness in the body.

- From NFHS-4 to NFHS-5, Karnataka, Meghalaya, Andhra Pradesh, Gujarat, West Bengal, and Sikkim have shown decline in the percentage of wasted children. Kerala and Lakshadweep have remained stagnant.

Severely wasting

- Children are considered as severely wasted when their weight-for-height is at least 3 standard deviations (SD) below the median for the WHO Child Growth Standards (NFHS, 2019-20). Along with inadequate diet, severe wasting occurs when there is inadequate breastfeeding, non-access to quality health care and insufficient food in the initial years of a child's growth.

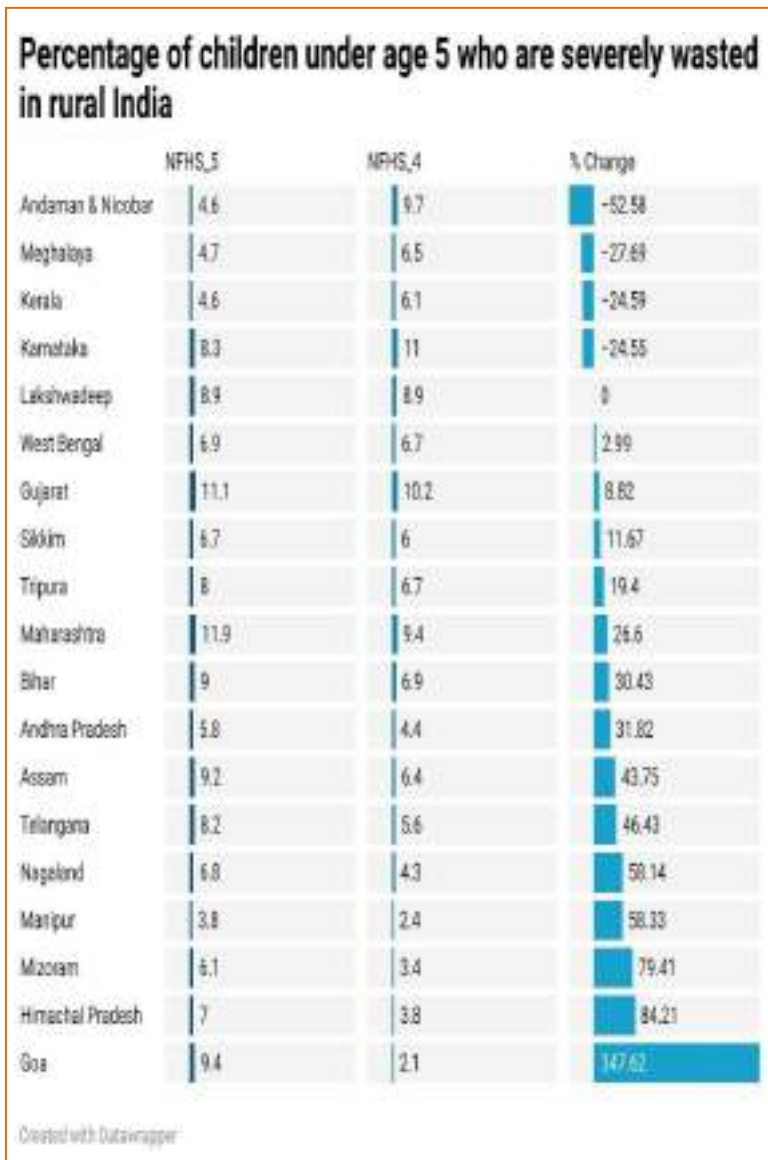


Figure 1.6

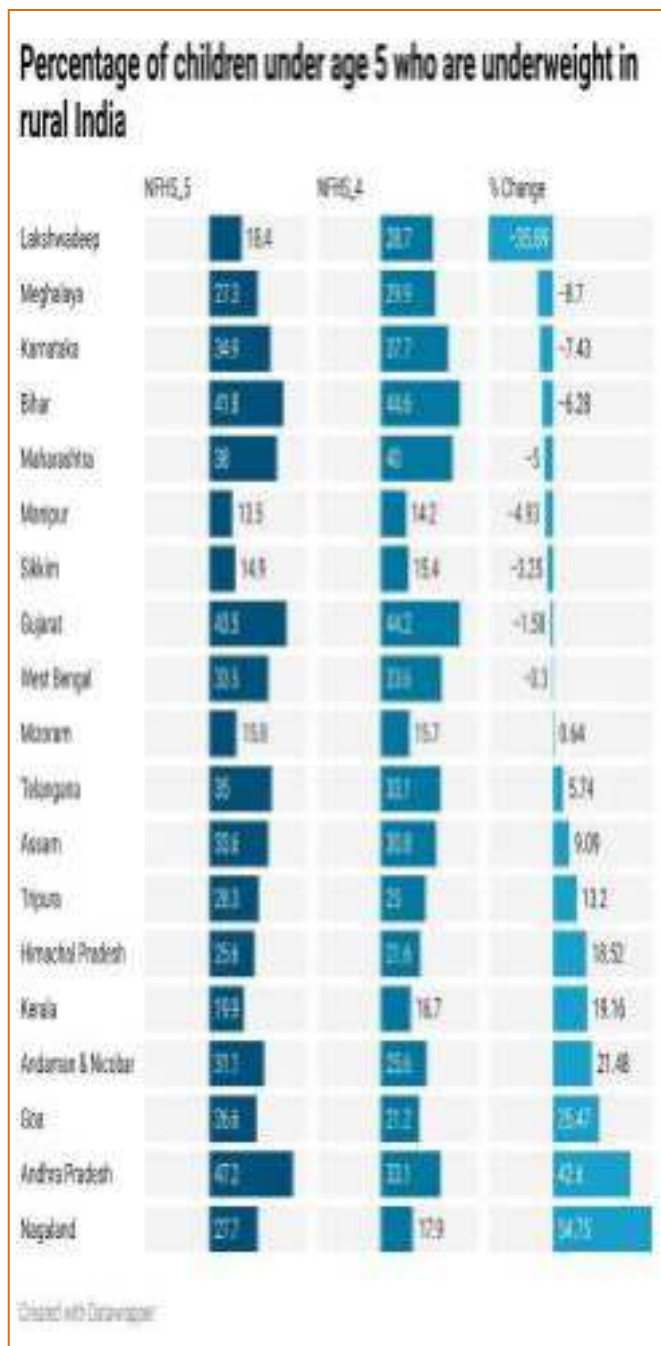
- It leads to weak body immunity and the chances of early death are higher in children with severe wasting. (UNICEF, 2020).

- Andaman & Nicobar, Meghalaya and Kerala perform well with the least percentage of severely wasted children and Gujarat, Maharashtra and Goa are the worst performers with more percentage in NFHS-5.

- The estimated figures from NFHS-4 and NFHS-5 suggest a decline in severe wasting among rural children in Andaman & Nicobar, Meghalaya, Kerala and Karnataka. The reported estimates also show unchanged wasting status in Lakshadweep while a noteworthy decline was seen in other states between 2015-16 and 2019-20.

Underweight

- Children are considered as underweight when their weight-for-age is at least 2 standard deviations (SD) below the median for the WHO Child Growth Standards (NFHS, 2019-20). The problem of Underweight in children caused due to genetic reasons, thyroid and other digestive diseases, or a weak digestive system and eating disorder.



- Underweight can lead to insufficient growth of the child, joint pain, delicate bones, low body fat and less muscle mass, anxiety and mood swings and restricted growth. This problem can be solved by giving them an adequately nutritious diet, proper calorie intake and a balanced diet. (Nair, 2019).

- Manipur, Sikkim and Mizoram have a smaller percentage of underweight children in 2019-20. However, Gujarat, Andhra Pradesh and Bihar have highest percentage of such children.

- From NFHS-4 to NFHS-5, Lakshadweep, Meghalaya, Karnataka, Bihar, Maharashtra, Manipur, Sikkim, Gujarat, and West Bengal have shown decline in the underweight children, while in the rest of the states; the number of underweight children has further increased with Nagaland having the most increase in underweight children.

Figure 1.7

Overweight

- Children are considered as overweight when their weight-for-age is at least 2 standard deviations (SD) above the median for the WHO Child Growth Standards (NFHS, 2019-20). Changing lifestyle habits with sedentary life and poor eating patterns has caused the problem of overweight in children.



- The genetics, socio-economic factors and a high dose of medication by the mother during pregnancy can also lead to overweight among children. Due to overweight, the child becomes prone to several diseases like high cholesterol, high blood pressure, diabetes, joint problems, breathing problems, liver problems, early maturity, high risk of cardiovascular diseases, etc. (WebMD Medical Reference, 2020).

- The figure 1.8 shows that most of the north-eastern states have high percentage of overweight children along with Lakshadweep, Himachal Pradesh and Andaman and Nicobar in 2019-20. However, Bihar is the state which have the least number of overweight children. Moreover, most of the southern states also have fewer overweight children.

Figure 1.8

Methodology for the calculation of Composite Nutritional Score for rural India

- To compare the nutritional status of rural children aged below 5 years across states in 2019-20, Composite nutritional Score is calculated by using four indicators - stunting, wasting, severely wasting and underweight.
- Mean and Standard Deviation for each of the indicators is calculated by using the data for all the available states and UTs.
- Z-Score has been computed for each of these indicators by using following formula:

$$\text{Z-Score} = \frac{(\text{Observation} - \text{Mean})}{\text{Standard Deviation}}$$

- The Composite Nutritional Score for each state is calculated by taking the average of Z-Score for that state.

Composite Nutritional Score for Children under age 5 for Rural India

Composite Score	Indicators taken into consideration	Description	States/UTs which have not been included
Nutritional Composite Score (Nutritional Status of Children under 5)	<ul style="list-style-type: none"> • Children under 5 years who are stunted (height-for-age) (%) • Children under 5 years who are wasted (weight-for-height) (%) • Children under 5 years who are severely wasted (weight-for-height) (%) • Children under 5 years who are underweight (weight-for-age) (%) 	A lower value of the composite score is better	<ul style="list-style-type: none"> • Daman &Diu and Dadra and Nagar Haveli • Jammu and Kashmir • Ladakh

Table 1.1

Composite nutritional score for children under age 5, 2019-20

- The composite nutritional score in figure 1.9 shows that states like Manipur, Mizoram, Sikkim and Kerala have better nutritional status for children under age 5 in 2019-20. However, Gujarat, Bihar and Maharashtra have poor nutritional status.

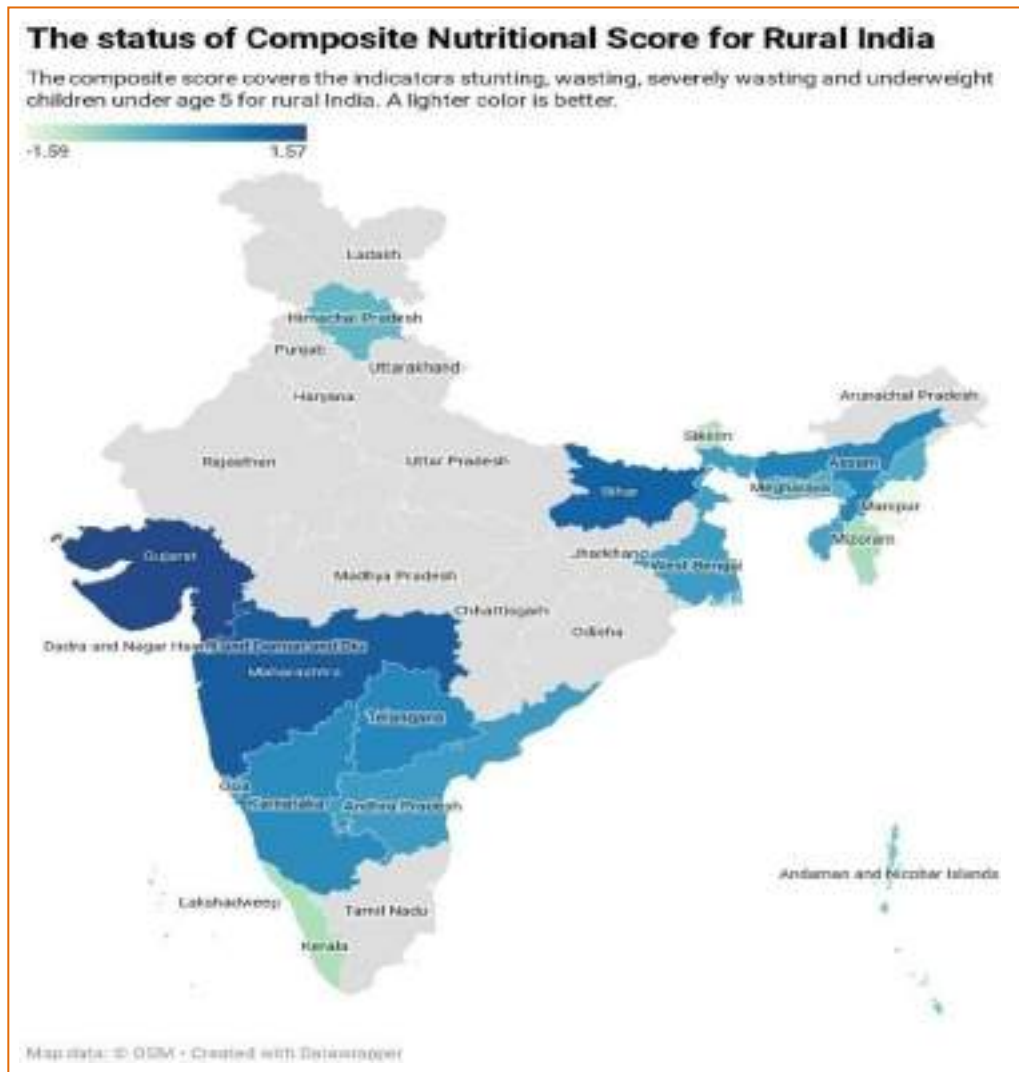


Figure 1.9

Karnataka- a sign of positive change

From NFHS-4 to NFHS-5, Karnataka has shown improvement in all the indicators related to the nutritional status of children under age 5, except a slight increase in the anaemic children. This indicates an improvement in the child nutrition in rural Karnataka.

Nagaland- a worrying trend

Nagaland is the only state whose position has deteriorated in all the indicators related to nutritional status of children under age 5 i.e, stunting, wasting, severely wasted, underweight and anaemic children from NFHS-4 to NFHS-5.

The sharp difference between Nagaland and Karnataka could be because of the health care policies adopted by these state governments, and the kind of care given to the newly born children in these states, along with adequate diets and other nutritions.



Figure 1.10



Figure 1.11



Figure 1.12



Figure 1.13



Picture Credit: DebaratiChaudhary



Picture Credit: Amol Kadam

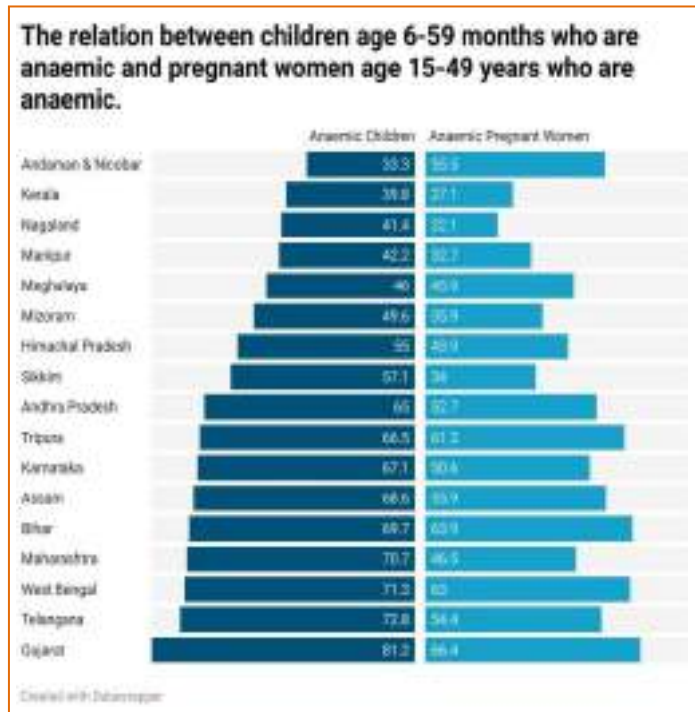
RELATION BETWEEN DIFFERENT INDICATORS



Picture Credit: Debarati Chaudhary

Relation between Anaemic children and Pregnant Women

- Anaemia is the most prevalent problem among children age 6-59 months. Anaemic children do not have enough red blood cells or hemoglobin (<11.0 grams per decilitre (g/dl) in their blood, which is responsible for carrying oxygen to different body parts.



- This may be caused due to infections, genetic reasons and defects in the RBCs, side effects of medications, or lack of minerals and vitamins in the body. It can make one feel very tired, irritable and can lead to increased heart rate, breathlessness, jaundice, etc. (Mayo Clinic, 2019)

- The percentages of children suffering from anaemia are more than 30% in all the states/UTs. **Gujarat (81.2%) has the highest anaemic children.**

Figure 1.14

- The states having a higher percentage of anaemic pregnant women also have higher percentages of anaemic children, like Gujarat and Bihar. The opposite is also true like Kerala with a lower percentage of anaemic pregnant women has a lower percentage of children suffering from anaemia.
- A strong relationship has been observed between anaemic children and anaemic expecting mothers ($r = 0.71, p < 0.01$)

Indicators	Anaemic Children	Anaemic Pregnant Women
Anaemic Children (6-59 months)	1	
Anaemic Pregnant Women	0.71*	1

Note: * shows that result is statistically significant ($p < 0.01$)

Table 1.2

Relation between composite nutritional score and Anaemic Children

- States which perform better in child nutrition indicators also have a lower percentage of children who are anaemic. The inverse is also true where the states which perform poorly in child nutrition indicators, also have a high percentage of anaemic children.
- Worryingly, many states with large population such as Gujarat, Bihar, Maharashtra, West Bengal, Telangana, Assam, Andhra Pradesh and Karnataka have very high percentage of anaemic children (more than 65% of children being anaemic).

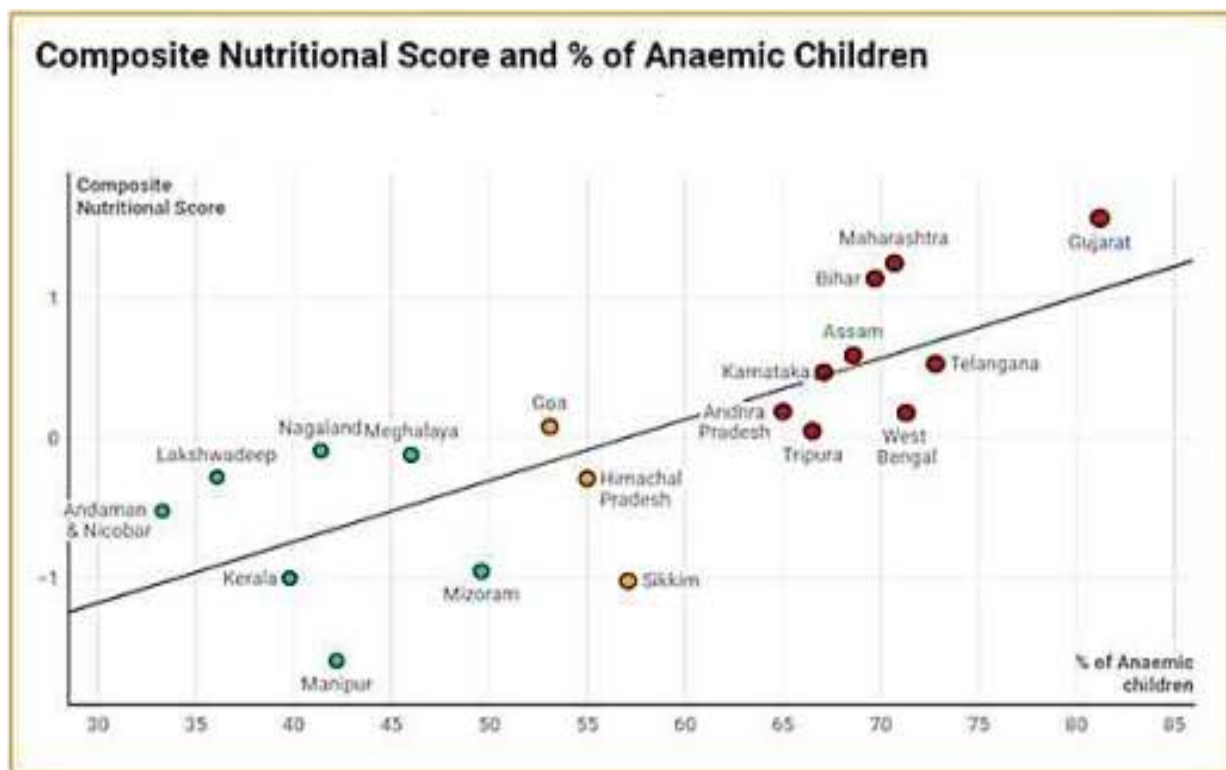


Figure 1.15

Relation between composite score and adequate diet

- The states where children are provided an adequate diet are doing better on nutritional parameters too that means they have a smaller number of stunted, wasted, severely wasted and underweight children) and vice-versa.

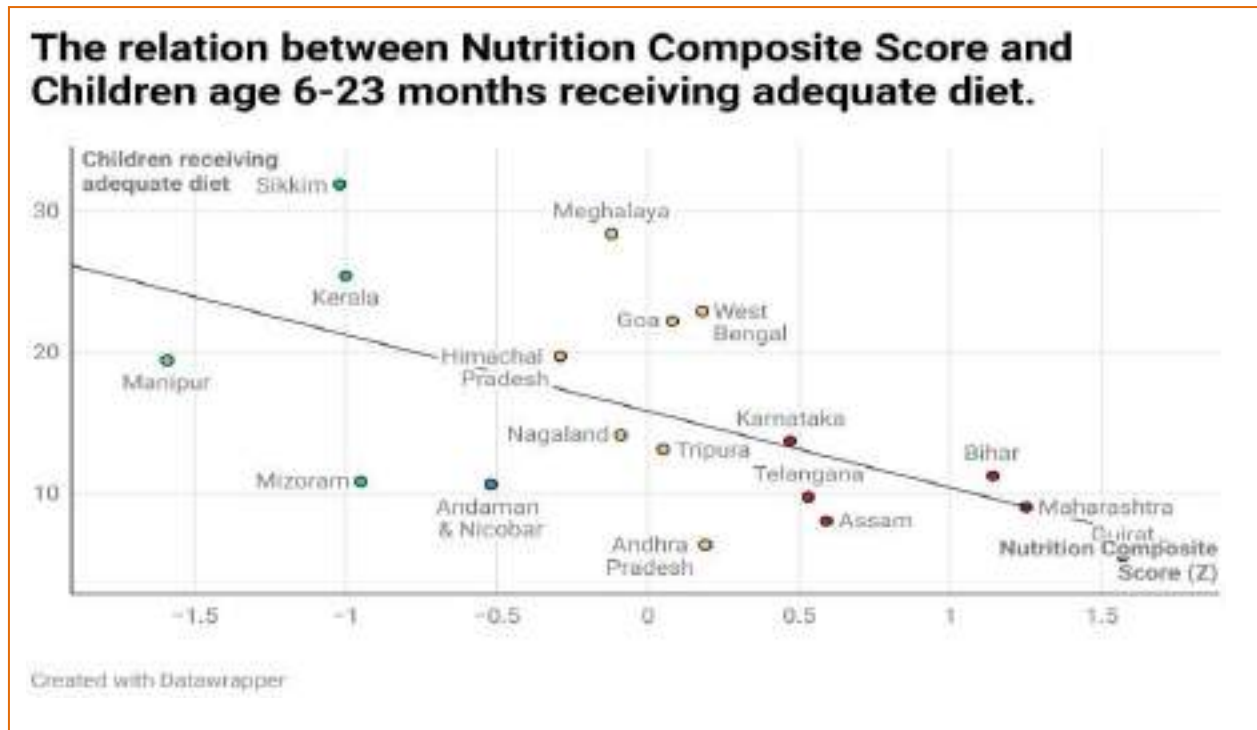


Figure 1.16

Conclusion

After observing the state wise performance, the following points can be concluded:

- The nutritional status of children in rural India is deteriorating between 2015-16 and 2019-20
- A mother's nutritional status can also influence her child's nutritional status.
- The correlation analysis shows a strong relationship between pregnant anaemic women and children age 6-59 months. To reduce anaemia among pregnant women, iron rich food and folic acid tablets should be given to them.
- Distribution of safe motherhood posters and the booklets in regional languages could enhance the health and nutritional education of pregnant women.
- Counseling for initiation of breastfeeding, Promotion of cultivation of micro-nutrient rich crops and development of their effective supply chains to rural areas could help to address stunting and wasting.
- Reforms by government regarding child nutrition should focus on the most vulnerable communities and critical age groups. For this a decentralized approach should be undertaken to strengthen the ownership of Panchayati raj institutions over nutrition initiatives.

Picture Credit: DebaratiChaudhary

The background of the slide is a grayscale photograph of several hands of different ages and skin tones being held together in a supportive grip. The hands are the central focus, with some in the foreground and others slightly blurred in the background, creating a sense of depth and care.

Child Health and Mortality

What is the relationship between child mortality and institutional care?



Background

The role of institutions in enhancing child health and preventing child mortality is indisputable. This can be felt at different stages of a child's life - from its birth, the crucial first hour, and up to five years of age.

Child mortality expressed in terms of Neonatal Mortality Rate (NNMR), Infant Mortality Rate (IMR), and Under-Five Mortality Rate (U5MR) can be associated with a host of factors. Along with the mortality rates, this bulletin based on NFHS-5 (2019-20) factsheet, covers output data observations pertaining to four such broad factors and related indicators. Available rural data for the 22 States/UTs surveyed in Phase-1 of NFHS-5 has been analyzed and compared with the previous round of NFHS-4 (2015-16).

The relationship of child mortality with indicators of institutional care like C-section deliveries, early breastfeeding, neonatal care given by skilled health personnel, and immunization has also been analyzed.

Relationship between Child Mortality and Institutional Care

Safeguarding the lives of newborns has been a long-standing issue in social policy, philanthropic undertakings, and public health. Scholars suggest that high infant mortality rates are for the most part demonstrative of neglected human wellbeing (Linda, 2017). One of the reasons for child mortality is the high infection risk in the case of non-institutional births. It is observed that in developing countries, enormous number of births occur outside of health facilities, for the most part at home and unattended by formally trained doctors or maternity specialists. The sub-Saharan Africa and South Asia are the two regions that represent most infant deaths because half of all births happen at home (Montagu, 2011).

The UN SDG framework (SDG-target 3.1.2) puts forth the rationale that having a skilled attendant at the time of delivery is an important lifesaving intervention for both mothers and babies. The neonatal period of a child's life i.e. – the first 28 days from birth – carries the highest risk of mortality per day than any other period of childhood (Sankar et al., 2016). In 2018, nearly half of the deaths before the age of five (2.5 million) occurred in the first month of child life (ECOSOC, 2020).

This gives us a grim picture of how neonatal mortality is contributing to the increased child mortality under-5 years of age. As per WHO 2012 estimates, 53% of child deaths in the age group 0-5 occur due to neonatal causes (MoHFW, 2017). The lack of skilled medical care given to newborns appears to be a major contributor in this aspect.

Studies conducted in Latin America, Asia, and Canada have suggested that the ideal standard rate of C-section deliveries falls in the range of 10-15% and rates higher than this correlate to higher IMR (Volpe, 2011). The number of births delivered via C-section has increased significantly in the last 25 years all over the world. Even in India, the rate of C-section births is increasing and the threshold of 15% C-section birth rates set by WHO has been already flouted adding to this rise (Guilmoto & Dumont, 2019). As compared to vaginal deliveries, C-section deliveries affect the early breastfeeding practices that further influences infant mortality (Kotaska, 2015). Delay in breastfeeding, the only natural source of nutrition for an infant, arises because of lack of exclusive and early breastfeeding after the C-section. In addition to nutrients benefits, the mother-infant interaction is built if a child is breastfed within an hour (Prior, et al., 2012).

Another important topic which we are discussing in this section is immunization of children in rural India. It is disheartening to note that nearly one million children die before their fifth birthday in India (UNICEF, 2019). A substantial proportion of these deaths are caused by vaccine-preventable diseases such as diarrhoea, pneumonia, malaria, etc. Immunization plays a vital role in mitigating child mortality and easing the disease burden. In the absence of proper immunization, infants and children under the age of five are extremely vulnerable to life-threatening diseases and disabilities (WHO, 2009). An effective immunization programme will not only reduce child mortality but also curtail the financial burden of the community, considering that the cost of prevention is drastically lower than the cost of treatment (WHO, 2009). Along with early institutional care for newborns, adequate immunization has the potential to save millions of lives.

Our analysis of the NFHS data on these indicators of institutional care and child mortality also substantiates the above arguments.



Source: <https://images.app.goo.gl/KgdaJrIw6qdoNk6z6>

NEONATAL Mortality AND INSTITUTIONAL CARE



Source: <https://images.app.goo.gl/Lz2nS29lGkdx3Ph>



Source: <https://images.app.goo.gl/YHLaRz8nYb5FXTbH8>

Neonatal Mortality Rate

Neonatal mortality rate is defined as the number of deaths per 1000 live births.

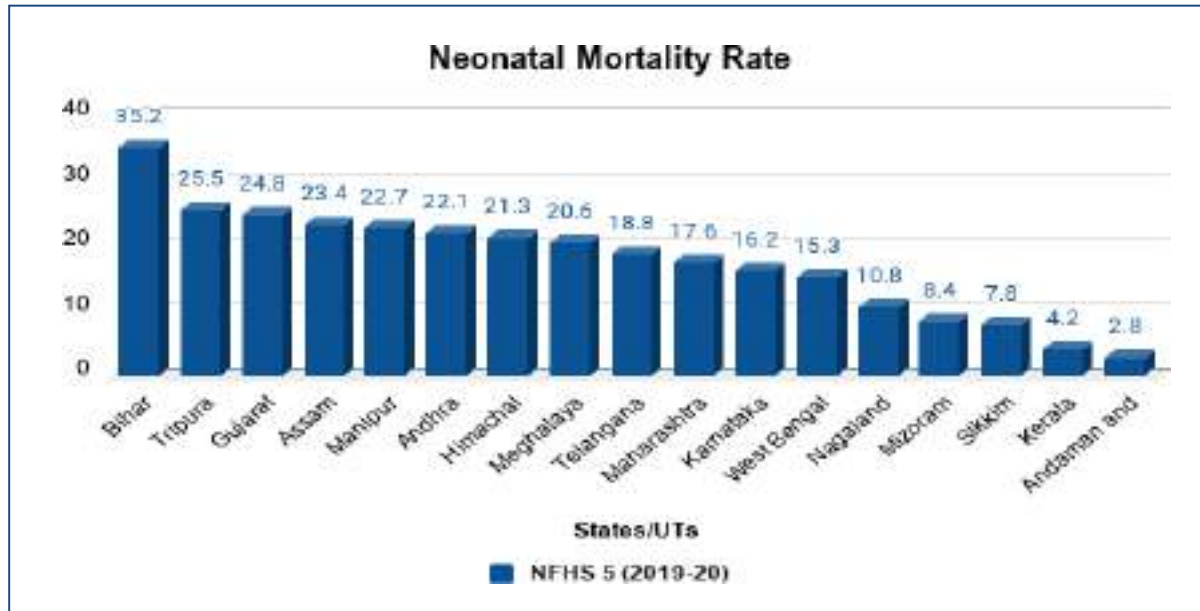


Figure 2.1

- Andaman & Nicobar Islands has the lowest NNMR of 2.8 deaths per 1000 live births whereas, among the states, NNMR is lowest in Kerala (4.2 deaths per 1000 live births).
- SDG target (SDG 3.2.2) of reducing NNMR to at least 12 per 1000 live births by 2030 has been achieved in rural areas of Andaman & Nicobar Islands, Kerala, Sikkim, Mizoram, and Nagaland.
- Bihar has the highest NNMR of 35.2 deaths per 1000 live births.

Check-up in a Health Facility

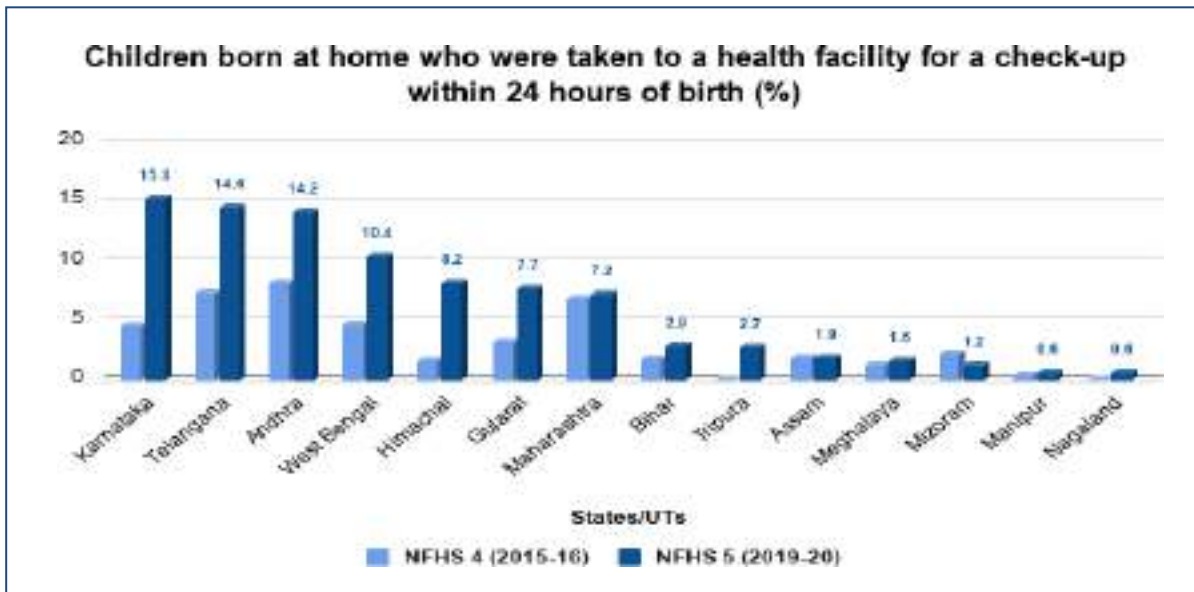


Figure 2.2:

- The percentage of children born at home who were taken to a health facility (HF) for a check-up within 24 hours of birth is lowest in the north-eastern part of the country along with Bihar (2.9%).
- Manipur and Nagaland are ranked at the bottom with 0.6 % children born at home who were taken to a health facility (HF) for a check-up within 24 hours of birth while Mizoram has shown a declining trend from 2.3 % in 2015-16 to 1.2 % in 2019-20.
- Assam has remained stagnant where 1.9 % children born at home who were taken to a health facility (HF) for a check-up within 24 hours of birth.

Postnatal Care by Health Personnel

The percentage of children who received postnatal care from doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of delivery has improved considerably in all the states.

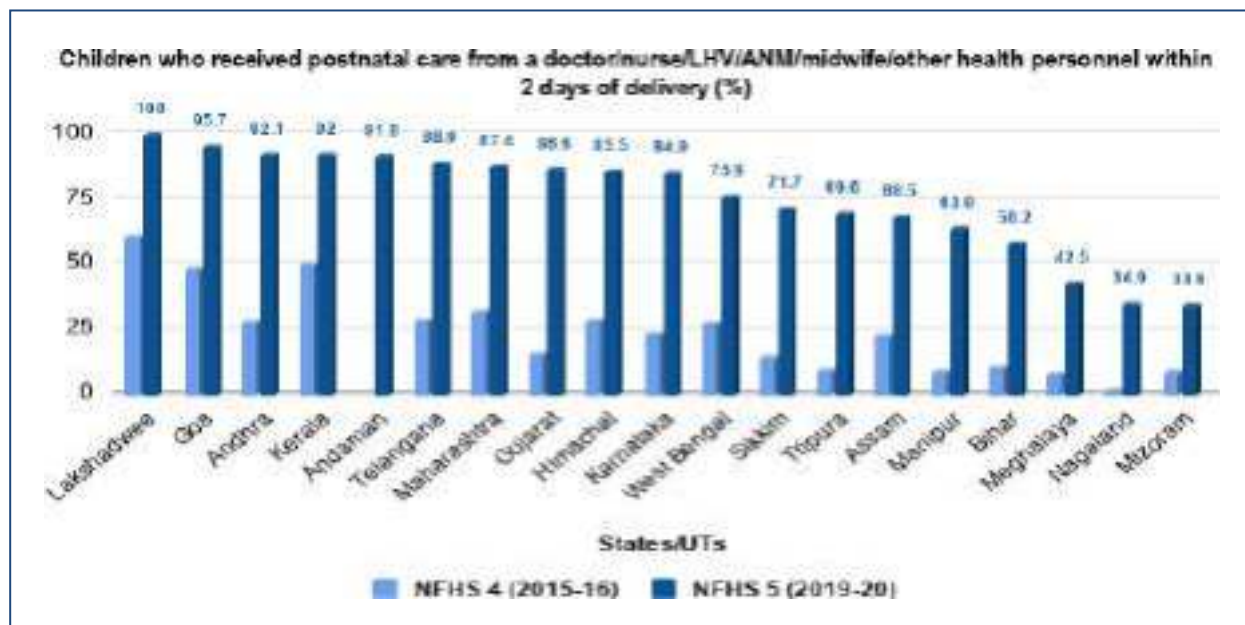


Figure 2.3:

- All the newborns in rural Lakshadweep have received postnatal care from skilled health personnel (SHP) whereas Goa ranks the highest among states, with 95.7% children received postnatal care from skilled health personnel (SHP).
- Mizoram, Nagaland, and Meghalaya rank lowest in postnatal care in 2019-20.
- However, all the states/UTs have reported positive percentage change between 2015-16 and 2019-20 with more than 50 percent jump in postnatal care reported in states like Gujarat, Karnataka, Tripura, Andhra Pradesh among others.

Births Attended by Skilled Health Personnel

According to the UN, there has been considerable progress worldwide in terms of births assisted by skilled health personnel (SHP) that generally includes doctors, nurses, or midwives, with an increase to 81% in 2019 from the earlier 64% in 2005 (ECOSOC, 2020).

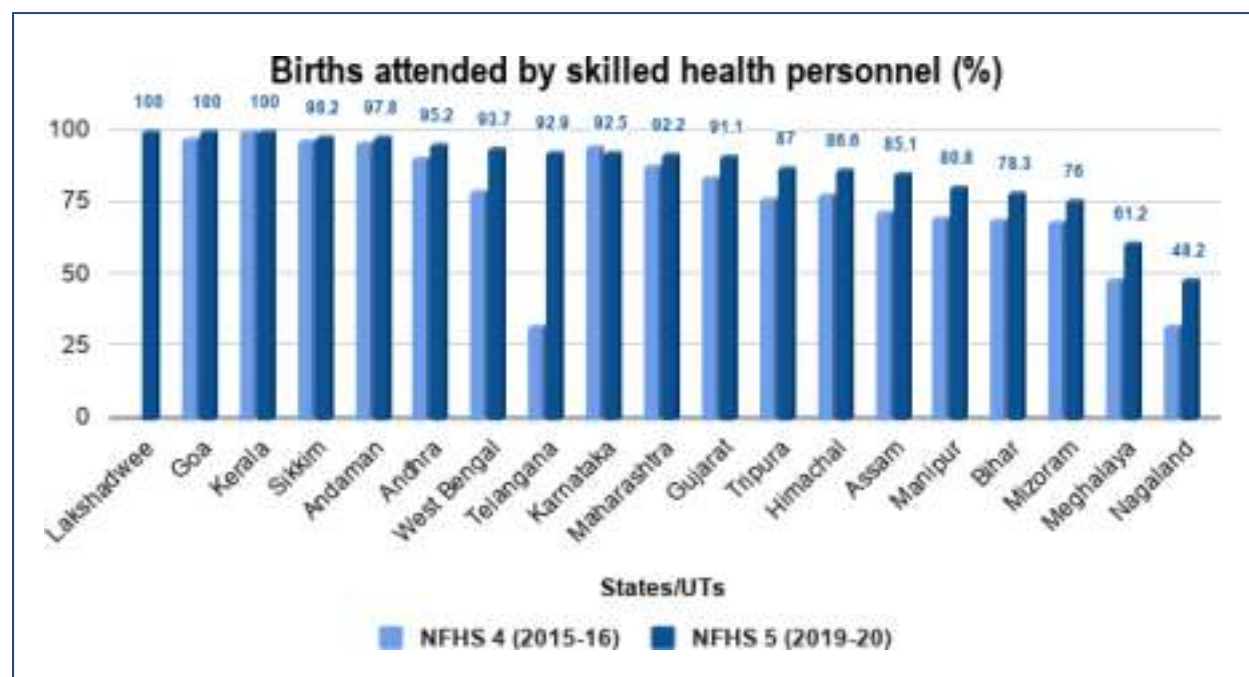


Figure 2.4:

- Out of the selected states, Nagaland has the lowest births attended by SHP (48.2 %).
- Telangana remarkably leapfrogged in the births attended by SHP from 32.5% in 2015-16 to 92.9% in 2019-20. However, there is decline in Karnataka from 94.4% to 92.5%.
- Goa, Kerala and Lakshadweep achieved full coverage of childbirths attended by skilled professionals in 2019-20. Sikkim is also inching towards full coverage with 98.2% of births assisted by skilled health personnel.

Nagaland: A Cause of Concern or a Case in Point?

The north-eastern region of India portrays a grim picture in terms of inadequate neonatal care and the prevailing high mortality rates. Children in NE receive poor neonatal care within 24 hours to 2 days after birth. As a result, some of these states have the highest NNMR (refer maps in Fig. 2.5, 2.6, 2.7 & 2.8).

In contrast, the southern states like Telangana, Andhra Pradesh, and Karnataka are better off in terms of early institutional care but still have a higher NNMR. Their mortality rates are even higher than Nagaland which is an exception with overall dismal neonatal care but a comparatively lower mortality rate.

These patterns put a question mark on the healthcare policies adopted by these state governments. To mitigate neonatal deaths, it is imperative to provide the best institutional medical care to every child at the earliest.

Figure 2.7:

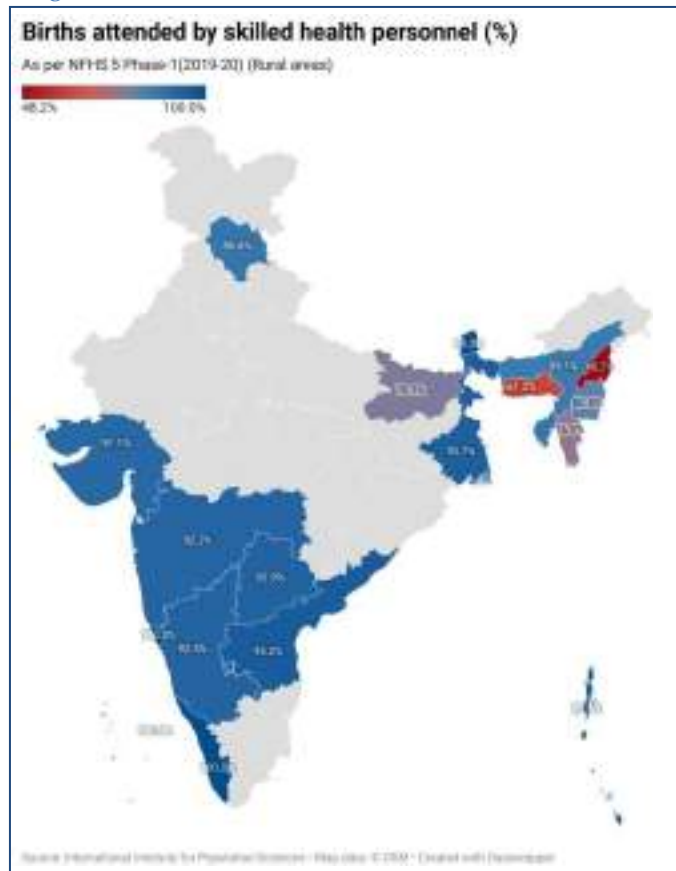
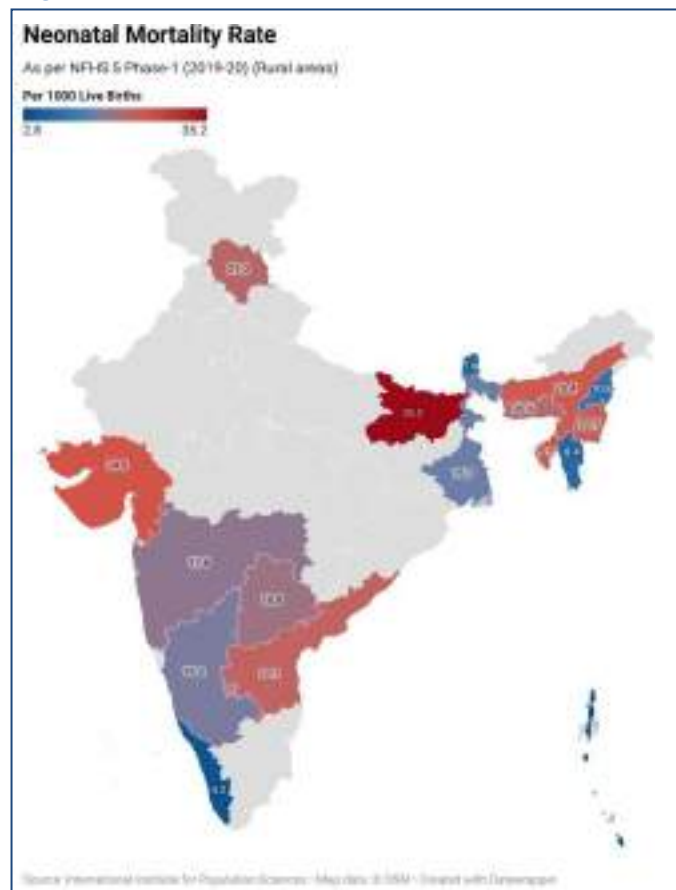


Figure 2.8:





Source: <https://images.app.goo.gl/ULZbeMezWnP0E3Qp6>

IMPACT OF C-SECTION ON EARLY BREASTFEEDING AND IMR



Source: <https://images.app.goo.gl/TTD0ag6ZP5wC0y41>



Infant Mortality Rate

The infant mortality rate is an important indicator of health because as defined by UNICEF, it measures the deaths between birth and exactly one year of age (expressed per 1,000 live births).

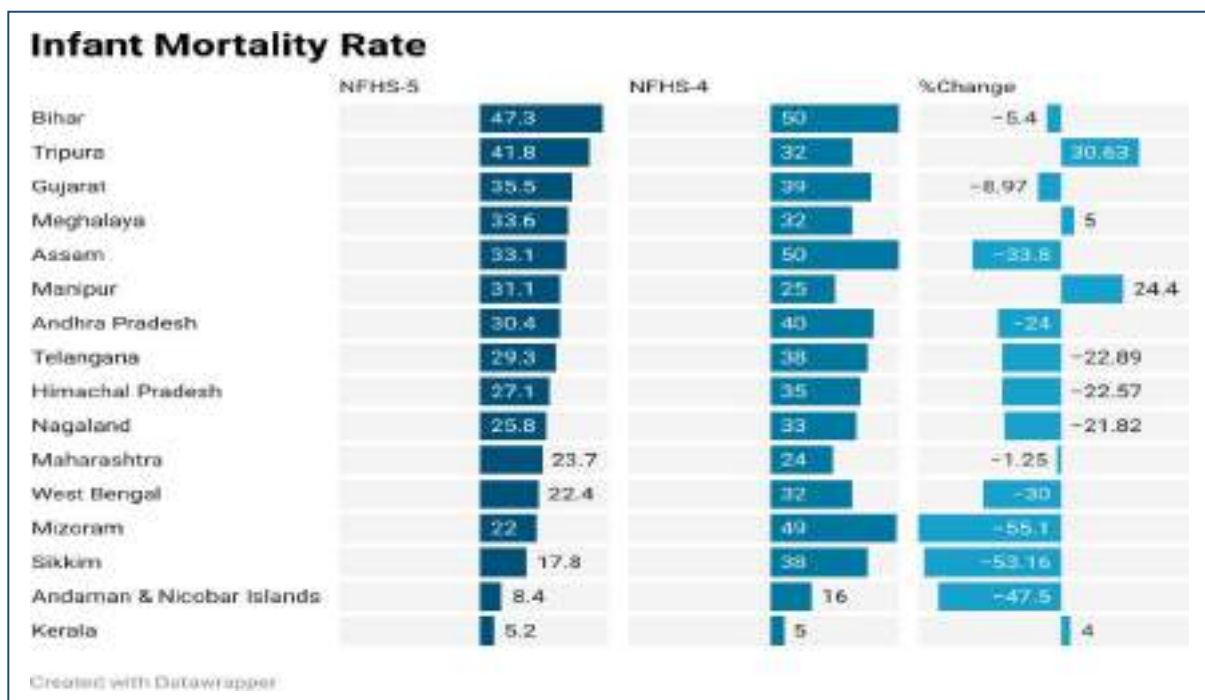


Figure 2.9:

- Rural IMR in the selected states has declined between 2015-16 and 2019-20 except for Kerala, Manipur, Meghalaya, and Tripura.
- Kerala, despite having the lowest IMR among all States/UTs at 5.2, has seen a marginal increase of 4% in the last four years.
- In NFHS-4, Assam and Bihar had similar IMR of 50 deaths per 1000 live births but in NFHS-5, Assam reduced it to 33.1, whereas Bihar still showcases the highest IMR among all states (47.3 deaths per 1000 live births).
- A similar observation could be seen for Tripura and West Bengal. Both the states have IMR- 32 deaths per 1000 live births in NFHS-4 but West Bengal made improvements by reducing it to 22.4 (a **30% decrease**) whereas Tripura worsened the IMR by increasing it to 41.8 (a **30% increase** - which is the highest among states that increased IMR).
- Mizoram and Sikkim have performed exceptionally well by reducing IMR by 55.1% and 53.16%.

Births Delivered by C-section

Caesarean section or C-section delivery is defined as the delivery of a baby through surgical incisions in the mother's abdomen and another in the uterus (Guilmoto & Dumont, 2019).

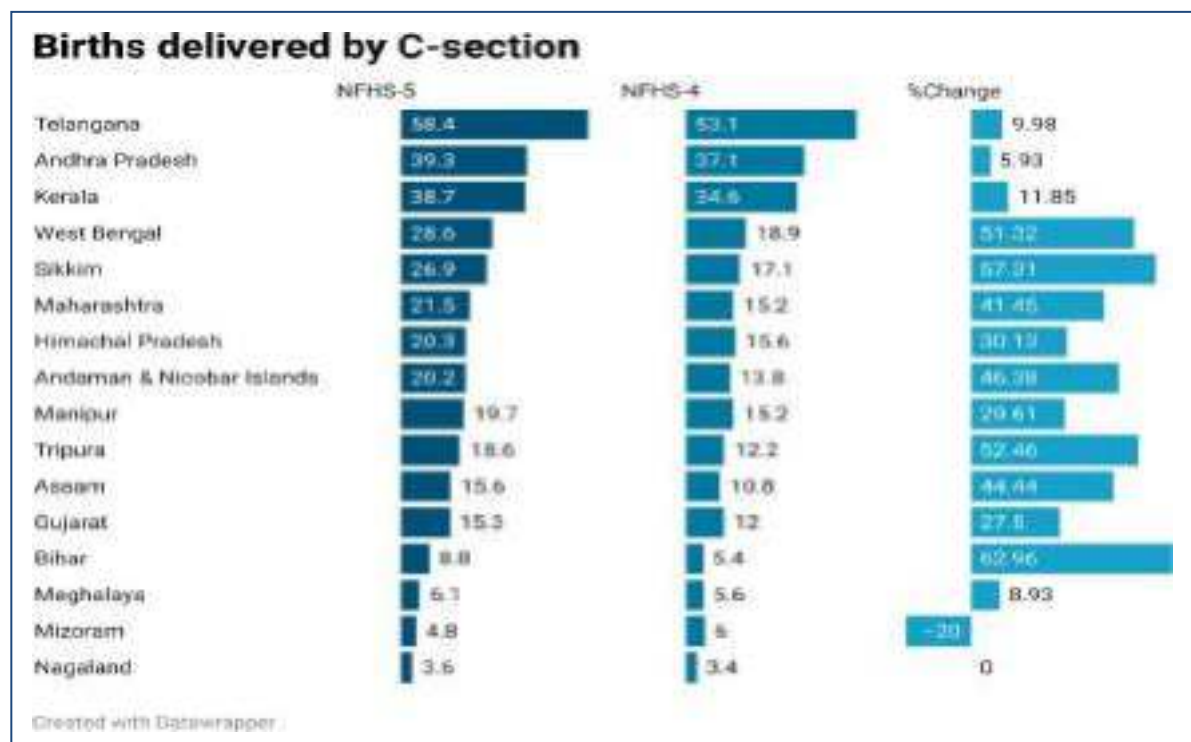


Figure 2.10:

- Bihar, Meghalaya, Mizoram, and Nagaland are the only states that have C-section births lower than the global recommended level of 15%.
- Southern states like Telangana (58.4%), Andhra Pradesh (39.3%), and Kerala (38.7%) showcase a significantly higher share of C-section births in 2019-20.
- While all other states have shown a rise in the C-section deliveries, Mizoram is the only state where a decline is observed in NFHS-5 compared to NFHS-4 with a relative change of -20%.
- Nagaland, on the other hand, has witnessed no relative change.
- States like Bihar (62.96%), Sikkim (57.31%), Tripura (52.46%), and West Bengal (51.32%) show a very high relative change which indicates increasing C-section deliveries in these states.

Early Breastfeeding

NFHS defines early breastfeeding as breastfeeding to the children within one hour of birth.

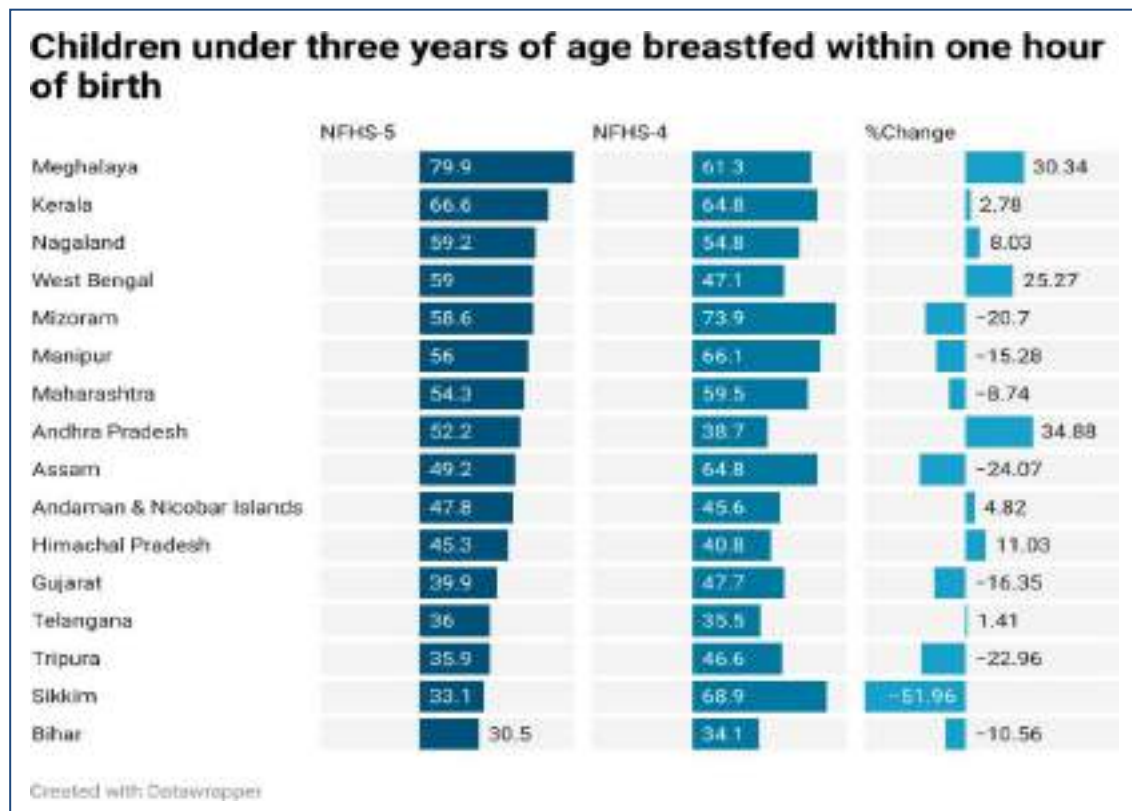


Figure 2.11:

- Meghalaya, Kerala, and Nagaland are the top three states with highest percentage of children breastfed within one hour of birth with Meghalaya showing a significant improvement (30.34%) in NFHS-5.
- Bihar, on the other hand, shows the lowest percentage of children breastfed within an hour (30.5% in 2019-20).
- A drastic decline (-51.96%) in breastfeeding has been observed in Sikkim as compared to all other states. Andhra Pradesh, on the other hand, has seen a significant improvement of 34.88% (highest relative change among all states and UT).

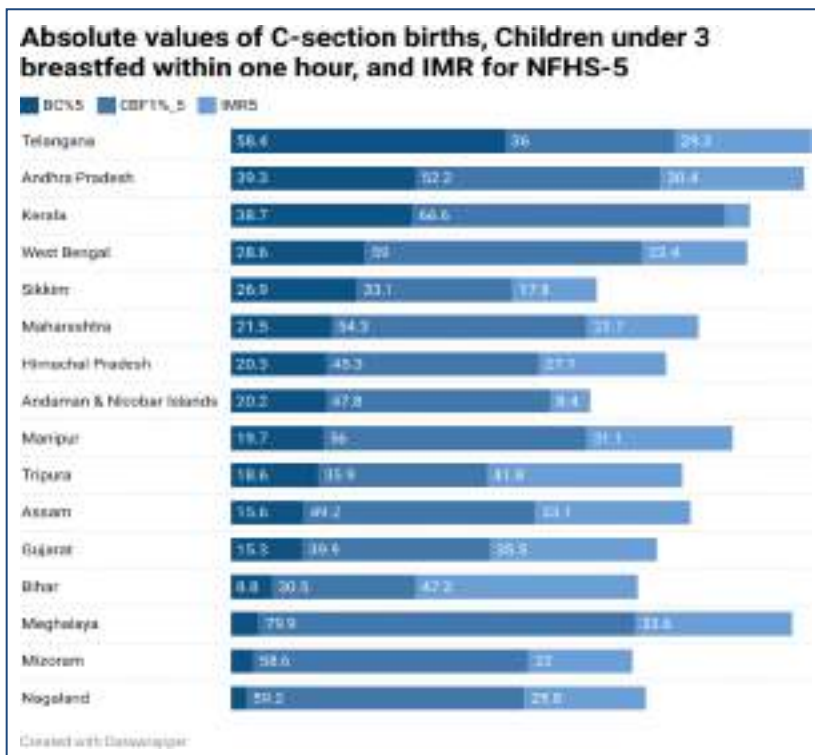


Figure 2.12:

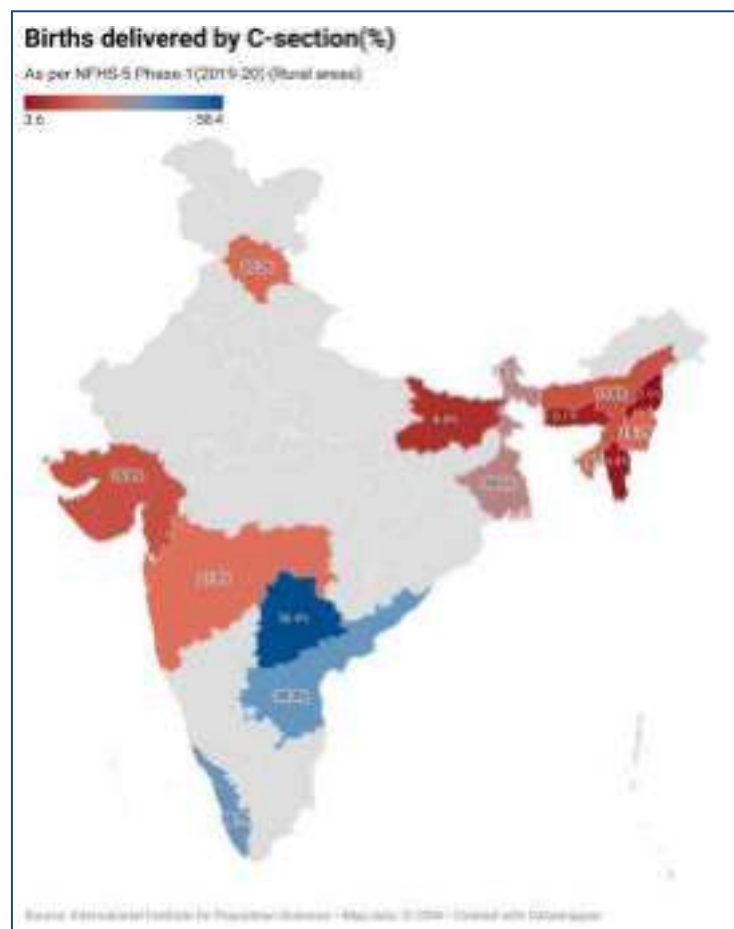


Figure 2.13:

Is C-section secluding babies from their first dose of milk?

All the North East states show high infant mortality despite low percentage of C-section births and relatively high percentage in children breastfed. Sikkim is an exception which has high C-section births & low early breastfeeding.

Compared to other states, southern states showcase a unique observation with high percentage of children breastfed despite having high percentage of C-section deliveries.

On the other hand, Gujarat and Bihar present a gloomy picture with high IMR despite low C-section deliveries and high percentage of early breastfeeding.

This dichotomy demonstrates that extraneous factors are into play that affect the relationship between these three indicators.

These observations on NFHS data also confirm that as compared to vaginal deliveries, C-section deliveries affect the early breastfeeding practices further influencing IMR because of the complications associated with C-section (Kotaska, 2015).

Figure 2.14:

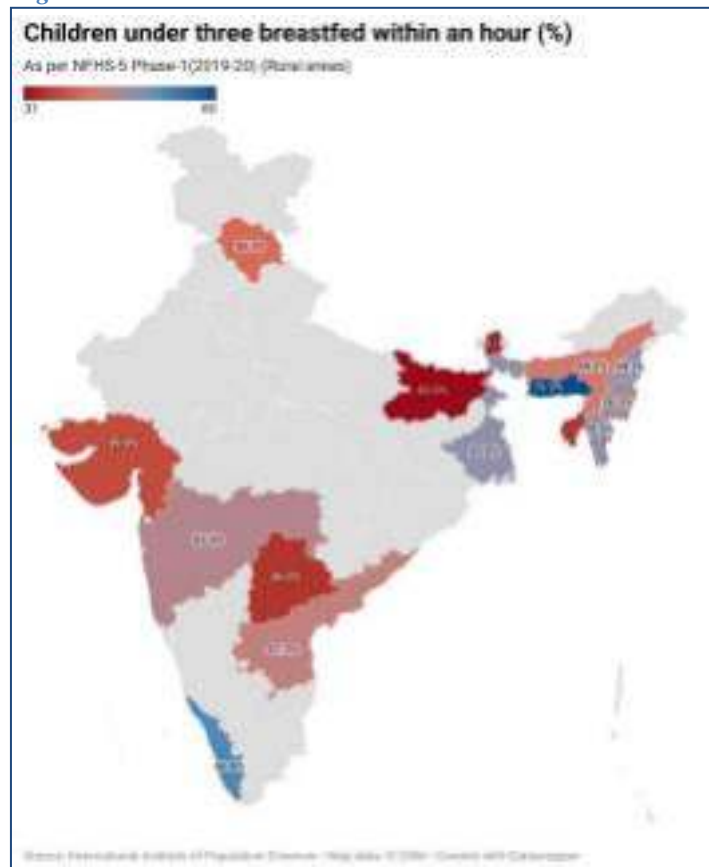
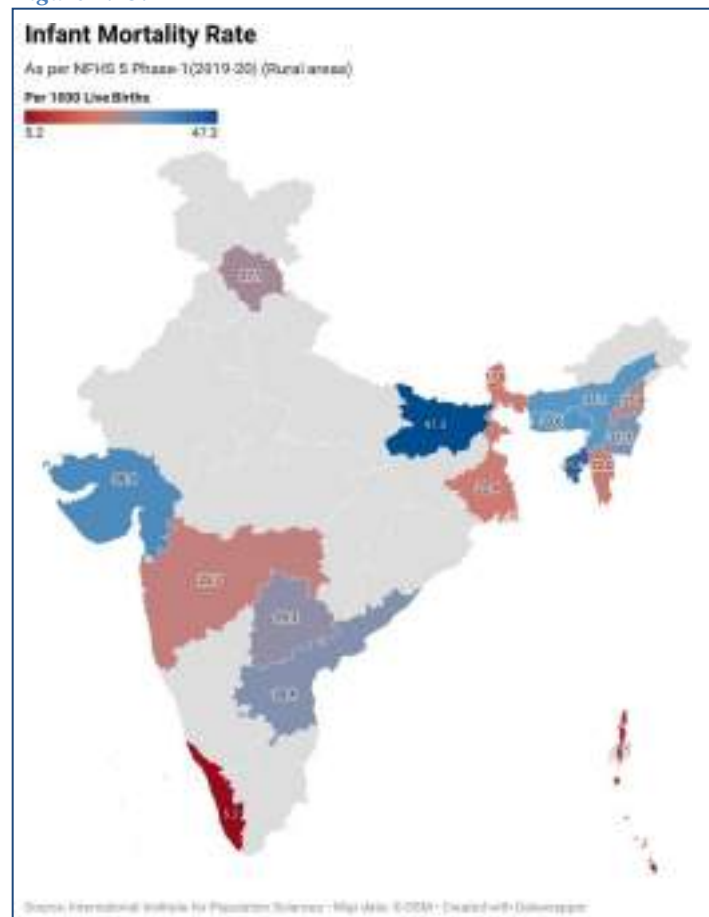


Figure 2.15:





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Photo credit: Anil Kumar Meena

FULL IMMUNIZATION OF CHILDREN

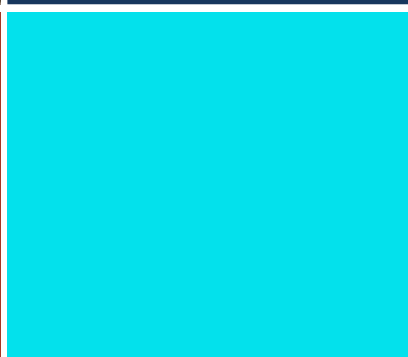
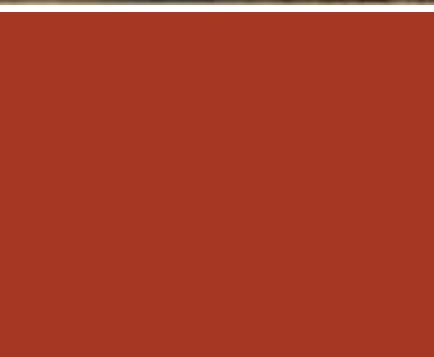
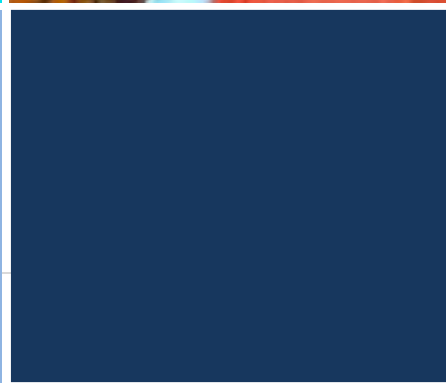


Photo credit: Anil Kumar Meena



Full Vaccination of Children aged 12-23 Months

As defined in NFHS, the term ‘full immunization’ denotes a combination of four vaccines - BCG, measles-containing vaccine (MCV)/MR/MMR/Measles, 3 doses each of polio (excluding polio vaccine given at birth), and DPT/ Penta vaccine.

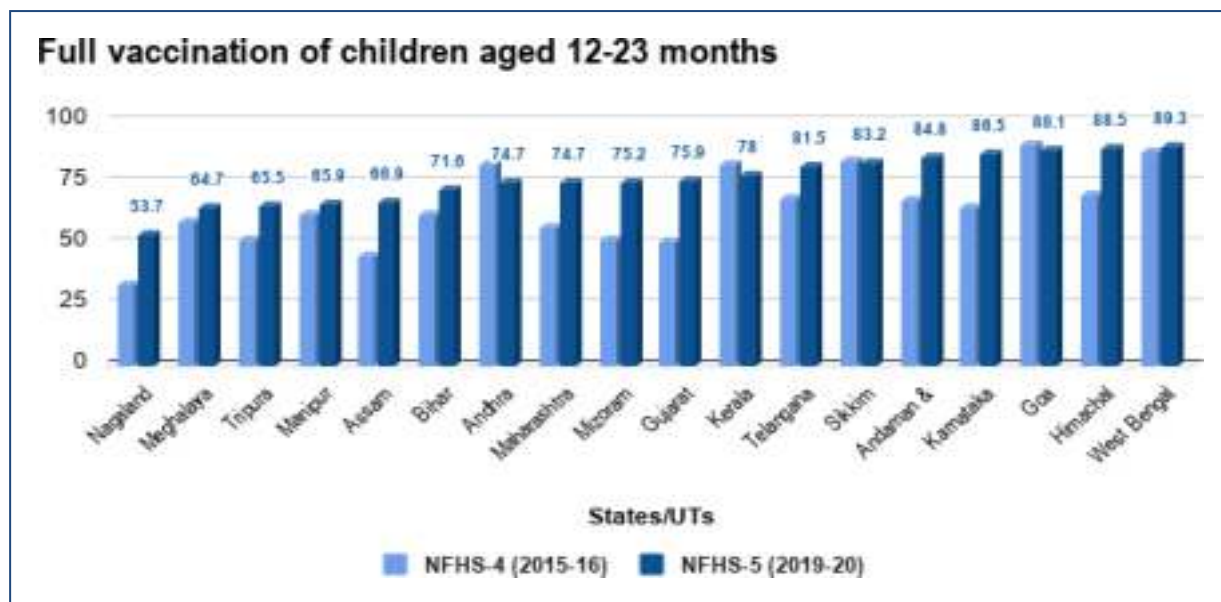


Figure 2.16:

- As per the reported estimates of NFHS-5, only Dadra & Nagar Haveli and Daman & Diu has achieved 100 percent child immunization.
- Among other states, the highest immunization coverage has been observed in West Bengal (89.3%), followed by Himachal Pradesh (88.5%) and Goa (88.1%).

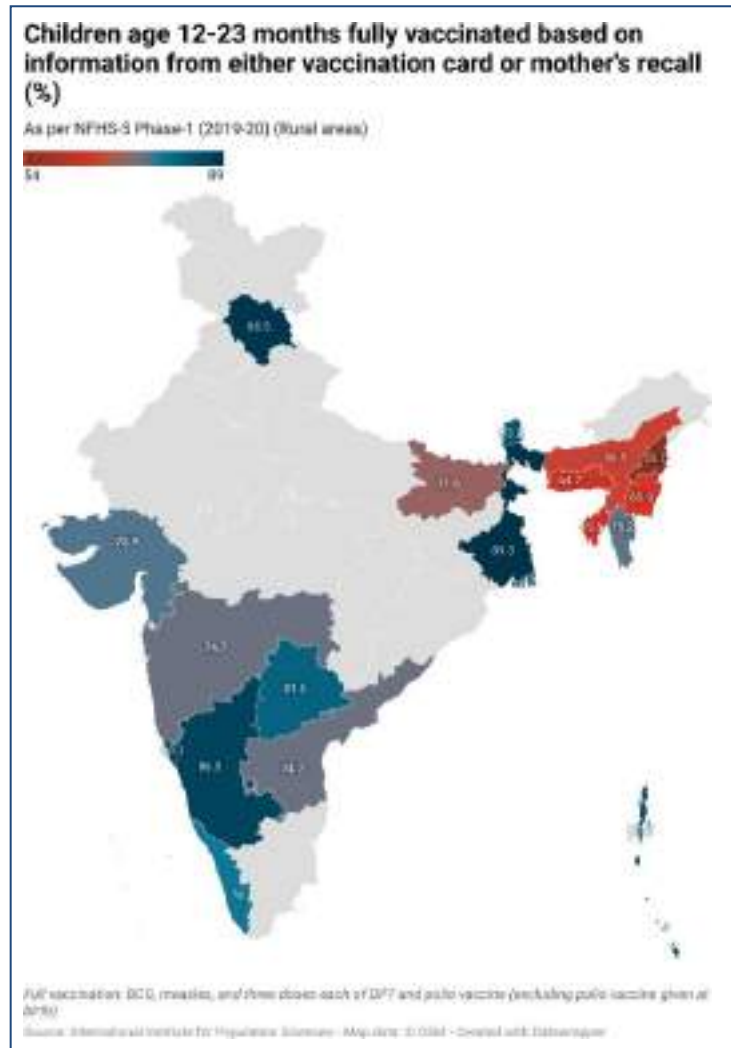


Figure 2.17:

- The Northeastern region presents a dismal picture. Nagaland (53.7%) has the **lowest immunization coverage**, followed by Meghalaya, Tripura, Manipur, and Assam.
- Barring four states - Andhra Pradesh, Goa, Kerala, and Sikkim, others have registered a positive change in full immunization in rural areas.
- **Case in point: Nagaland.** Although Nagaland continues to occupy the bottommost rungs in 2019-20, there is notable relative increase in full immunization between the period of 2015-16 to 2019-20 (62.7 per cent).
- The states of Assam (50.7% increase) and Gujarat (50.6% increase) have also registered significant improvement in immunization.

Under-Five Mortality Rate (U5MR)

Defined as the number of children dying before reaching the age of five (per 1000 live births), the under-five mortality rate (U5MR) is a key indicator for determining child health and overall well-being.

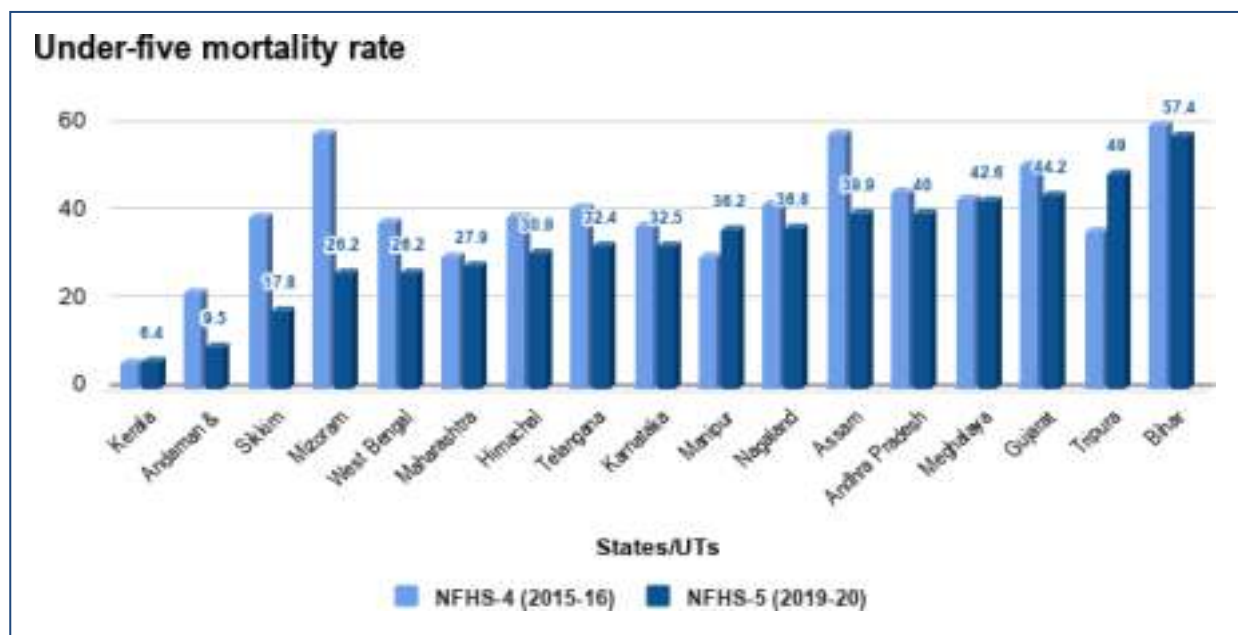


Figure 2.18:

- In 2019-20, nearly six States/UTs have accomplished the SDG target of reducing U5MR to below 25 deaths per thousand live births. These include Kerala (lowest U5MR), Sikkim, Goa, Andaman & Nicobar Islands, Dadra & Nagar Haveli and Daman & Diu, Jammu & Kashmir (reported as per NFHS-5).
- Rural Bihar (57.4) records the **highest U5MR** in 2019-20, followed by Tripura and Gujarat.
- Rural Kerala (6.4) has the **lowest U5MR** followed by Andaman & Nicobar Islands and Sikkim.
- Between 2015-16 and 2019-20, all select states have observed a reduction in U5MR in rural areas except for Tripura (36% increase), Manipur and Kerala also have recorded an increase in the same period.

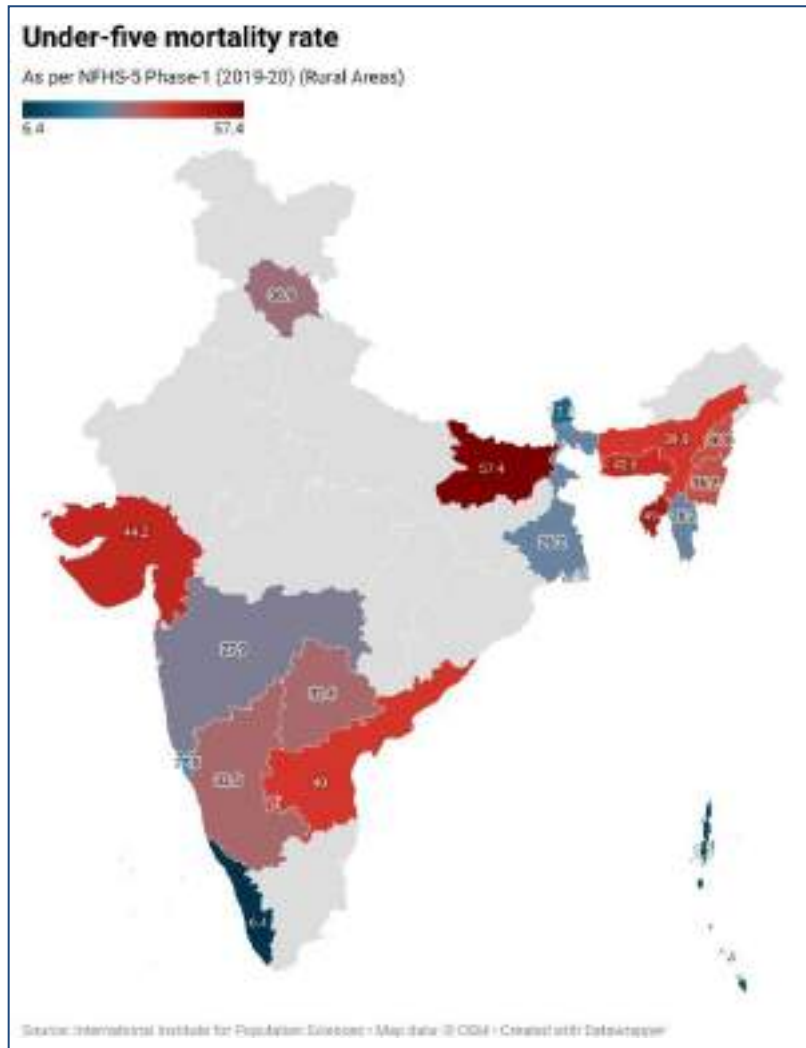


Figure 2.19:

- The case of Kerala is interesting. Despite being the best performer in terms of U5MR, Kerala has witnessed an increase in the U5MR.
- Meghalaya presents a stagnant picture, recording merely a 0.9% increase in U5MR.
- Based on the reported estimates from NFHS-4 and NFHS-5, **the most noteworthy improvement in U5MR** has been recorded in Andaman & Nicobar Islands (U5MR declined by 56.8%).
- Out of the seven sisters, U5MR has declined significantly in Mizoram (by 54.8%).

Improved Child Immunization: The Lucrative Solution?

The scatter plot clearly highlights that the two variables move in the opposite direction. The downward trend suggests that with an increase in immunization coverage, the U5MR tends to decline.

Goa, West Bengal, Andaman & Nicobar Islands have the highest immunization coverage and also the least U5MR. Similarly, a trend can be observed in the performance of North-Eastern states. The states of Meghalaya, Tripura, Manipur, Nagaland and Assam have the lowest full immunization coverage and also the highest U5MR.

Considering the importance of effective immunization, it becomes imperative for the state to ensure that appropriate interventions are undertaken to address the issue of low immunization in India. While at the rural level an overall expansion has been observed in immunization coverage, the condition in states like Bihar, Andhra Pradesh and the North Eastern region of India remains worrying.

The relationship between Under-five mortality rate and Full vaccination of children

As per NFHS-5 Phase-1 (2019-20) (Rural areas)

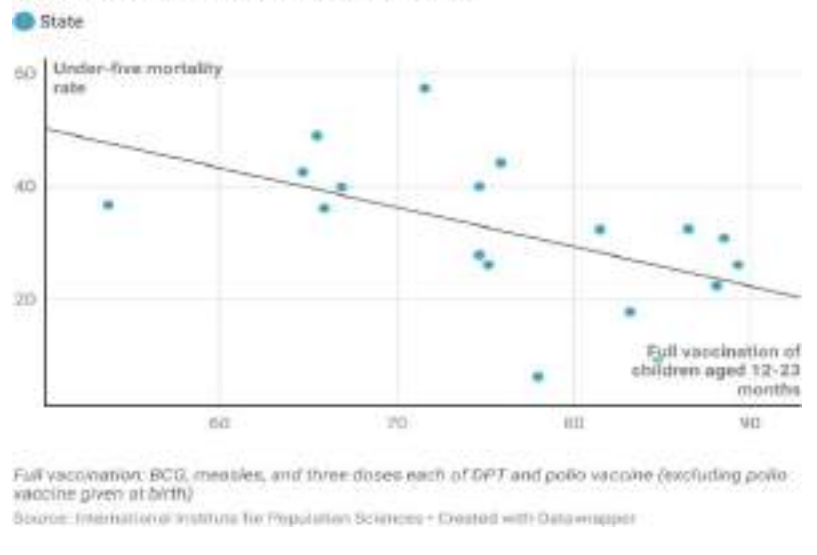


Figure 2.20:



Conclusion

Neonatal, infant, and under-5 mortality rates have been declining in rural India from 2015-16 (NFHS-4) to 2019-20 (NFHS 5) carrying on the trend for the last two decades. The observations made in our report calls for new interventions to take forward this trend with more inclusivity. Considered as the future assets of a nation, children's well-being warrants the states like Tripura and Bihar which underperform in all the three indicators of child mortality to emulate states like Sikkim and Kerala with comparatively lower rates by addressing the policy loopholes. North-Eastern states need to be emphasized given their dismal performance in indicators of institutional care. Reduced early breastfeeding in the rural areas of many states necessitates targeted action to improve breastfeeding in India.

Thus, considering the devastation that the COVID-induced pandemic has led to the existing rural health infrastructure of the country, now is the time for policymakers and the government to devise such policies and programmes that ensure children's well-being in these areas. It is the concerted effort of all the stakeholders that will decide India's trajectory to achieve the SDG goals in this decade. Future policy formulation hinges on charting a state-wise strategic framework to improve child health and address the issues that plague the current health programmes.

Photo Credit: Anil Kumar Meena

Gender-Based Violence

*Understanding the agency of women experiencing
spousal violence*

Photo credits: Debarati Choudhary

Background

We are living in a world where “at least one in every three women has been beaten, coerced into sex, or otherwise abused by a man in her lifetime and where more than 20 % of women are reported to have been abused by men with whom they live,” (Minnesota Advocates for Human Rights, 2003). In the Indian context, the reported violence against women is skyrocketing day by day. Also, the given reality of unreported violence due to the country’s rationalized patriarchal history of treating violence as means to tame and discipline women questions the very agency and safety of women in our country.

Even though existing studies have thrown light on a range of issues such as women’s support-seeking behavior, the culture of silence, and the adherence to social norms that encourage tolerating, accepting, and even rationalizing domestic violence, there is a lack of empirical data to tackle this crucial challenge.

In the existing works of literature where there is a lack of empirical in-depth understanding of gender-based violence in rural India, this endeavor attempts to dive deep into the experiential understanding of Women empowerment indicators and their relationship to violence and the extent to which literacy and education help to stop this violence.

Women’s Agency and Spousal Violence:

The theorization pertaining to any act of violence against women can be seen as being pushed to the realms of private sphere, which in the larger picture, is a practice that is a part of the dominant patriarchal perspective in the society. As violence is inherently related to power and the intersection of any act of violence with gender is inevitable, it is important to understand the power dynamics that are associated with gender-based violence. In Indian society, this power dynamics is evident through the socialization process in different phases of life, including the stereotyped role associated with gender leading to the development of domination and control habit in men and dependence and submission in women. Gender-based violence is something that is least spoken about in the life of a woman and their life in the private sphere has remained away from any form of scrutiny and that has enabled a space for committing violence against women. In a society that adheres to strong patriarchal cultural norms, women’s life is relegated to the private sphere, when the public-private dichotomy in the society is considered.

Photo credits: Vishal Bhandari, Paridhi Bhatiya, Joshua Menezes

The violence against women has been normalized by the patriarchal norms existing in the society and the fact that not much attention and research is dedicated to this, only renders the harm invisible. Peterson (1980) rightly explained that the origin of spousal violence can have a feminist/patriarchal understanding as well as a social learning perspective, which is in line with most of the other existing theories on gender-based violence. In fact, the interesting point to note is the wide range of theories of spousal violence, but the lack of empirical data to support these theories is a huge challenge in the eyes of a policymaker.

Jejeebhoy & Visaria (1997, 1999) highlighted that, through the betterment of socioeconomic status levels and higher levels of education for women, the power dynamics existing in a patriarchal society is not only being addressed, but it acts as a protective factor against women's risk of domestic violence. When we look into the "structural explanations for spousal violence, it points to fact that gender norms existing within the society have a pernicious influence on the relevance and acceptance of domestic violence against women" (Showden, 37, 2011). The example provided by Sherry Hamby in the context of studies related to gender-based violence in Native American culture can be taken into consideration as a basis for this study. The author found that gender-based violence against women was lower in Native American societies where the gender roles were more evenly weighted, i.e. propensity of shared decision making, female partners' control of family resources, and immediate social response to domestic violence (Crowell & Burgess, 1996).

The question of agency is highlighted when examining women's response to spousal violence. It is clear that women's agency develops through the process of incorporating intertwined gender, race, and class norms into one's identity, and agency here "denotes the ability to develop and act on conceptions of oneself that are not determined by dominant, oppressive conceptions" (Abrams, 1995).

Women must cope with practices that operate to deny or diminish their agency, which under oppression is necessarily partial or constrained. Presently women are not capable of completely disarming these practices, either individually or in the group. In that sense, women's agency is more often related to resisting or overcoming the practices, structures, or images that contribute to gender-based oppression, and therefore, it can be synonymous to resistance itself (Abrams, 1995).

This underpinning finds a reflection across the world, and the Indian society is not an aberration to these overarching trends/characteristics. In Indian context, Dasgupta and Jain (2007) have shared an interesting aspect on how the patriarchal norms often override the teaching of gender equality in religious communities and have cited an example on problems related to intimate partner violence experienced by avidly nonviolent Jains, and how the adherents express their belief in men's right to chastise their wives despite explicit religious teaching on gender equality.

Women in India constitute nearly half of its population of over a billion people (Nalla & Unnithan, 2018) and are victims of violence of all kinds, but of the various categories of violence that are perpetrated against women, spousal violence is the most significant as it undermines the women and their agency in a multitude of ways. The purpose of this study is to look at this significant aspect of women's lives, which is spousal violence. The incidence of spousal violence is very high and the affect that it has on women's lives and their psyche is much more problematic or in a sense dangerous as the attacks are by their intimates rather than a stranger. In this particular study, an attempt has been made to establish how in oppressed conditions like in the case of spousal violence, a women's agency is influenced by empowerment through the means of education, ownership of land, bank account, and the ability to make household decisions.



INTRODUCING INDICATORS OF SPOUSAL VIOLENCE



What is Gender-based violence?

According to UNHCR, “Gender-based violence refers to harmful acts directed at an individual based on their gender. It is rooted in gender inequality, the abuse of power, and harmful norms. Gender-based violence (GBV) is a serious violation of human rights and a life-threatening health and protection issue. It is estimated that one in three women experiences sexual or physical violence in their lifetime. During displacement and times of crisis, the threat of GBV significantly increases for women and girls.”

Ever-married Women who Have Ever Experienced Spousal Violence (%)

The issue of domestic violence is grave especially in developing countries like India. Domestic violence affects more than one-third of the women population in India, causing physical, mental, and psychological trauma to the survivors. There have been specific interventions in urban India to combat gender violence, rural India is still in want of such initiatives. For example, in the past decade, the urban civil hospitals and associated healthcare professionals have become somewhat equipped to intervene and prevent a wide range of violence-related complaints, including rape, sexual assault, and other forms of physical abuse, but there is a pressing need for a similar mechanism in rural areas to combat gender violence. The following data reveals state-wise percentage of rural women reporting spousal violence in 2015-16 and 2019-20 and the relative change in the percentage of women reporting spousal violence in rural area in the same period.

From the figure 3.1, following observations are made;

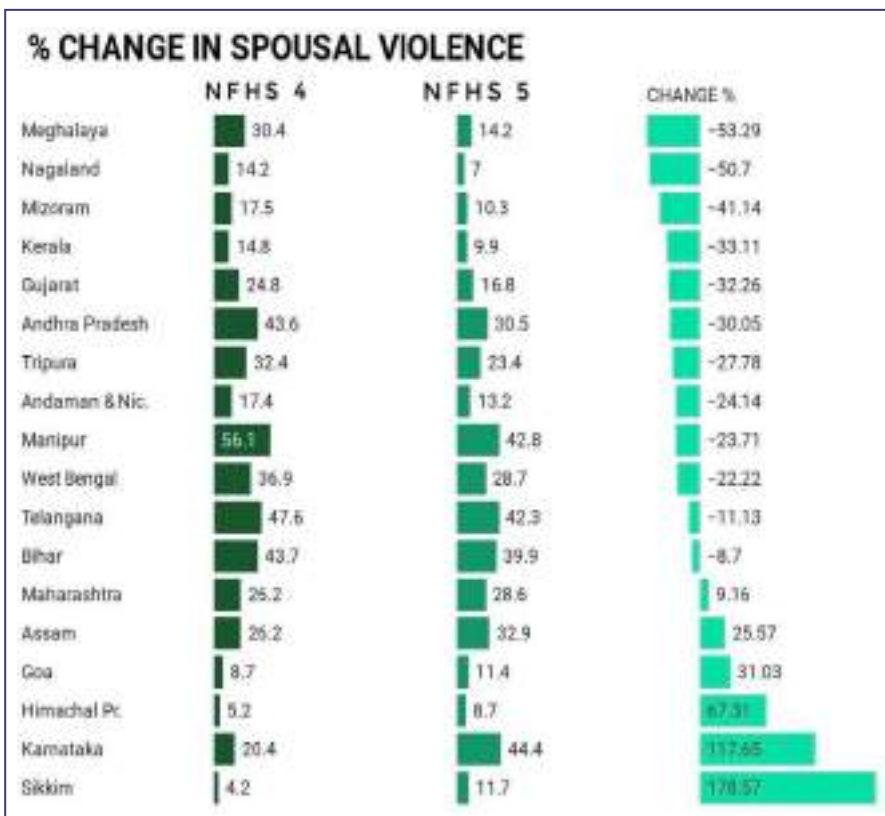


Figure 3.1

Source: NFHS 4 and 5

- Majority of the states/UTs have shown a decline in the percentage of ever-married women facing spousal violence.

- The relative change in the percentage of ever married women facing spousal violence shows that highest decline in the spousal violence has been found in Meghalaya followed by Nagaland, Mizoram and Kerala.

- Manipur was the state that had the highest prevalence of spousal violence [56.1%] in the 2015-16, which later reduced to 42.8% in the 2019-20 (13.3% decline in spousal violence).
- Sikkim followed by Karnataka, Himanchal Pradesh, Goa, Assam and Maharashtra are the six states out of 18 select states/UTs which have reported increment in the spousal violence among ever married women.

Ever-married Women who have Experienced Violence during any Pregnancy (%)

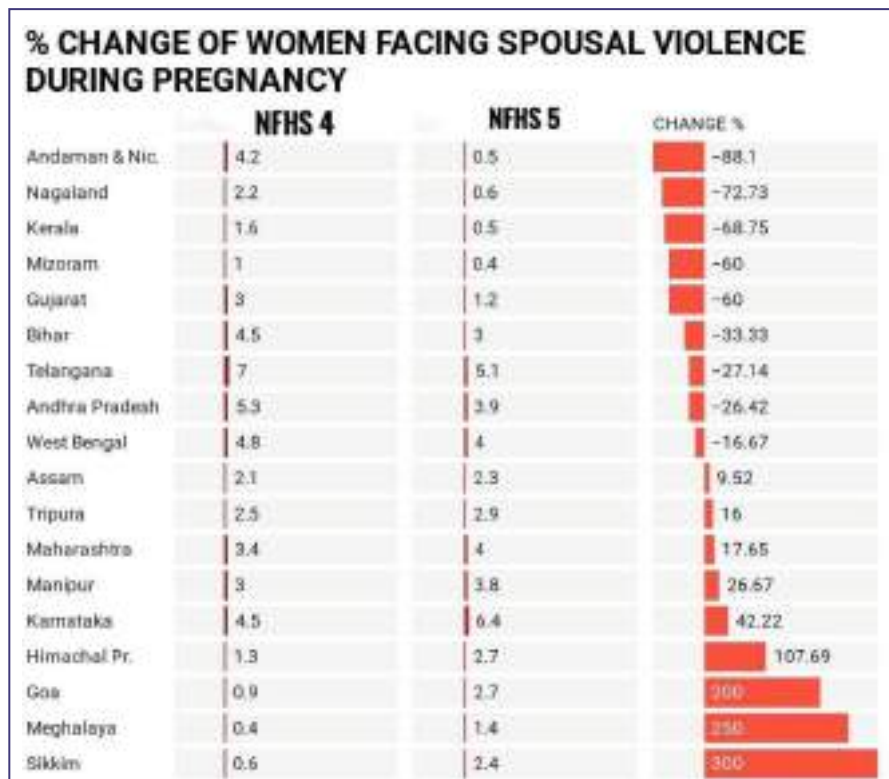


Figure 3.2

Source: NFHS 4 and 5

- The percentage of pregnant women experienced violence is low in rural part of select states and it has further decline in 9 states/UTs out of 18 states/UTs.

- States like Nagaland, Kerala, Andaman & Nicobar Island (UT), Mizoram, and Gujarat are amongst the best performers that witnessed a substantial decrease in spousal violence during pregnancy.

- We have tried to find the linkages between the spousal violence and violence during pregnancy and find a strong correlation ($r=0.5894$, $p>0.01$). It shows that the states that experienced high levels of spousal violence in rural areas also showcased an increase in physical/spousal violence during pregnancy.



INTRODUCING INDICATORS OF WOMEN EMPOWERMENT



Women Owning a House and/or Land (Alone or Jointly with Others) (%)

Property ownership by women is one of the basic human rights but yet in many countries including India, women are denied access to land and property. In India around 87.3% of women are dependent on agriculture, and yet not more than 10.34 per cent own land, which is the most important household asset. Women owning land/house is one of the key indicators that reflect women empowerment in NFHS that helps in understanding the situation of the women.

We have drawn following conclusion from the figure 3.3:

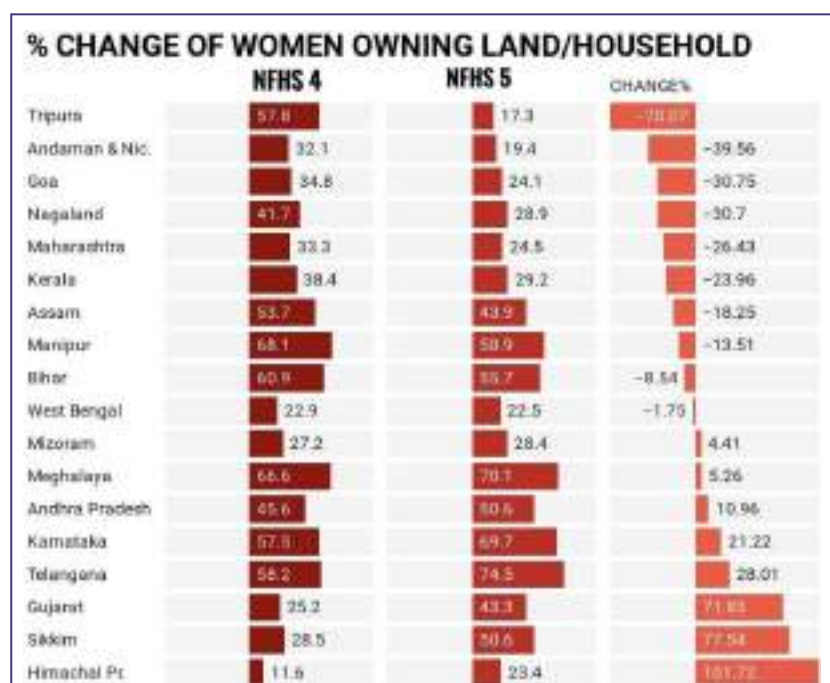


Figure 3.3

Source: NFHS 4 and 5

that showcased a higher fraction of land/ house ownership by women.

- Sikkim with 50.6% of land/house ownership by women has shown an improvement in 2019-20 and has accounted for the highest increase of 22.1 % since 2015-16.
- The best figures are from the South Indian States of Telangana and Karnataka where 74.5 % and 69.7 % of women own land/house respectively in 2019-20. On the other hand, Kerala has also reported a 9.2% fall in the number of women owning land/house.

- Out of the 18 states /UTs considered for this analysis, 11 states/UTs have shown a decline in the number of women owning land/houses out of which four of them are Northeastern states.

- Tripura has shown a sharp decline of 40 % since 2015-16 which is the maximum decrease of women owning land/house reported.

- Meghalaya (70.1%) is the only Northeastern state

The correlation between **spousal violence and women owning house/land** is **positive and strong**. What has been observed here is that states that generally experienced an increase in women owning a property in rural areas also experienced an increase in physical/spousal violence. It is generally believed that secure land rights can increase a woman's economic independence and her bargaining power and reduce her vulnerability to Gender based violence. However, this correlation is highly variable and context- and culture-dependent. More research is needed to understand the many dimensions of this relationship, and its implications.

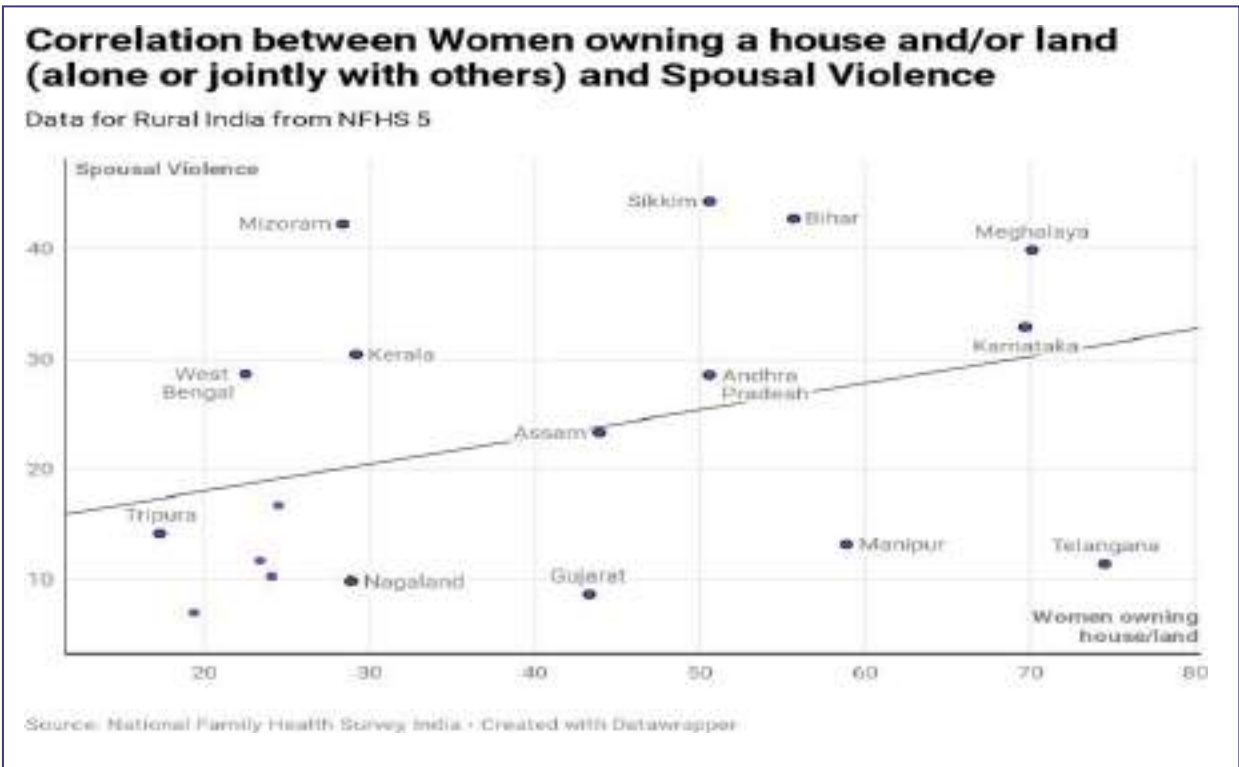


Figure 3.4

Source: NFHS 4 and 5

Women having a Bank or Savings Account that they themselves use (%)

It becomes important for citizens to maintain a bank account for the effective implementation of government programmes such as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and other direct benefit transfer schemes.



Figure 3.5

There is a sharp rise in the number of bank accounts held by women (between NFHS-4 & NFHS-5) which can be observed in the figure below.

- Almost all the states have shown positive trend in this indicator.
- However, we observe a significant increase in 10 states where women account holders are holding and running their accounts themselves.

- Among the 22 states, Bihar and Manipur had the maximum increase in the women holding a bank account. In Bihar, women holding, and operating bank accounts had increased from 24.6% in 2015-16 to 76.2% in 2019-20 followed by Manipur (from 29.7% to 70.7%) and Nagaland (from 27.4% to 55.4%).
- We have tried to establish the interlinkage between spousal violence and bank account ownership among women and found no particular correlation.

According to the NFHS-5 (2019-20), 50 percent of the account holders are women who have opened bank accounts under the "Pradhan Mantri Jan Dhan Yojana." Here, it can be seen that due to the "zero balance" account benefit, there is an incentive to open the individual bank accounts by women which led to increase in the number of women account holders (Maurya & Sharma, 2020).

Currently married Women who usually participate in Household Decisions (%)

In India, in spite of six decades of development, rural women continue in the grip of economic dependence, social neglect and political ignorance, which prevents them from attaining their due place of society. Though women in rural India participate in economic activities, they have little role in decision making particularly in matters related to agriculture and financial matters.

Following observations can be made from the state wise analysis;

- The percentage of women participating in household decisions increased during 2015-16 and 2019-20. In 2015-16, all states had more than 75 % rural women participating in household decisions which increased to more than 80 %.
- Out of 18 states, 12 states showed a positive change in terms of women participating in household decision making process.

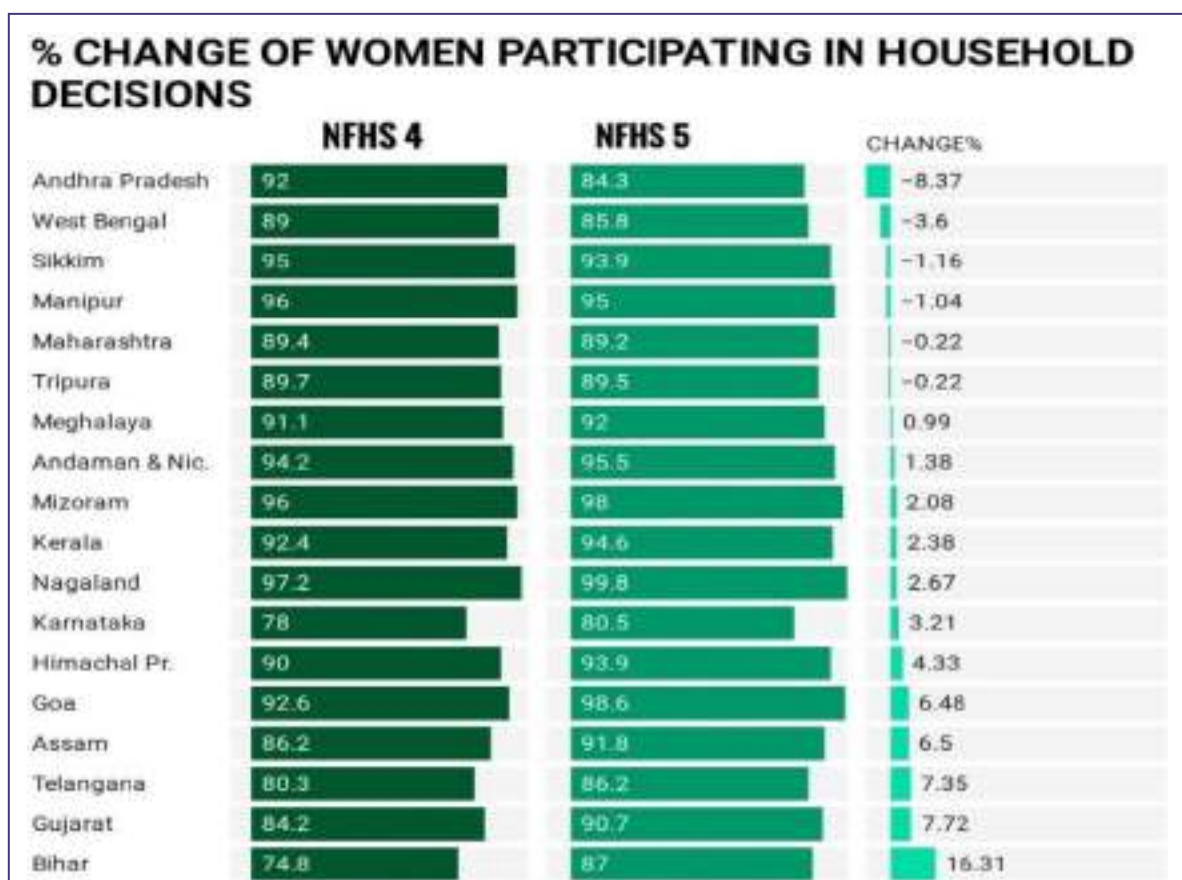


Figure 3.6

Source: NFHS-4 and NFHS-5

- Bihar followed by Gujarat, Telangana, Assam and Goa have shown a significant increase in women participating in household decisions compared to other states during 2015-16 and 2019-20.
- Andhra Pradesh, West Bengal, Sikkim and, Manipur, have performed poorly with a decrease in percentage of women participating in household decisions in the same period.

More Autonomy=More Spousal Violence?

According to Nisha Malhotra, in her essay, *Domestic violence, and women's autonomy*, "Women who have more autonomy (perhaps because they earn independent incomes) would experience less spousal violence than women with less autonomy. In a pioneering paper that brought out the importance of female autonomy in determining the demographics of India by region, Dyson and Moore (1982) showed a clear divide in the autonomy of women in North India and those in South India (with the latter exhibiting greater autonomy). Therefore, one would expect less domestic violence in the South of India. As was shown by Menon and Johnson (2007) using the NFHS data for India, and as we confirm here, this is patently false: women from the south appear to be experiencing domestic violence more frequently. We are able to provide an explanation for this very puzzling fact that women with more autonomy experience more spousal abuse. But there is no necessary theoretical relationship between a woman's reservation utility (or outside option) and the extent of the physical abuse she faces at home."



INTRODUCING INDICATORS OF WOMEN'S EDUCATION



Women who are literate (%)

The literacy rate is identified as an important indicator that has the power to bring in a positive change in the socio-economic development as well as in ensuring the well-being of the citizens of any country. According to NFHS Survey guidelines, the indicator titled ‘Women who are literate (%)’ refers to those women ‘who completed standard 9 or higher and who can read a whole sentence or a part of a sentence.

In reference to the graph given below, the following conclusions can be drawn:

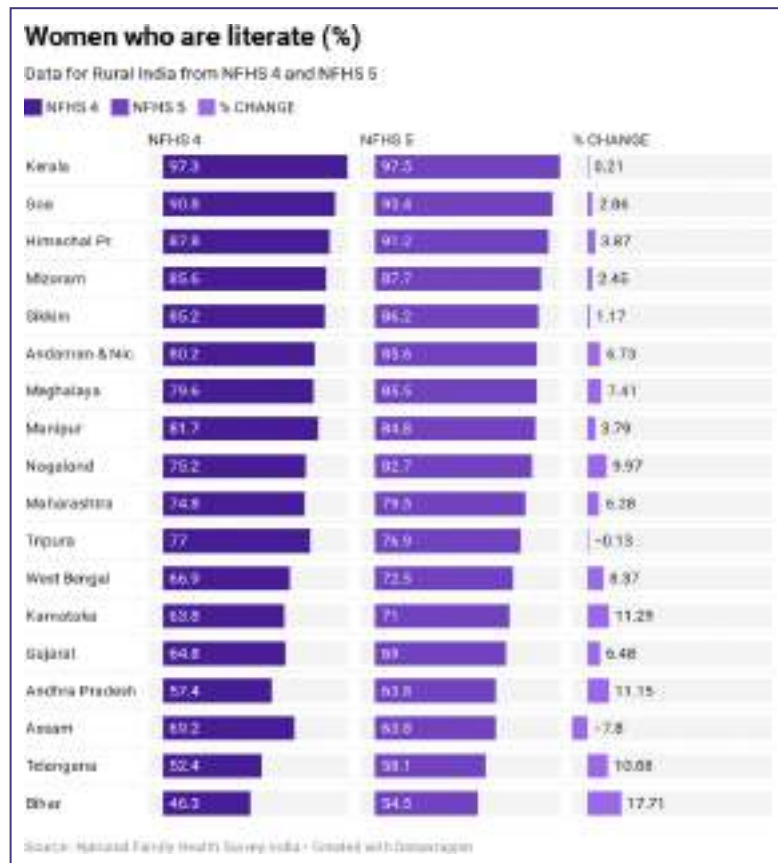


Figure 3.7

- There is an upward trend indicating an improvement in the percentages of literate rural women except for the North-eastern states of Assam and Tripura which have shown a declining trend since NFHS 4.
- Kerala with 97.5% in the NFHS- 5 reports for the highest percentage of women literates in the rural population
- States of Goa (93.4%) and Himachal Pradesh (91.2%) are among the top three states accounting for a greater female literacy rate.
- All the North-eastern states have performed well in terms of the rural female literacy rate except Tripura and Assam.
- Although Tripura shows a mild decline of 0.13%, Assam on the other hand stands at 63.8% with a dip of (-7.8 %) since NFHS 4.
- Despite Bihar having lowest female literacy at 54.5% in 2019-20 had showcased a significant improvement of 17.71 % of female literacy compared to the NFHS-4 (2015-16).

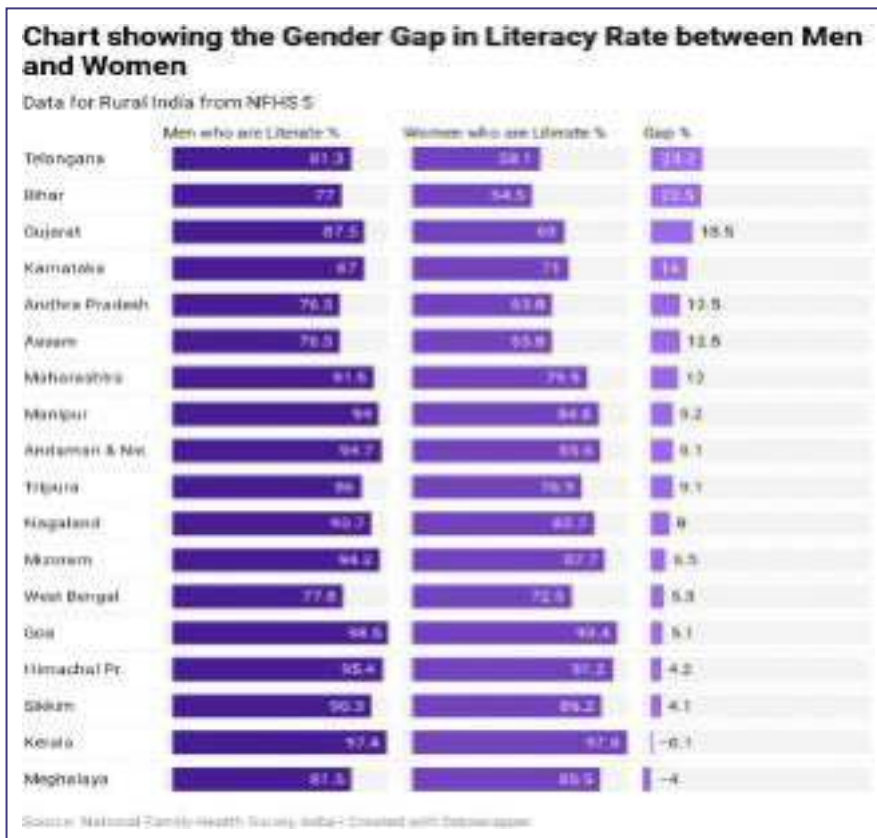


Figure 3.8

- The gender divide in literacy is very high in the states of Telangana and Bihar with a 23.2% and 22.5% literacy gap respectively.
- Kerala has the highest male and female literacy rate and the gender disparity in literacy rates is lowest.
- North-eastern states are performing better with less gender gap in literacy rate as compared to other states
- Interestingly, Meghalaya reports the lowest literacy rate gap of -4 % in the country.
- The common trend in the figure points towards the alarming reality of gender disparity of literacy in some of the states such as Telangana, Bihar, Gujarat, Karnataka, Andhra Pradesh and Assam.

The scatter plot (figure 3.9) depicts a **negative relation** between the variables of **Ever- married women who have ever experienced spousal violence (%)** and **women who are literate (%)**, which means, higher the female literacy rate lower the violence against women and vice-versa.

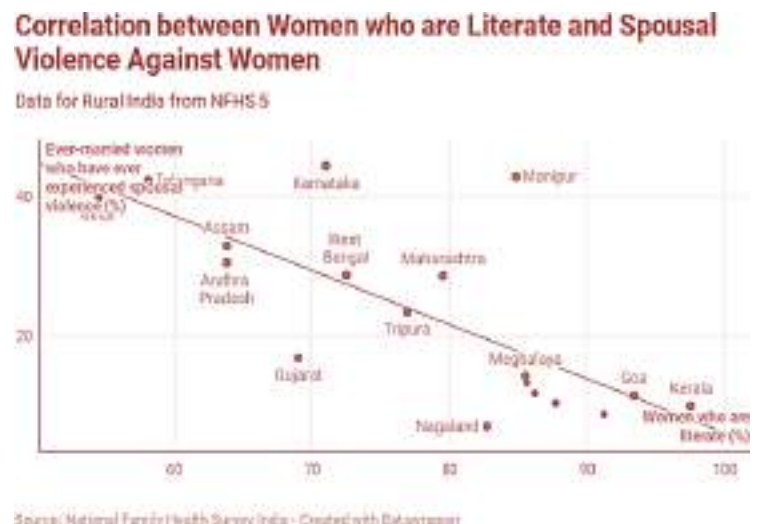
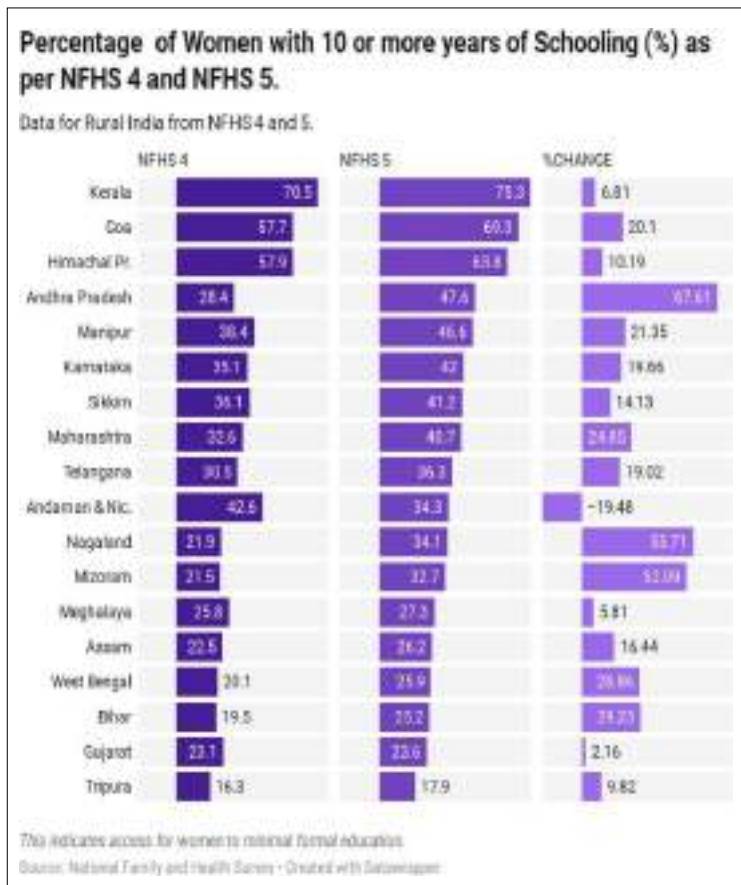


Figure 3.9

- States like Kerala, Goa, and Himachal Pradesh are having higher female literacy rates as well as lower violence against women and the states of Telangana and Bihar depict lower female literacy rates and higher violence against women.
- The states of Telangana and Bihar which have higher literate men than women are showing the highest risks of spousal violence against women which poses an important question of why rural women still experience higher spousal violence despite having literate husbands?

Women with 10 or more Years of Schooling (%)

In addition to the literacy rate, another indicator that signifies the women’s education is the indicator that provides the estimate of women with ten or more years of schooling in the NFHS.



- An improvement is observed in percentage of women with 10 or more years of schooling across states, except for Andaman and Nicobar which recorded a negative change of - 19.02% between NFHS-4 and NFHS-5.

- Andhra Pradesh has shown an increase of 19.2% which is the highest among the 18 States and Union Territories.

- States like Kerala, Goa, and Himachal Pradesh have shown that more than half of the women’s population has attained minimal formal education.

Figure 3.10

- Among the North-eastern states, Mizoram and Nagaland have performed better than the rest. Despite the higher literacy rate recorded for the North-eastern states, it shows a lower proportion of the women with 10 or more years of schooling. (Also observed in the NFHS 4 data).

- In NFHS-4, 23.1% of women from Gujarat had 10 or more years of schooling. It has remained almost stagnant with just an increase of 0.5% throughout the last five years, which is shown in the NFHS-5.

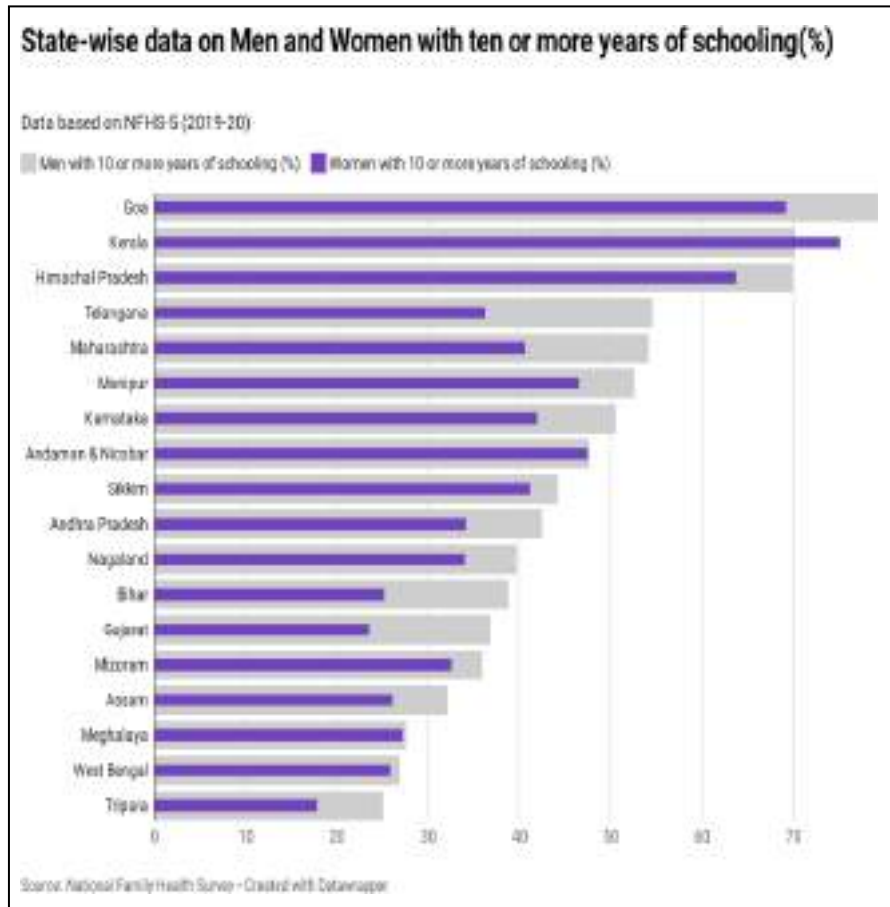


Figure 3.11

- Meghalaya, Andaman & Nicobar and West Bengal have approximately equal percentage of women and men with 10 or more years of schoolings.

The result obtained from analyzing the correlation between **Ever-married women who have ever experienced spousal violence (%)** and **women with 10 years or more schooling (%)** depicts an **inverse relation** between the variables.

- The proportion of men with 10 or more years of schooling in the indicator is the lowest in Tripura at 25.1%.

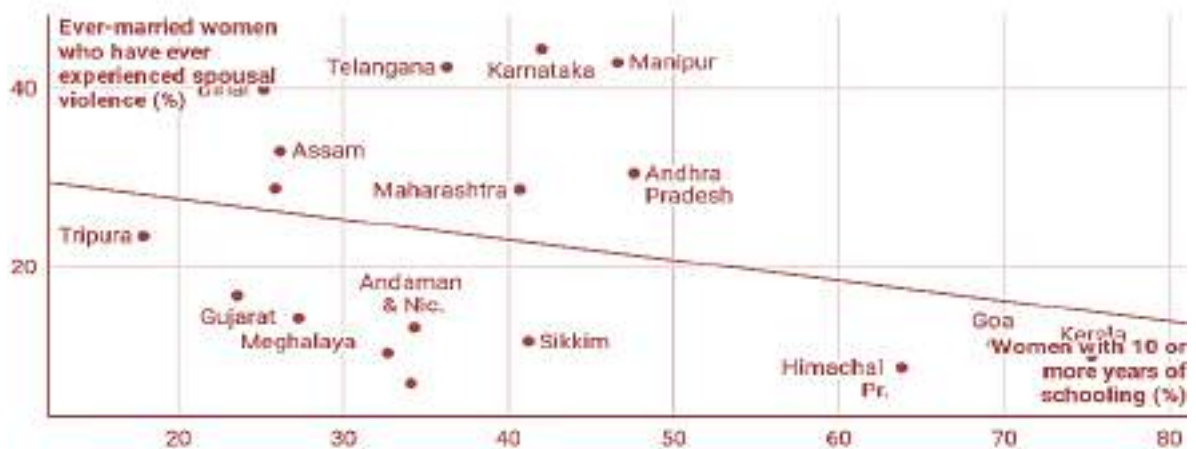
- Goa has the highest proportion of men with 10 or more years of schooling (79.4%).

- Kerala has lesser proportion of men with the ten or more years of schooling (70.2%) than that of the proportion of women (75.3%), which is a unique case.

- States like Kerala, Goa, and Himachal Pradesh are having higher female with 10 years or more schooling as well as lower violence against women and the states of Telangana and Bihar depicts lower female with 10 years or more schooling and higher violence against women are examples of this inverse relationship.

Correlation between Women with minimal formal education and Spousal violence against women.

Data based on NFHS 5



Source: National Family Health Survey - Created with Datawrapper

Figure 3.12

- States which focus on improving Minimal formal education for women i.e. 10 years or more schooling show a decline in spousal violence.
- Kerala has a unique position with higher percentage of women with 10 years or more schooling (75.3%) and lower spousal violence against women (9.9%) in 2019-20. The various social movements in the history of Kerala along with political mobilizations and collective actions around educational reforms have enabled an environment for mass literacy along with producing a liberal attitude towards girls' education (Panda, 2004). Kerala also has the lower percentage of spousal violence which could be linked with the higher percentage of women with minimal formal education.

Conclusion

The analysis based on the data from NFHS 4 and NFHS 5 was focused on understanding the relationship between empowerment indicators of women such as owning land/house, women using bank accounts, and women's participation in the decision-making process, and the magnitude of spousal violence and violence during pregnancy faced by women in rural India. But the study could not find any significant relation between the criteria of women empowerment and spousal violence faced by them. This can be largely due to the history of patriarchal norms embedded in the rural areas wherein both men and women from different socio-economic backgrounds tend to legitimize the violence against women as a tool to discipline women who deviate from the socio-cultural norms and practices.

Although with an increase in female literacy there is a decline in violence but the extent to which literacy has helped to stop violence is very mild. Despite the higher literacy rate among male than female in the population, violence against women has not come down. There is a reduction in violence in the case of men and women having higher formal education creating agency for women. This calls for creating awareness about gender-based violence and the importance of gender equality in society.

Marriage, Fertility, and Family Planning

Decoding India's population trajectory

Background

The World Population Prospects report (2020) projects India to be the most populous country in the world by around 2027. Though the political and intellectual elites of the then newly independent India, driven by the doctrine of Malthusianism, delineated the world's first state-led National Family Planning Programme in 1952 to prevent India's undeterred population growth from hindering its economic development (Sharma, 2012), this stance was contested by the new discourse developed in the 21st century that began to see population as human capital that could foster growth. Though population per se is not a bane, uncontrolled population outbursts could eventually lead to low living standards and ceaseless conflicts for resources. In this context, the WPP report's findings intensified India's population debate to which Marriage, Fertility and Family Planning are inextricably linked.

Photo Credit: Sreetama Basu

An Overview of Population Control in India:

Though India's fertility rate has declined according to the NFHS data, the debate on population control is still on. While one discourse supports the move to introduce legal and punitive means to control and stabilize the population, the other emphasizes a right-based approach focused on improving access to education, health and contraception. Since Marriage, Fertility and Family Planning are facets linked to India's population growth trajectory, the focus of government's policies has been on reducing adolescent marriages, increasing the spacing between births and bringing down the number of pregnancies by popularizing various family planning methods to reduce the overall fertility rate.

Although the structure of the India's population control policies resonated with the concomitant change in the discourse on population growth and control, by shifting its focus from a rigorous clinical approach to a more rights-based approach until now, it needs to be repurposed and reimagined based on changing fertility patterns using credible data sets like National Family Health Survey. For a geographically and culturally diverse country like India, it is first essential to understand the current trends of marriage, fertility, and family

planning among different sections of the population. In this context, the present section of this study examines and analyzes the current fertility level and the usage of family planning methods in rural India.

Importance of Family Planning:

Family planning has a significant role in improving sexual and reproductive health of the population. The importance of fertility control and family planning measures has also been incorporated as target 3.7 of SDG-3: "By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes". However, as per WHO, among the 1.9 billion Women of Reproductive Age group (15-49 years) worldwide in 2019, 1.1 billion require family planning; of these, 842 million are using contraceptive methods, and 270 million have an unmet need for contraception.

Improved awareness and usage of contraceptive methods result in informed decision making by young population, healthy sexual behavior, reduced adolescent pregnancies, and proper spacing between childbirths. These factors could help improving maternal health, reducing complications in pregnancies, which could further result in reducing maternal and neonatal mortality rates. Thus, awareness and adoption of family planning methods is not only focused on availability and affordability of contraceptives, but it further encourages the larger goal of achieving sound maternal and child health.

Indicators used in the present section:

1. Marriage and Fertility
2. Current Use of Family Planning Methods
3. Quality of Family Planning Services
4. Characteristics of Adults; Women with 10 or more years of schooling (Age 15-49 years)

RURAL FERTILITY RATE AND REPLACEMENT LEVEL FERTILITY



Picture Credit: Debarati Choudhary



Photo Credit: Sreetama Basu

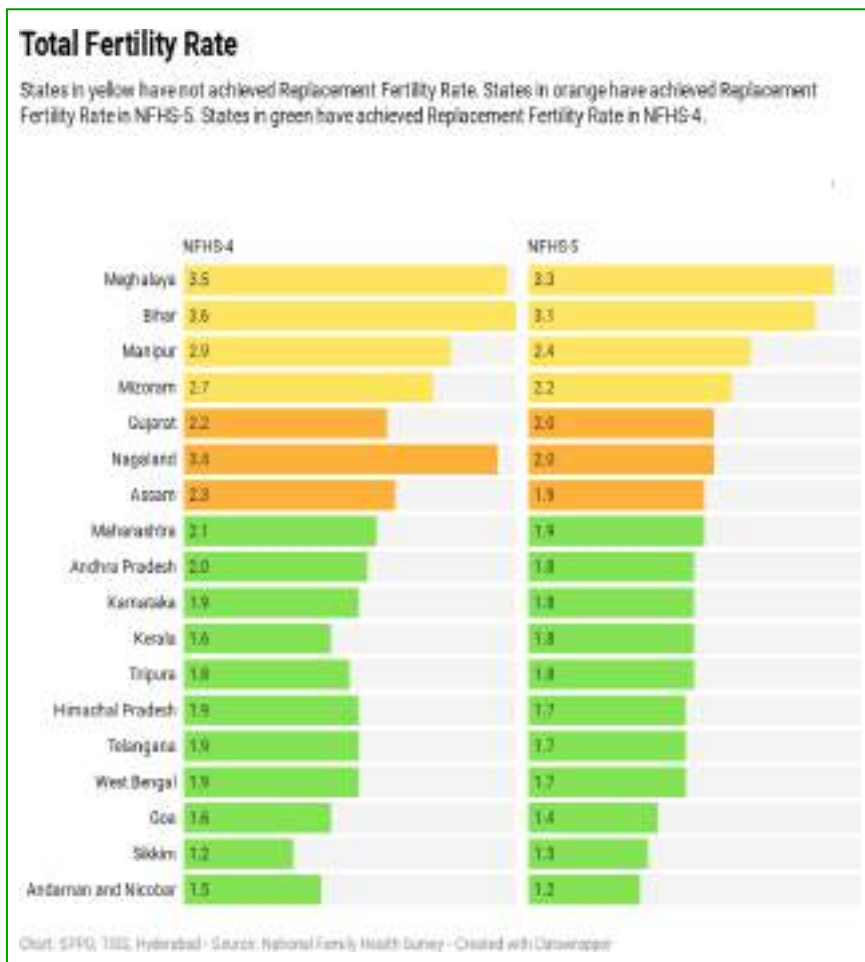


Rural Fertility Rate across states and Union Territories:

Total Fertility Rate (TFR): The average number of children that would be born to a woman over the course of her lifetime if she will experience the current age-specific fertility rates through her lifetime, and if she survives from childbirth to the end of her reproductive life.

Replacement Level Fertility (RLF): Replacement level fertility is the fertility rate at which a population exactly replaces itself from one generation to the next. In both developed and developing countries, RFR is taken as an average of 2.1 children per woman.

Total Fertility Rate in Rural India:



There were 11 states which achieved replacement rate (2.1) in 2015-16. However, Assam, Gujarat and Nagaland achieved a Replacement Level Fertility Rate of 2.1 in NFHS-V (2019-20). Although Bihar, Manipur, Meghalaya, and Mizoram have a high TFR as compared to other states and these states yet to achieve replacement rate but the TFR has declined between 2015-16 and 2019-20.

Figure 4.1

GUJARAT

The launch of Family Planning Logistics Management Information System (FPLMIS), a mobile app used by healthcare workers of all levels to collect, process, and track the usage of family planning logistics can be one of the reasons for decline in TFR in Gujarat. There was also an increased focus on spacing methods, postpartum family planning, sterilisation, and the creation of PPP models.

NAGALAND

Rural Nagaland experienced a significant decline in TFR from 3.1 to 2 between NFHS 4 and NFHS 5. This could be due to the state's satisfying performance in reducing the unmet need for planning methods by 59%. Nagaland has also shown improvement in assuring 10+ years of schooling for girls, which improved by 55%, and decline of underage marriages (girls who got married before the age of 18 years) by 54.1%, helping lower the TFR.

**State specific policies and programmes for family planning:
States which achieved
replacement level between 2015-16 and 2019-20**

ASSAM

Major challenges in implementing family planning policies in rural Assam include a diverse population, geographical accessibilities, issues related to healthcare delivery and infrastructure, etc.

Assam is classed as a “high-focus state” under family planning interventions like Mission Parivar Vikas, enhanced compensation schemes for sterilisation, etc. The state government implemented initiatives such as Boat Clinic services (for villages in Brahmaputra flood plain) and Comprehensive Abortion Care Services, which likely contributed to Assam's improved performance in NFHS-5.

States which are yet to achieve replacement level in rural areas

MANIPUR

The state shows the highest fall in the unmet need and seems to be more inclined towards using non-modern methods of family planning. The gender disparity in the use of family planning methods that is starkly visible in other states is relatively very low in Manipur. Despite a high percentage of women who received schooling for at least 10 years, Manipur has not achieved the replacement rate. Manipur requires the highest percentage increase in modern contraceptive use to achieve 75% demand satisfied with modern methods by 2030 (New et al.,2017).

MEGHALAYA

Women's education, occupation, sex composition of living children and monthly family income appeared as the most significant determining factors for contraceptive use and method preference (Dey, 2014). The state has the highest TFR in the country. The usage of family planning methods of any kind is not very high in the state, but out of the used methods, pills seem to be the most popular with a declining trend between NFHS-4 and 5.

BIHAR

It has the second highest percentage of women (43.4%) being married before 18 years. Studies show that marriage at an early age causes more pregnancies during a woman's reproductive age (Dommaraju, 2011). The state has low levels of outreach by health workers to create awareness about family planning methods.

The use of permanent family planning methods like female sterilisation is fairly high, the usage of temporary methods like condoms and IUDs is quite low. Female education levels are low, and a large part of the population lives below the poverty line. Bihar is "in-focus" under the Mission Parivar Vikas scheme and the resultant change in TFR from 3.6 to 3.1 is commendable.

MIZORAM

Mizoram has low level of population as compared to the rest of India. The studies show that women with high education and professional/clerical/business occupations in Mizoram, tend to have a more positive attitude towards the usage of various means of family planning methods (Vanlaltanpuii & Vadhera, 2019). The TFR in Mizoram has declined from 2.7 in 2015-16 to 2.2 in 2019-20. It shows that Mizoram is at the stage of achieving replacement level in near future if current trend continues.

FAMILY PLANNING METHODS IN INDIA



Photo Credit: Galvi Srikanth



Photo Credit: Sreelama Basu

Family Planning Methods: Types and Trends

IUD/PPIUD: An intrauterine device/intrauterine contraceptive device/copper-t, is a small, often T-shaped birth control device that is inserted into the uterus to prevent pregnancy.

Pills: Oral contraceptives contain a small amount of artificial estrogen and progesterin hormone which inhibit the female body's natural hormones to prevent pregnancy.

Condoms: It is a thin, fitted tube worn over the penis during sexual intercourse (male condoms) or inserted into the vagina before intercourse (female condoms). Condoms can help prevent pregnancies and sexually transmitted diseases. They create a barrier that keeps semen and other body fluids out of the vagina. Here, the usage of male condoms is studied.

Predominantly Used Methods of Family Planning Across India (NFHS 4)

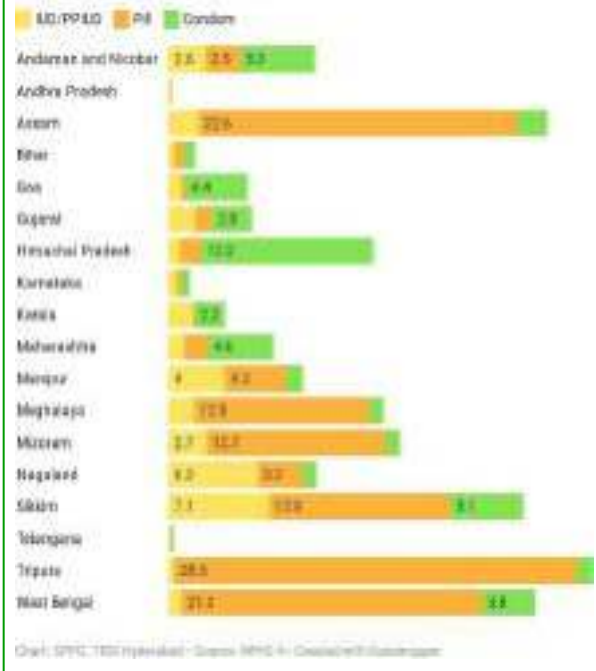


Figure 4.2

Predominantly Used Methods of Family Planning Across India (NFHS 5)

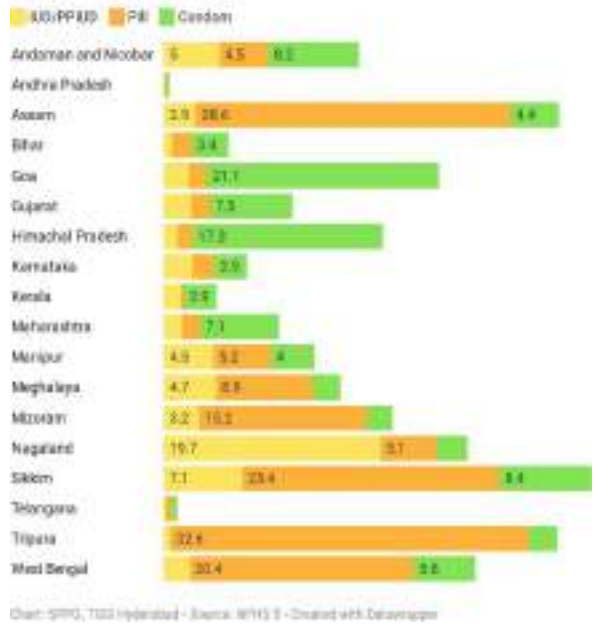


Figure 4.3

Family Planning Methods and its Usage in Rural India:

- The three figures are the state-wise changes in rural usage of various family planning methods. The data is organized in decreasing order of usage in the states/UTs. With regard to IUD and PPIUD, Nagaland displays the most notable increase in usage by 13.4 points during 2015-16 and 2019-20.

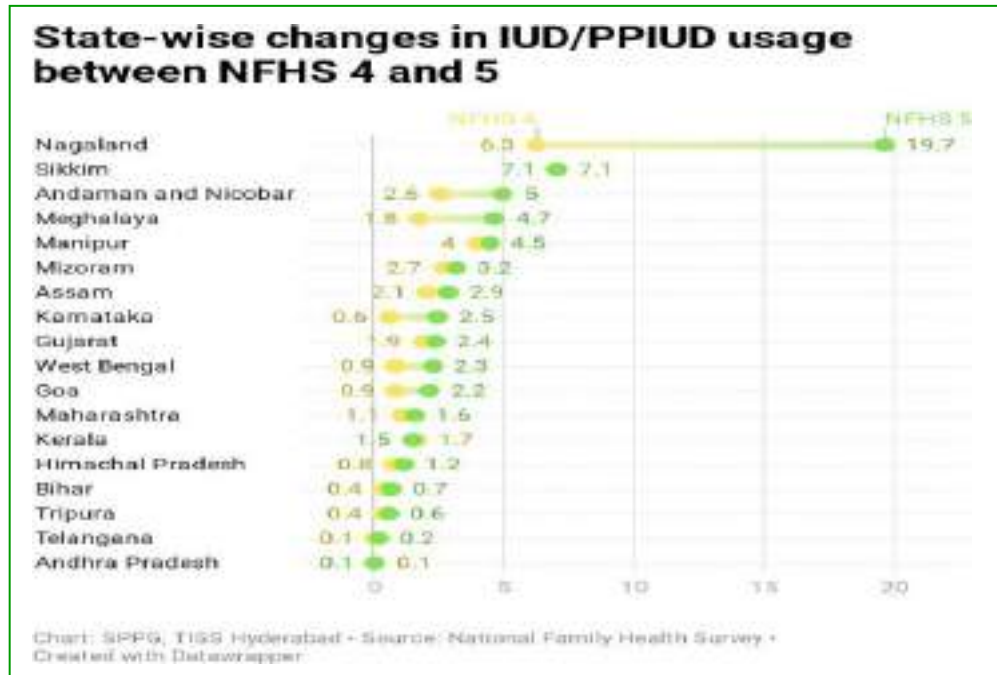


Figure 4.4

- Goa has the highest percentage of condom usage in 2019-20 with significant increase from 4.4 per cent in 2015-16 to 21.3 per cent in 2019-20. Himanchal Pradesh, Sikkim, Andaman and Nicobar Island and Gujarat also show a notable increase

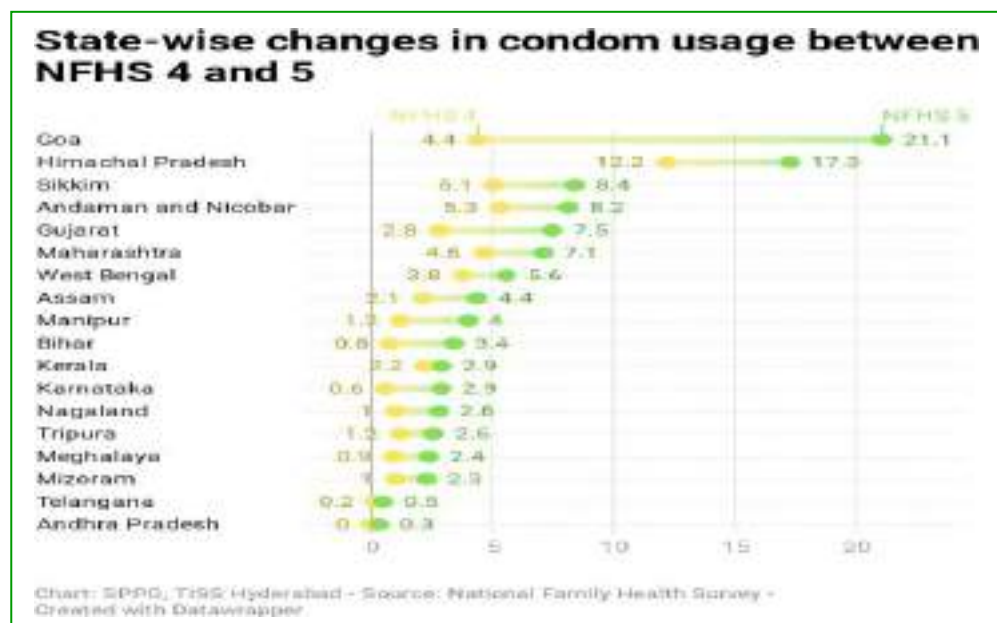


Figure 4.5

- With regard to the contraceptive pill, Tripura has the highest users (32.6 per cent) in 2019-20 with a notable increase during 2015-16 and 2019-20. Assam and Sikkim are the states which also show a notable increase in the contraceptive pills' users.

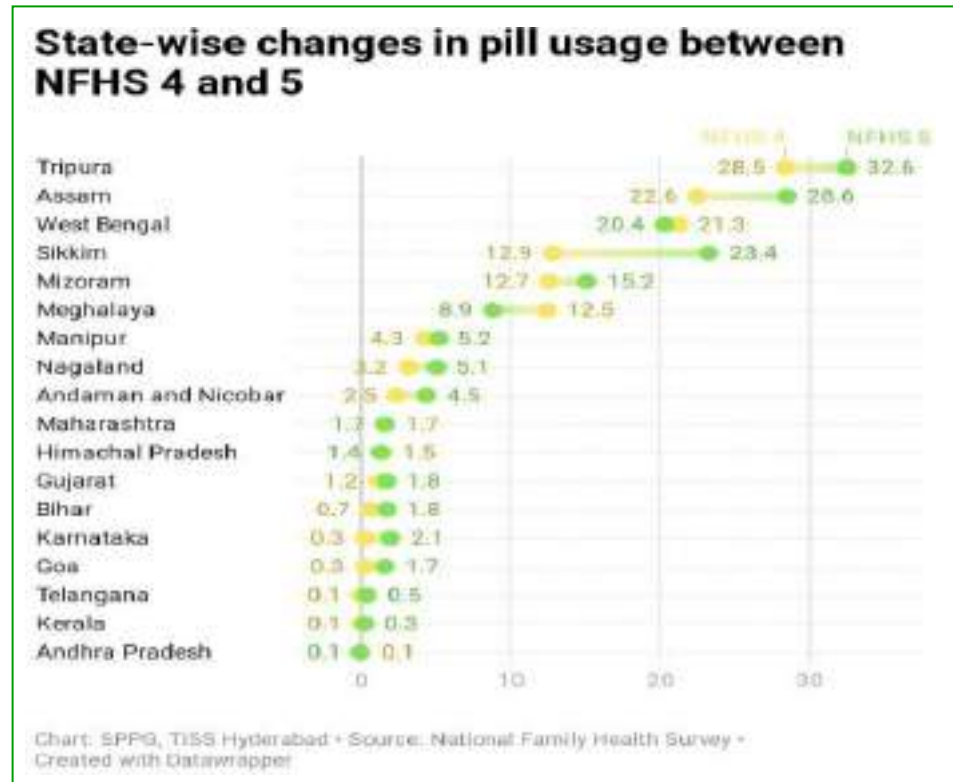


Figure 4.6

- Across Family Planning Methods, Andhra Pradesh shows the least improvement across States.

Family Planning: A Woman’s Burden?

Female Sterilisation: Female sterilisation is an operation to permanently prevent pregnancy. The fallopian tubes are blocked or sealed to prevent the eggs reaching the sperm and becoming fertilised. Here, female sterilisation is measured based on the percentage of married women aged 15- 49 years who have undergone sterilisation.

Male Sterilisation: Male sterilisation is a permanent method of family planning for men. It works by blocking the Vas (tubes connecting testicles to urethra). After vasectomy procedure, there is no sperm in semen.

The responsibility of sterilisation is largely shouldered by women in India, and the **number of sterilised women outnumber the number of sterilised men in every state**, usually by a wide margin amongst rural households.

Low preference to use permanent sterilisation in the northern and northeastern states can be observed.

It has been observed that among rural women, the usage of family planning methods are more **inclined towards permanent contraceptive methods** especially in the case of Andhra Pradesh and Telangana.

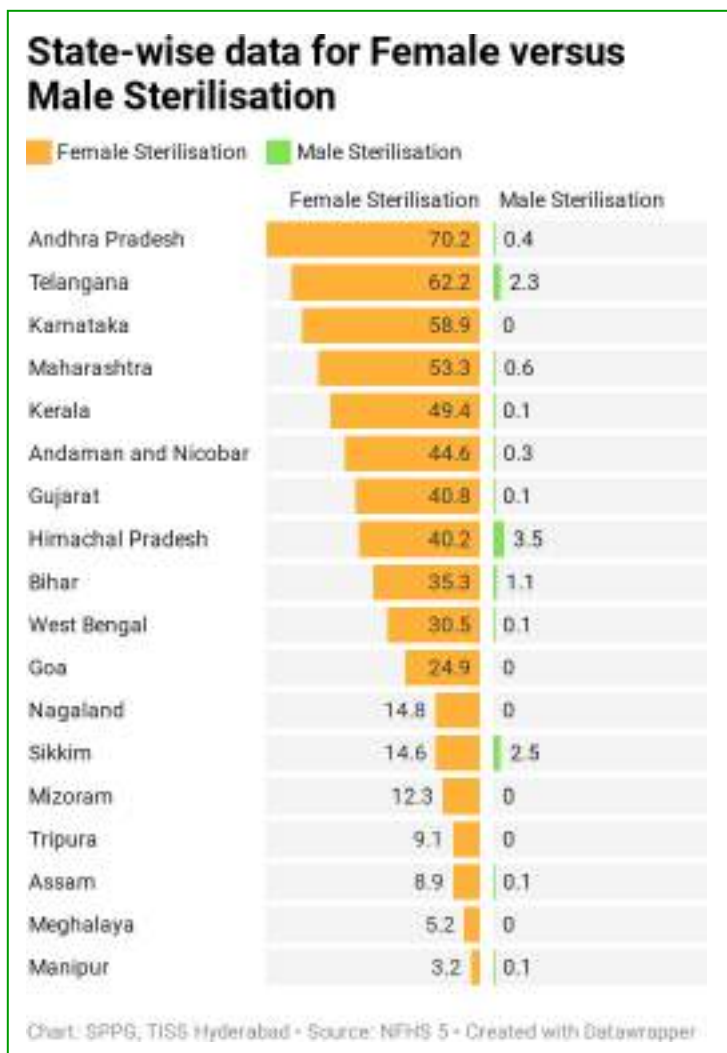


Figure 4.7

UNMET NEEDS, TOTAL FERTILITY RATE AND REPLACEMENT LEVEL FERTILITY



Photo Credit: Sreetama Basu



Photo Credit: Asmita Jain



Link between Unmet Needs, Total Fertility Rate and Replacement Rate Categories:

Unmet Needs: Unmet need for family planning is defined as the percentage of women of reproductive age, either married or in a union, who have an unmet need for family planning. Women with unmet need are those who want to stop or delay childbearing but are not using any method of contraception (UNDESA, 2014).

In 2015-16 (NFHS-4), states like West Bengal, Telangana, Karnataka and Andhra Pradesh achieved the replacement rate of 2.1 and at the same time were able to meet the needs of the people in terms of family planning.

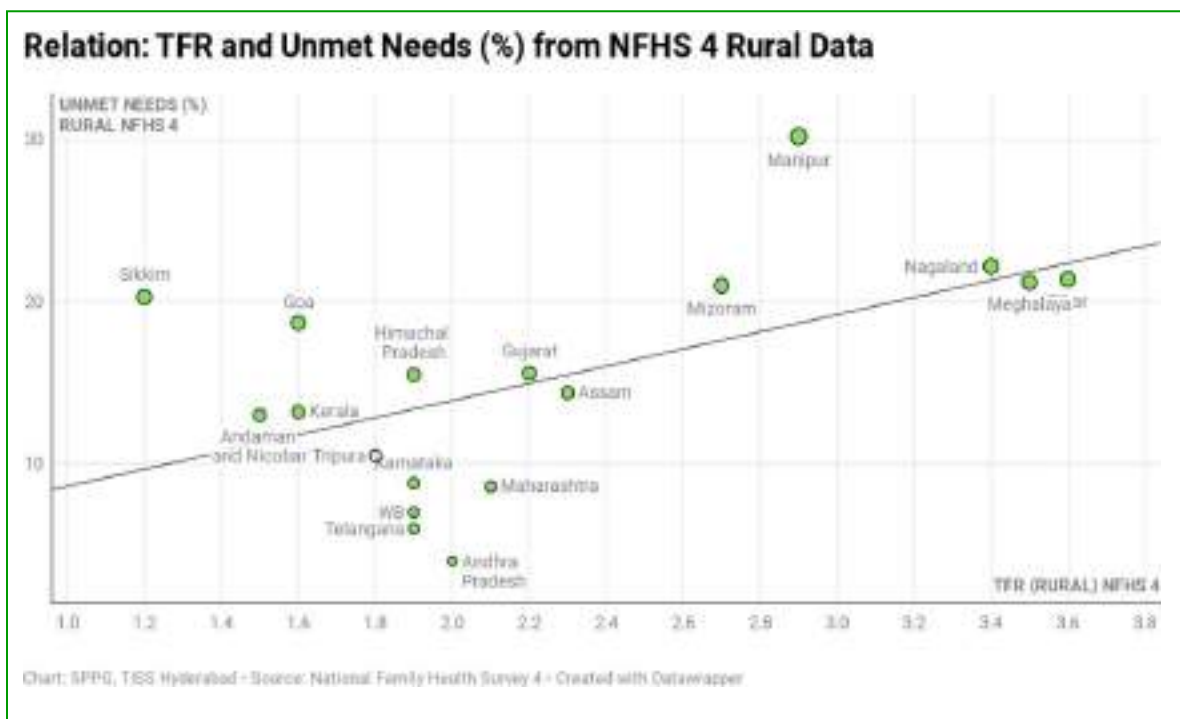


Figure 4.8

- States like Manipur, Meghalaya, and Bihar were performing poorly with a high TFR and high percentage of unmet needs of the people.
- There is a direct relationship between TFR and Unmet Needs which shows- higher the percentage of unmet needs, higher the TFR, and vice versa.
- There also exist exceptions like Sikkim and Goa that depict a different picture. Here, the TFR is low and below the replacement rate but these states also had a high percentage of unmet needs and require further study.

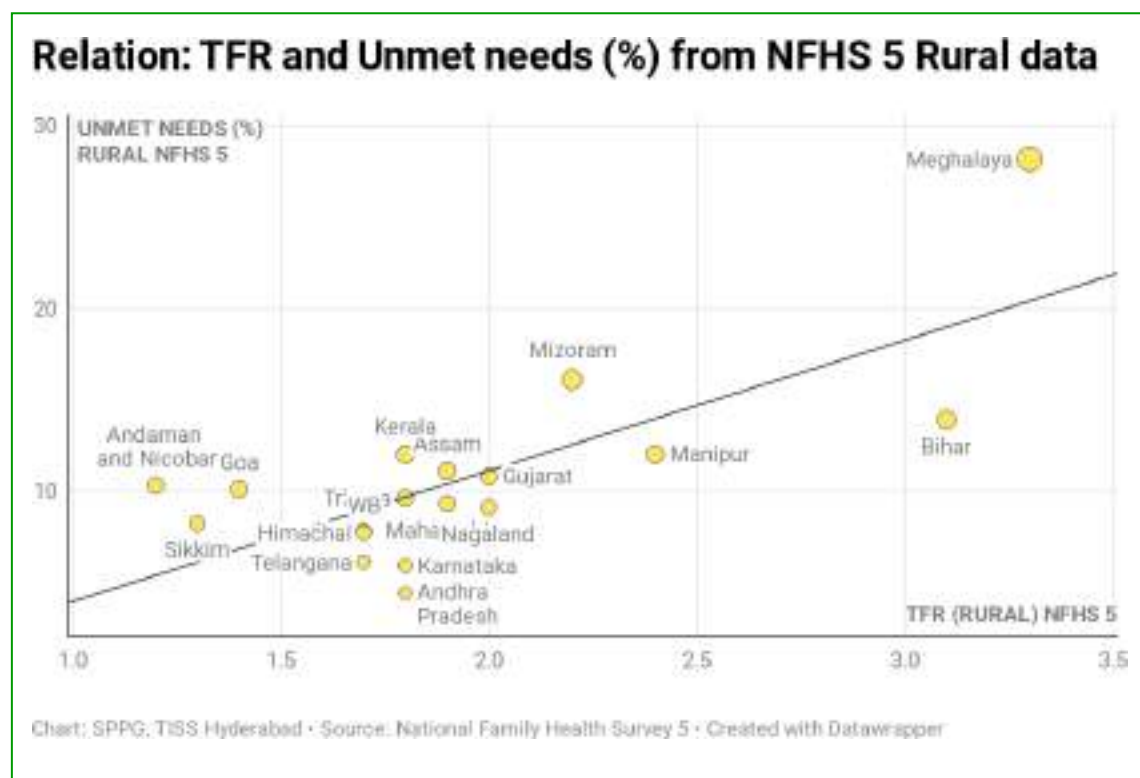


Figure 4.9

- States and UTs like Karnataka, Himachal Pradesh, Kerala, Tripura, and Andaman and Nicobar Islands have lowered the percentage of unmet needs for contraceptives. Performance of Goa and Sikkim have also improved in NFHS 5. These are the states which have achieved replacement level fertility (2.1).
- States like Assam, Gujarat and Nagaland which achieved TFR of 2.1 or below during NFHS 5, have performed well and are able to reduce the percentage of unmet needs for contraception. Particularly, Nagaland has performed very satisfactory by decreasing unmet needs by 59% in NFHS 5 compared to NFHS 4.
- States which are yet to achieve TFR of 2.1 but show declining TFR during NFHS-4 and 5 such as Bihar, Manipur and Mizoram have also show decline in their unmet needs of family planning. However, Meghalaya is the least performing state as it has reported increased levels of unmet needs and is yet to achieve TFR of 2.1. Hence, there is a need for further efforts in the state of Meghalaya.

EDUCATION, ADOLESCENT PREGNANCY, AND REPRODUCTIVE HEALTH



<https://www.unicef.org/education/girls-education>



<https://www.google.com/amp/s/www.orfonline.org/research/there-is-a-need-to-end-teenage-pregnancies-in-india-as-harming-the-national-economy-6030/>

Relationship between Female Schooling Years, Adolescent Marriages, Pregnancies, and Fertility Rate:

Marriage and Fertility are interlinked phenomena, especially in the traditional societies where out of marriage fertility is still considered taboo or unacceptable. Thus, this study attempts to understand the various factors that result in higher adolescent fertility. Here, first, we have tried to analyze the relationship between girls' education and marriage age. The charts below show the relationship as per the data provided by NFHS-5, for rural India. The figure 4.10 shows a negative relationship between the education level of women (women who attained 10 or more years of schooling) and marriages (women who got married during 15-17 years of age).

The figure 4.10 shows an inverse relationship that exists between schooling years of women and adolescent girls' marriage: the better the states perform under women education, the lower the incidence of adolescent girls' marriages.

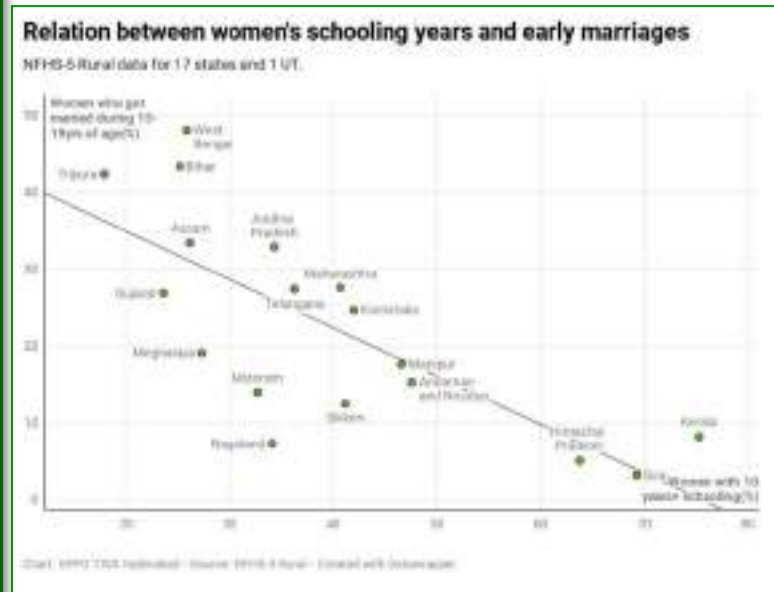


Figure 4.10

This figure 4.11 depicts the inverse relationship between relative change in the female schooling years and adolescent girls' marriages during 2015-16 and 2019-20.

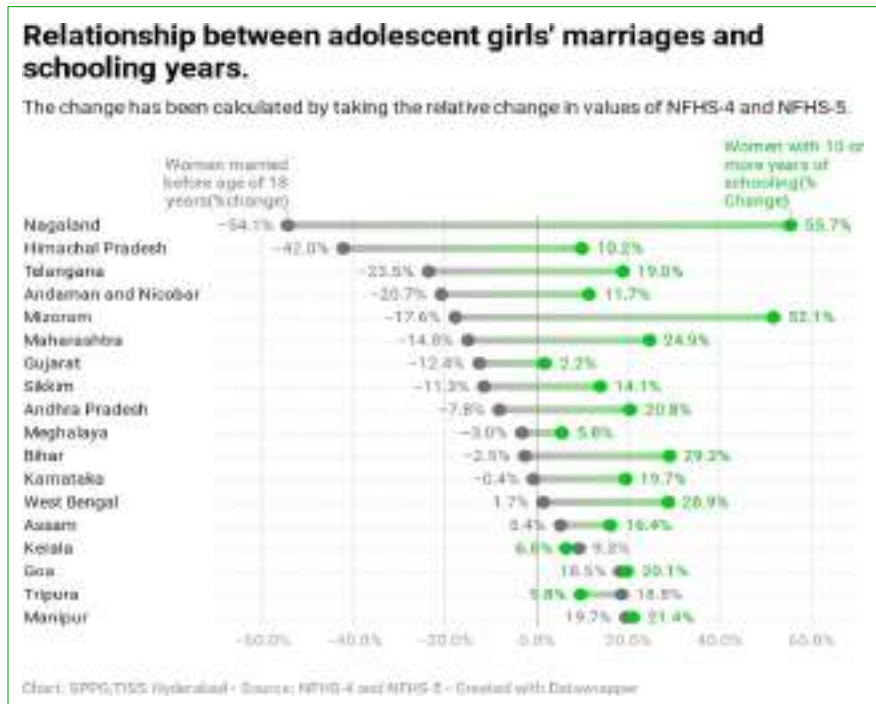


Figure 4.11

- States like Nagaland, Himachal Pradesh, and Telangana have performed exponentially well in reducing marriage of adolescent girls and improving female education which could also be a contributing factor among these states in achieving the replacement fertility rate.

- The performance of states like Bihar, Manipur, Meghalaya, and Mizoram remains poor in reducing the marriages of adolescent, which could also be an important contributing factor behind their slow performance in achieving the replacement fertility rate.

The Relationship between Adolescent Marriage, Fertility, and Unmet Need for Family Planning and Spacing: A Glance at the Performance of States Having High TFR:

Adolescent Fertility Rate (AFR) is being defined as the number of children per 1000 women under the age group of 15-19 years old. For the first time, NFHS-5 has incorporated the AFR for all the states in the fact sheet. Here for our analysis, we have comparatively analyzed the performance of the bottom four states- Mizoram, Meghalaya, Manipur and Bihar with Nagaland which is the best performing states in the selected indicators

- The figure 4.12 shows that states with high TFR also have higher AFR. In Bihar and Mizoram, despite improvement in female schooling years, the incidences of adolescent girls' marriages and adolescent pregnancy have not been improved in a similar rate.

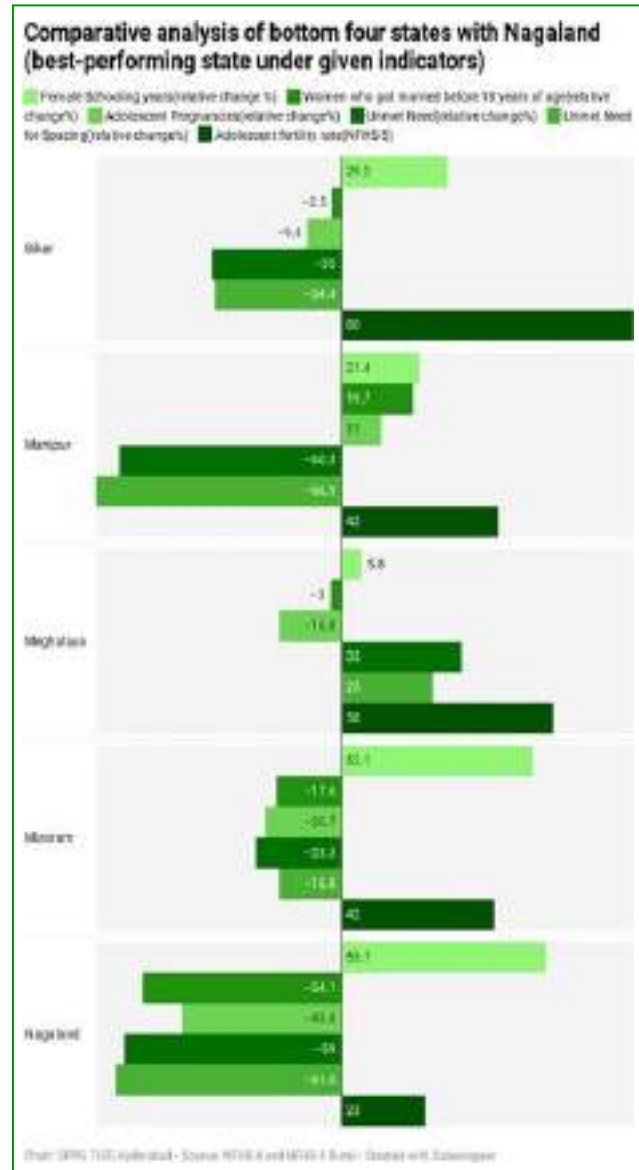


Figure 4.12

- Meghalaya's performance remained somewhat consistent, where improvement in female education led to lower adolescent marriages and pregnancies. However, the unmet need for family planning methods and the unmet need for spacing has increased in Meghalaya, which could further result in higher fertility in the state.
- Manipur came out as an outlier/exception, which has shown an increase in adolescent marriages and pregnancies, despite improvement in female education.
- By doing a comparative analysis with Nagaland, which has the highest improvement under all the indicators, we find certain interesting observations. Nagaland's performance has been the most consistent in terms of improvement in schooling years and reduction in adolescent marriages and pregnancy mainly because of two reasons:
 1. First, the significant improvement in the schooling levels of girl children delayed the marriage age and early pregnancies.
 2. Second, the huge reduction in the unmet need for family planning methods, especially the unmet need for spacing had played important role in reducing the adolescent pregnancy.

These two important reasons could be the reason behind Nagaland achieving the replacement level fertility rate in NFHS-5.

Thus, this comparative analysis highlights the importance of improving the educational attainment of female children and reducing the unmet need for family planning methods and spacing.



Conclusion

The study found that in the states like Bihar, Mizoram, Manipur and Meghalaya, the total fertility rate is inextricably linked to the percentage of unmet need for family planning methods. The results also show a gender disparity embedded in the usage of family planning methods with higher burden on females.

There is positive relationship between TFR and unmet needs of family planning which indicates that states with higher TFR are the states with high unmet needs of family planning.

There is negative relationship between women's education and adolescent's fertility. The states with better women's education show low percentage of adolescent's fertility.

Most of the states have already achieved below replacement level fertility and therefore, the study suggests, that India's population policy of the 21st century should focus on supervising and stabilizing the population trends by adopting a varied and a rights-based approach specific to each state rather than controlling the population by following a universal and uniform method throughout the country.

Policy Recommendations:

- Better accessibility of family planning methods should be ensured for the states like Bihar, Meghalaya, Manipur, and Mizoram to achieve replacement level fertility of 2.1.
- Need for coordination, training and sensitization among healthcare functionaries for proper implementation of Family Planning Logistics Management Information System (FPLMIS).
- Adoption of an integrated Adolescent Girls Health-care Policy with primary focus on proper schooling of girls, eliminating adolescent marriages and avoiding adolescent pregnancies with fulfil of unmet needs of family planning.
- Focus on the use of temporary modern methods of family planning, especially by men to decrease the gender bias and curtail the burden of family planning faced by women.
- Provision of counselling for couples and families, and renewed focus on reproductive and sex education at schools and colleges to inculcate sexually responsible behavior among young people.
- Need for in-depth study to understand the role of cultural, religious beliefs and myths related to family planning that shape the attitudes of people towards adoption of modern family planning methods (Vanlaltanpuii & Vadhera, 2019).



Maternal Health and Institutional Care

What is the relationship between Maternal Health and institutional care?

Background

Maternal health refers to the health of the women during pregnancy, childbirth and the postnatal period (WHO, 2017). The health of the mother at each of these stages affects the health of the child as well. The Sustainable development goal agenda 2030 has acknowledged the issues of maternal health and has set a goal of eliminating maternal mortality under Sustainable Development Goal 3: “Ensure healthy life and promote well-being for all at all ages”. The studies conducted by National Institutes of Health (2009) revealed that the situation of maternal health care in rural areas is poor as compared to urban areas because of the lack of health infrastructure and other behavioral practices.

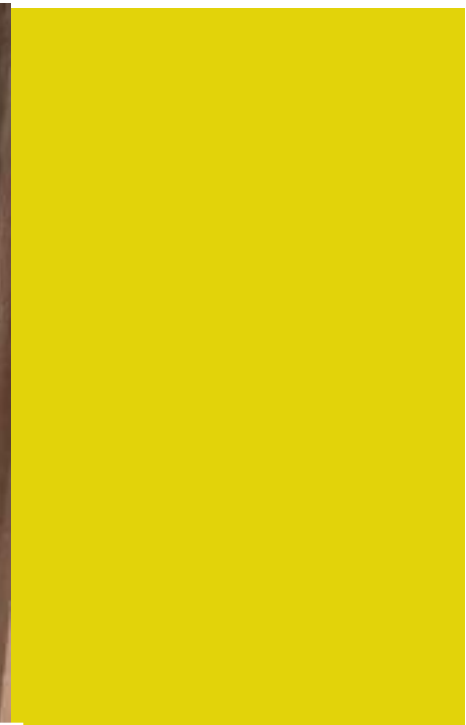
Photo Credit: Srikanth

Relationship between Maternal Health and Institutional Care

In 2010, India aimed to reduce the levels of maternal mortality to 100 per 1,00,000 live births. Other points of focus were ensuring 80 percent institutional deliveries and 100 percent deliveries attended by skilled health personnel. Although there is noticeable progress in these indicators, a regional disparity exists in the status of maternal health across states. In this context, this section of the present study aims to examine the current status of maternal health using the recently released factsheets of NFHS-5. Six indicators have been selected for the purpose of this study: (i) Registered pregnancies for which the mother received the mother and child protection card (%) (ii) Institutional births (%) (iii) Births attended by skilled health personnel (%) (iv) Births delivered by caesarean section (%) (v) Average out of pocket expenditure per delivery in a public health facility, and (vi) Women age 15-19 years who were already mothers or pregnant at the time of survey. The present study covers 17 States and 1 Union Territory for which the data were available in the factsheets of NFHS-4 and NFHS-5.



Photo Credit: Srikanth



REGISTERED PREGNANCIES



Photo Credit: Arvind

Photo courtesy: Paula Bronstein/ The Verbatim Agency/Getty Images



Photo Credit: Shreyas



Registered Pregnancies for which the mother received the mother and child protection card (%)

Registering the pregnancy with the nearest Primary Health Centers (PHCs) and Government hospitals, along with receiving the Mother and Child Protection Card (MCP), is an important indicator to assess the tracking system of the health of the mother as well as that of the child. From the time when a woman gets pregnant, this card covers several benefits including regular checkups, antenatal care, tetanus injections, iron folic tablets etc. This also ensures nutritional counseling at the antenatal care (ANC) and the postnatal care stage. It guarantees that the cohort of mothers and children are registered for health, nutrition and growth purposes.

OBSERVATIONS

- Manipur has made an immense improvement in this area with a big jump from 34.2 to 71.9 percent.
- Goa is the only state in the list which has provided the MCP cards and registered the pregnancies of all the mothers.
- Based on the ranking of states, the north eastern states like Manipur, Nagaland and Tripura have made significant improvement than other states.
- The only state where the percentage of registered pregnancies decreased is Sikkim.
- Karnataka, which recorded the highest number of SCs, PHCs and CHCs among the southern states in the Rural Health Statistics (RHS,2018-19) has inched towards 100 percent registered pregnancies (98.2 percent)



Figure 5.1



Photo Credit: Srikanth



INSTITUTIONAL BIRTHS AND C-SECTION DELIVERIES



Photo Credit: Srikanth

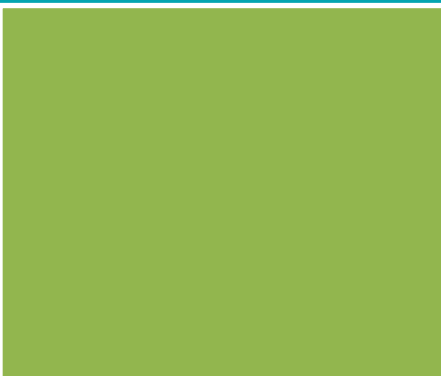


Photo Credit: Gustavo



Institutional Births (%)

Institutional births refer to the deliveries that occur at a healthcare facility where the mother and the child are attended by skilled and professional healthcare workers. It is crucial to both the mother and child that they are taken care of in a proper setting wherein life-saving equipment and hygienic environment can help in reducing the potential complications that may arise during delivery, causing illness or death to both mother and child (Kesterton et al., 2010). Thus, the availability of emergency obstetric care by skilled health professionals is an important characteristic of Institutional delivery that is required to reduce the maternal and the infant mortality rate. The NFHS-4 and NFHS-5 provide the following account on Institutional births.

OBSERVATIONS

- All the states have recorded commendable improvement in the percentage of Institutional births from NFHS-4 to NFHS-5. However, the north-eastern states are collectively experiencing an extremely low level of Institutional births, with Nagaland registering the lowest rate at just 38.8 per cent in 2019-20,
- Sikkim is the only north-eastern state that performs really well with up to 96.3 per cent Institutional births in 2019-20.
- Among other regions, Bihar has a comparatively lower rate of 75 per cent Institutional deliveries in 2019-20.
- Southern states like Kerala, Karnataka, Andhra Pradesh and Telangana have fared well with Institutional deliveries going above 95 per cent in 2019-20.

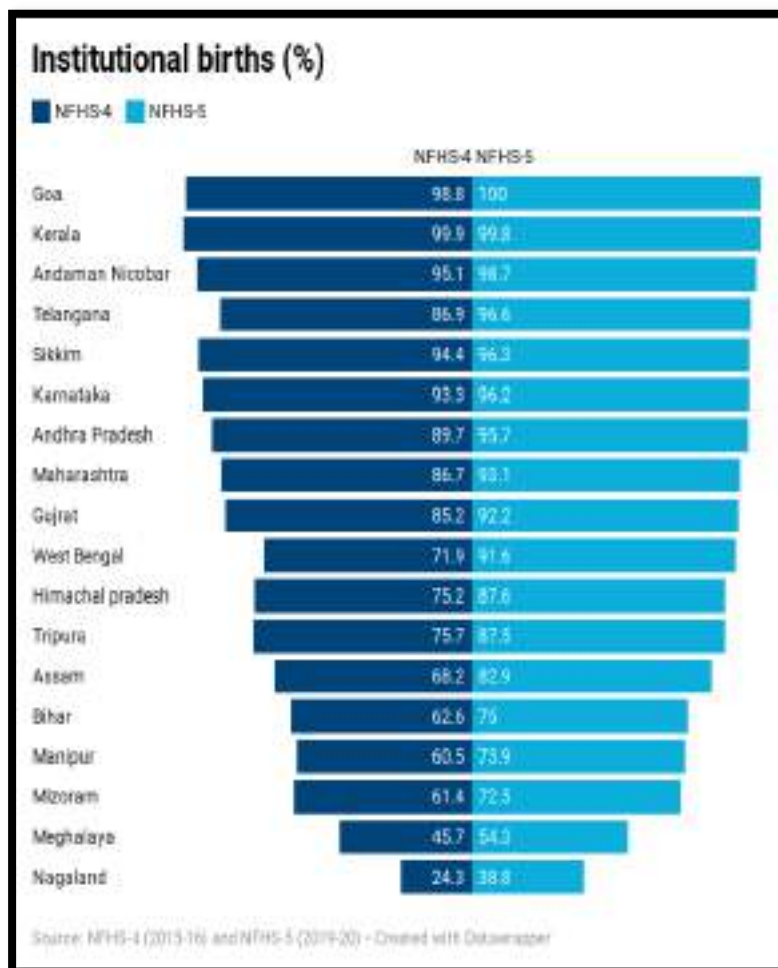


Figure 5.2

- The Western states like Maharashtra, Goa, and Gujarat have figures above 90 per cent with Goa achieving 100 percent Institutional deliveries.

Births delivered by caesarean section (%)

Births delivered by caesarean section reflect the accessibility and utilization of services as well as the functioning of the healthcare system. The appropriate use of a C-section leads to a decrease in maternal mortality and morbidity, as well as a decrease in perinatal morbidity and mortality. While caesarean section deliveries may be performed to save a woman’s life against intrapartum complications, an immoderate surge raises questions on the effectiveness of maternal healthcare services in a nation. The WHO recommends a Caesarean section rate between 10-15 percent of all births. While rates less than 10 percent may indicate inadequate availability and access to emergency obstetric care, rates above 15 percent suggest overuse of the procedure for non-emergency reasons. (WHO, 2015).

OBSERVATIONS

- The NFHS-5 data highlights interstate variation in the caesarean section births rate, which is highest in Telangana (58.4 percent) and the lowest in Nagaland (3.6 percent) in 2019-20.

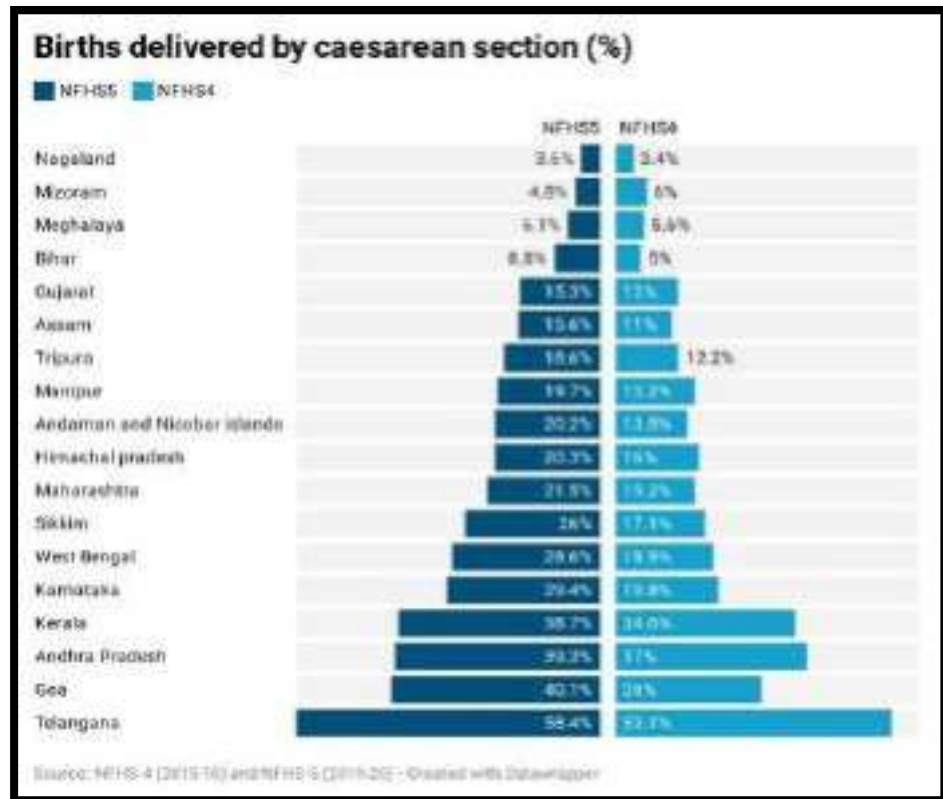


Figure 5.3

- In the west, Goa records the highest Caesarean-section deliveries (40.1 percent), followed by Maharashtra (21.5 percent) and Gujarat (15.3 percent) along with a moderate increase from NFHS-4 figures.

- The north-eastern states like Meghalaya (6.1 percent), Nagaland (3.6 percent) and Mizoram (4.8 percent) report the lowest percentage of C-section deliveries in 2019-20. The overall increase in such deliveries is low for these states during 2015-16 and 2019-20.
- Mizoram is the only state to experience a decrease in such deliveries from 6 percent to 4.8 percent between NFHS-4 and NFHS-5.
- An increase in Institutional births has also increased the rate of Caesarean-section deliveries in rural India. This relation can also be analyzed with the help of Correlation and linear regression coefficients as follows:

Table 5.1. Correlation between Institutional births and C-section deliveries

Indicator 1	Indicator 2	Coefficient of Correlation (r)	Significance level	No. of observations
Institutional births	C-section deliveries	0.71	0.000853	18

- The correlation coefficient of 0.71 with $p < 0.001$ indicates a strong positive relationship between Institutional births and C-section deliveries.

Table 5.2. Regression between Institutional births and C-section deliveries

Coefficient	Intercept	F-stat	p-value	R-square
0.614	-29.25	16.97	0.001	0.514

Regression equation:

$$\text{C-section deliveries (Y)} = -29.25 + 0.614 * (\text{Institutional births}).$$

- According to the given data, the R square value is- 0.514 which indicates that around 51% variance in C-section deliveries can be explained by institutional births.
- The slope coefficient is 0.614. This depicts that a unit change in Institutional births increases C-section deliveries by 61 units.
- The F- stat value is 16.97 and p-value is very low and well within the 5% significance level.
- Therefore, it can be inferred that there exists a statistically significant relationship between Institutional births and C-section deliveries.

- The highest percentage of C-Sections performed in public health facilities is recorded in Telangana at 44.3 per cent whereas the lowest is 3.5 per cent in Bihar. As against this, the highest percentage of C-Section deliveries performed in private health facilities is seen in West Bengal at 84.4 per cent and the lowest in Gujarat at 25 per cent.

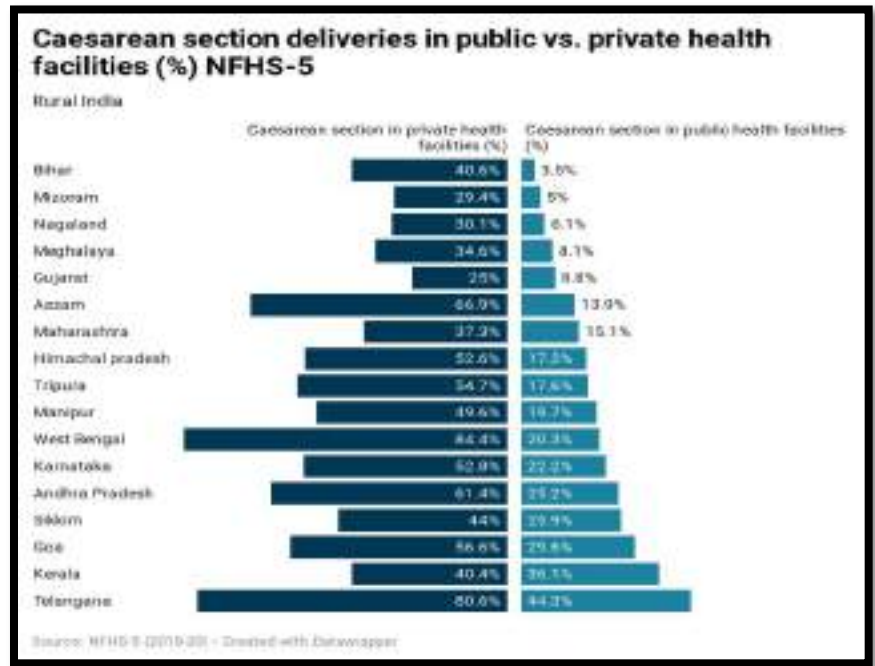


Figure 5. 4

- The greatest public-private divide is witnessed in West Bengal and Assam where births in private health facilities delivered by caesarean section are significantly higher than the births in public health facilities delivered by caesarean section.

C-section deliveries are associated with longer hospital stays, higher morbidity among mothers and newborns, lower birth-weight and increased chances of C-section for subsequent births, all of which have long term psychosocial effects on the mother. The unbridled cases of C-section births against the ideal range of 10-15% set by the WHO, especially in the private facilities indicate a growing commercialization of deliveries in India.

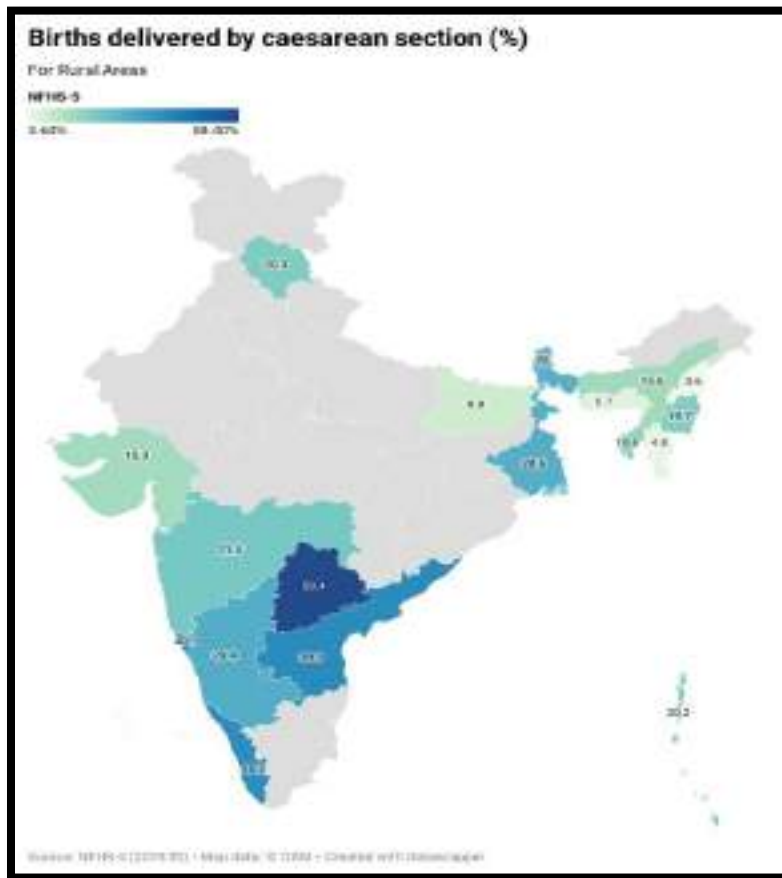


Figure 5.5



Photo Credit: Arvind

BIRTHS ATTENDED BY SKILLED HEALTH PERSONNELS



Photo Credit: Gustavo Frings



Photo Credit: Srikanth

Births attended by skilled health personnel

Maternal health is dependent on a plethora of factors. Every year with the birth of 25 million children, India accounts for close to one-fifth of the world’s annual childbirths (UNICEF, 2020).

It is noteworthy that nearly 46 per cent of maternal deaths and 40 per cent of neonatal deaths happen during labour or the first 24 hours after birth (UNICEF, 2020). With the rationale to prevent, detect, and manage the complications of maternal health, skilled personnel are used to assist the delivery process. Therefore, it is important to study the births attended by skilled health personnel.

OBSERVATIONS

- The north-eastern states are doing relatively worse when it comes to births attended by skilled personnel. Sikkim is an exception in this regard as it is one of the top performers in the indicator, unlike other north-eastern states.
- On the other hand, states like Kerala and Goa have achieved 100 percent births attended by skilled health personnel.
- Other southern states like Andhra Pradesh, Karnataka, and Telangana have also performed well

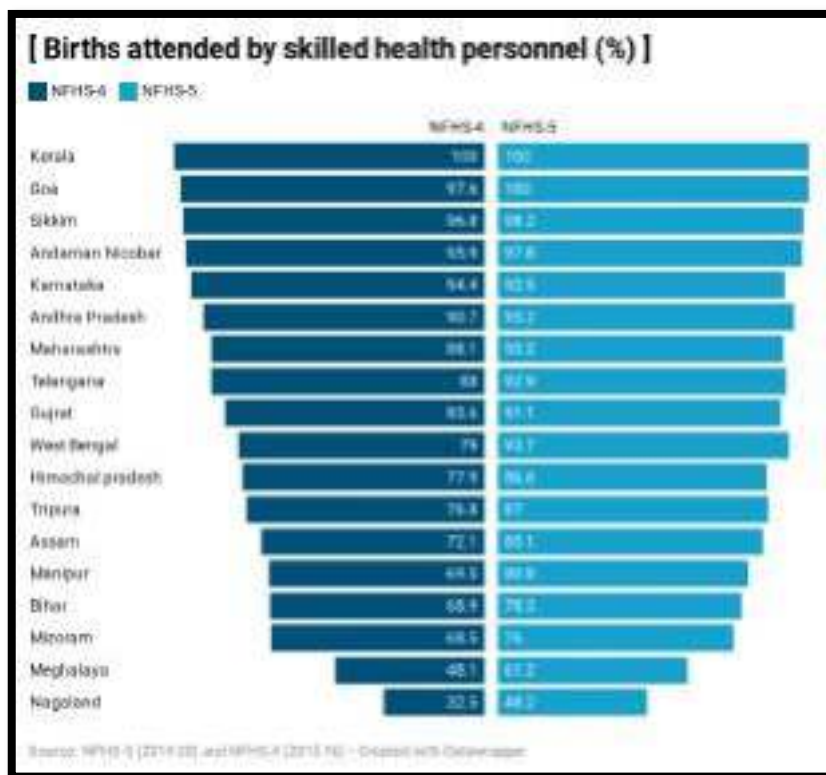


Figure 5.6

in the given parameter with above 90 percent of births attended by skilled personnel.

- Although all the states have seen improvement in performance from NFHS-4 to NFHS-5, there is a dire need for improvement in birth attended by health personnel among the north-eastern states.

Table 5.3 Correlation between births attended by skilled health personnel and institutional births

Indicator 1	Indicator 2	Coefficient of Correlation (r)	Significance level	No. of observations
Births attended by skilled health personnel	Institutional births	0.5	0.034	18

- The above table indicates a positive correlation ($r=0.5$, $p<0.05$) between births attended by skilled personnel and Institutional births. It indicates that if deliveries are happening in health centres, there are higher chances that it would be attended by skilled health personnel.



Photo Credit: Arvind



Photo Credit: Arvind

ADOLESCENT PREGNANCIES



Photo Credit: Anand

Women aged (15-19) who were already mothers or pregnant at the time of survey

In dealing with the relationship of maternal health and institutional care, adolescent pregnancies acquire importance, as despite the low rate with a regional variation, this indicator holds a strong influence on the mother's health. As opposed to the institutional benefits which a woman in the child-bearing age gets entitled to, an adolescent pregnancy goes unaccounted through formal healthcare with at times reliance on quacks, resulting in grave consequences for the young mother's health.

OBSERVATIONS

- Out of the 18 states, 6 states show more than 10 percent adolescent pregnancies. Despite a decline between NFHS-4 and 5, majority of these pregnancies are unaccounted for in the record of the public healthcare system.
- The adolescent pregnancies are highest in Tripura followed by West Bengal, Telangana, Andhra Pradesh, Assam, Bihar and Maharashtra of which West Bengal showed a declining trend during 2015-16 and 2019-20.

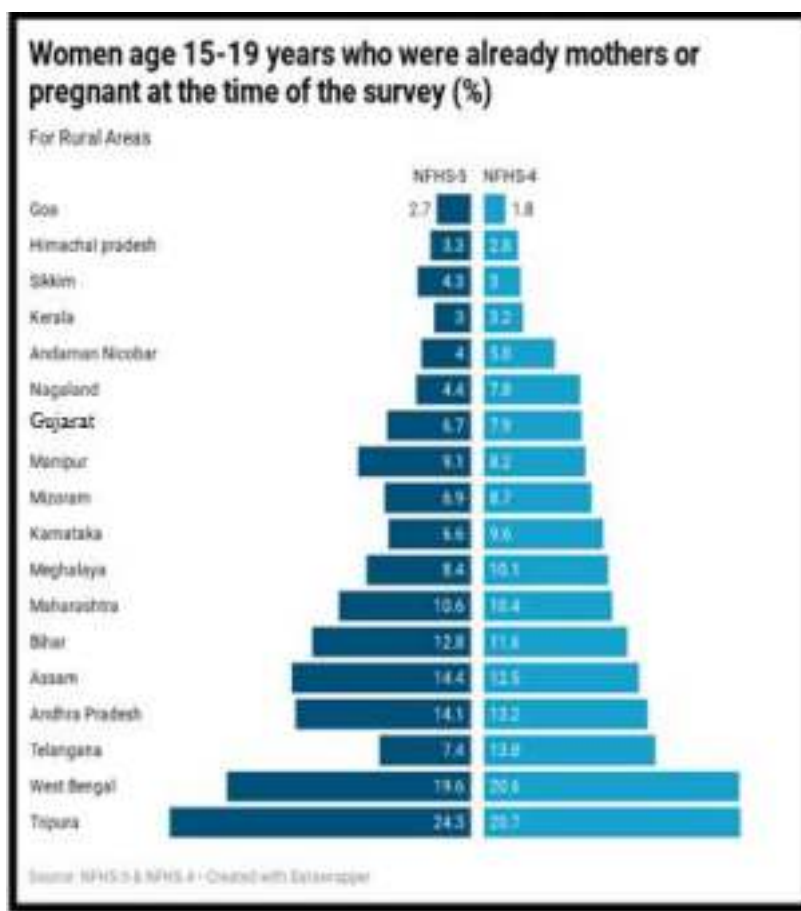


Figure 5.7

- Amongst the Southern States Kerala has the least Adolescent Fertility Rate (3.2 percent in NFHS-5). It is succeeded by Telangana with a reduced adolescent fertility rate by 6.4 percent points from 13.8 to 7.4 percent during 2015-16 and 2019-20.

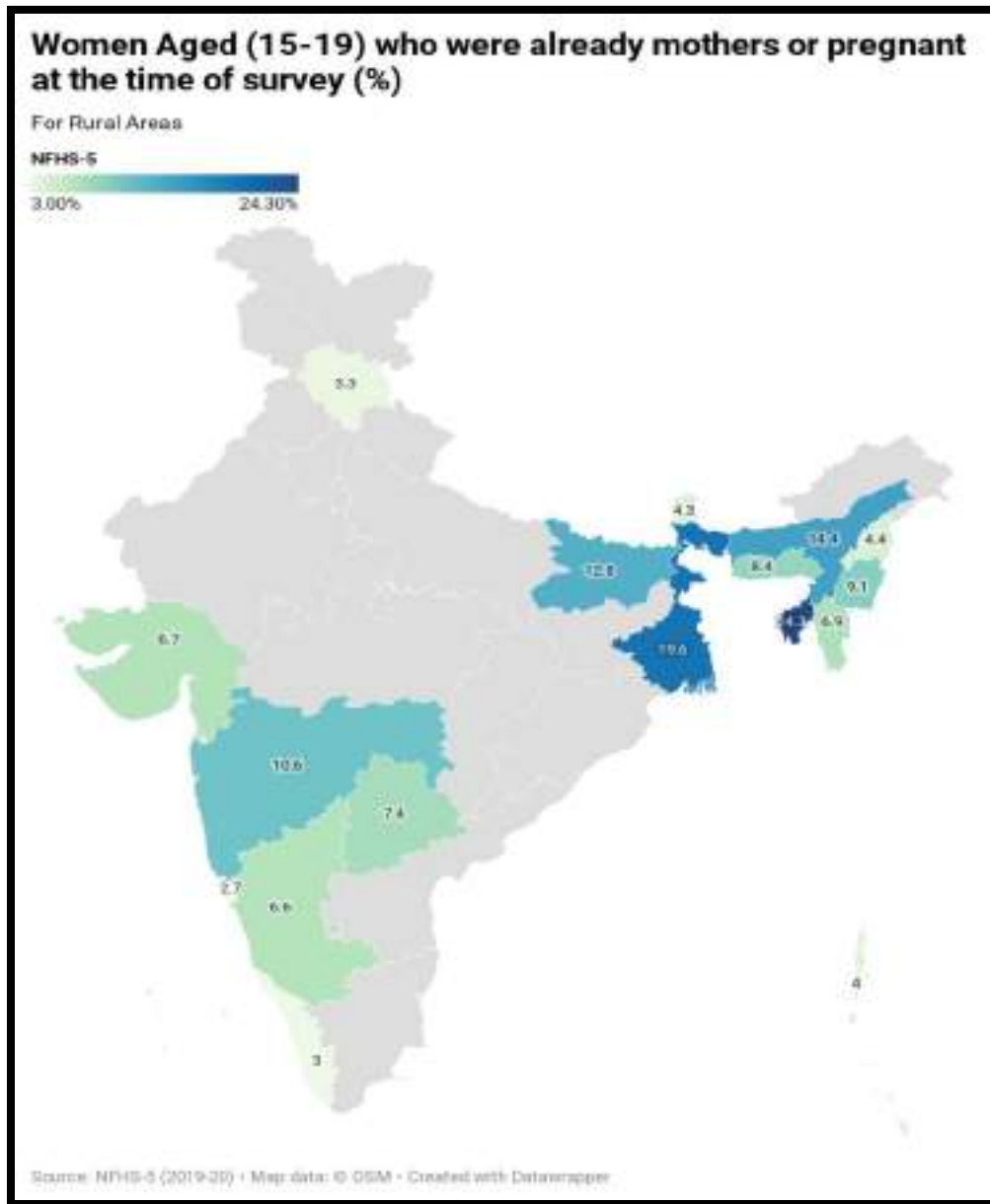


Figure 5.8



Photo Credit: Srikanth



Photo Credit: Annie

OUT OF POCKET EXPENDITURE PER DELIVERY



Photo Credit: Anand

Average out-of-pocket expenditure per delivery in public health facilities (in Rs.)

An analysis of the Average out-of-pocket expenditure (OOPE) per delivery in a public health facility is important because it throws light on economic burden on couples having delivery. Mishra & Mohanty (2019) have shown in their study that a higher OOPE in public health facilities has implications on one's borrowing behavior, leads to distress financing and impacts the pattern of consumption expenditure at household level. The NFHS-4 and 5 collected data on OOPE per delivery in public health facilities for both urban and rural areas. However, we have confined our analysis to rural areas only in this study.

OBSERVATIONS

- North Eastern states (Manipur, Sikkim, Tripura, Assam and Nagaland) and Kerala are the top 6 states with regard to the OOPE per delivery in a public health facility.
- Among all the, West Bengal shows a remarkable decline in the OOPE per delivery in public health facility. In West Bengal, a household incurs an expenditure of Rs 2,686 per delivery as OOPE in case of delivery in public health facility (a steep decline from Rs. 7,504 observed in NFHS-4)
- A very interesting but puzzling relationship is observed between economic status of states and OOPE per delivery in public health facility. For instance, economically developed states like Maharashtra and Gujarat have one of the lowest OOPE per delivery in public health facilities

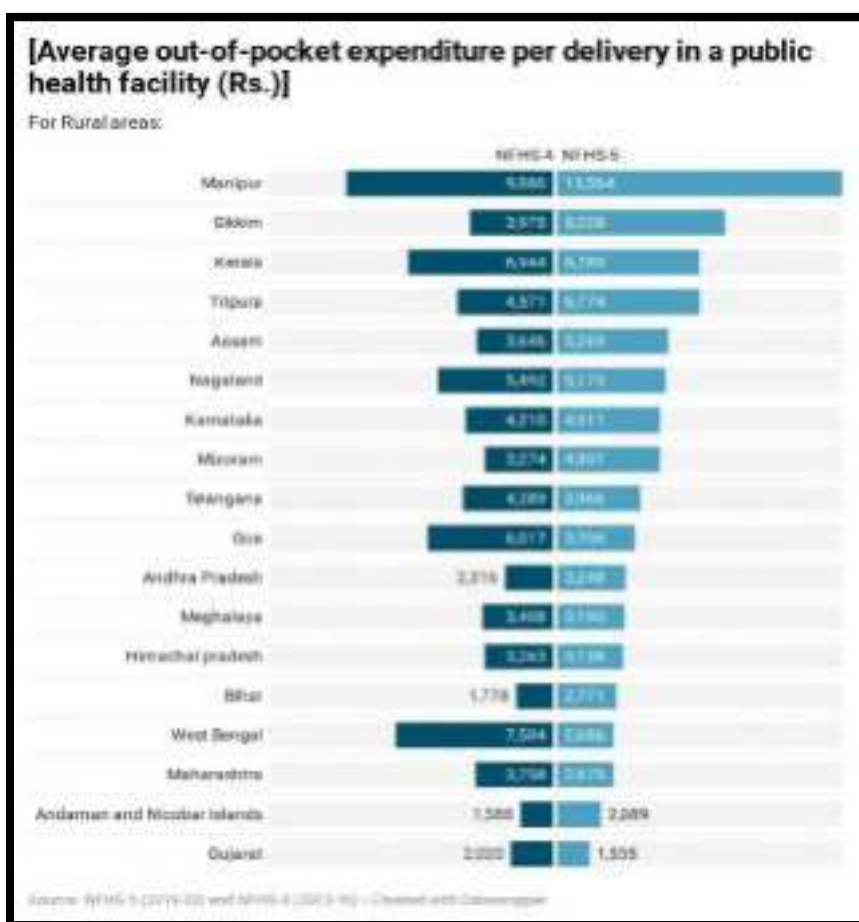


Figure 5.9

(Rs.2,675 and Rs.1,535 respectively in 2019-20), while at the same time the economically backward states like Bihar and West Bengal also fall in the same category with low OOPE per delivery with Rs. 2,771 and Rs. 2,686 respectively in 2019-20.

- Sikkim accounts for the highest increase (102 per cent) in OOPE per delivery. Other eastern states like Manipur (34 per cent), Assam (45 per cent), Tripura (48 per cent) and Mizoram (50 per cent) also show a substantial increase in OOPE per delivery in rural areas.
- Among southern states, Andhra Pradesh and Karnataka with an increase of 40 per cent and 17 per cent respectively in OOPE per delivery in public health facility show an increasing trend.
- Among the economically developed states, Gujarat and Maharashtra registered a decrease of 24 and 29 per cent respectively.

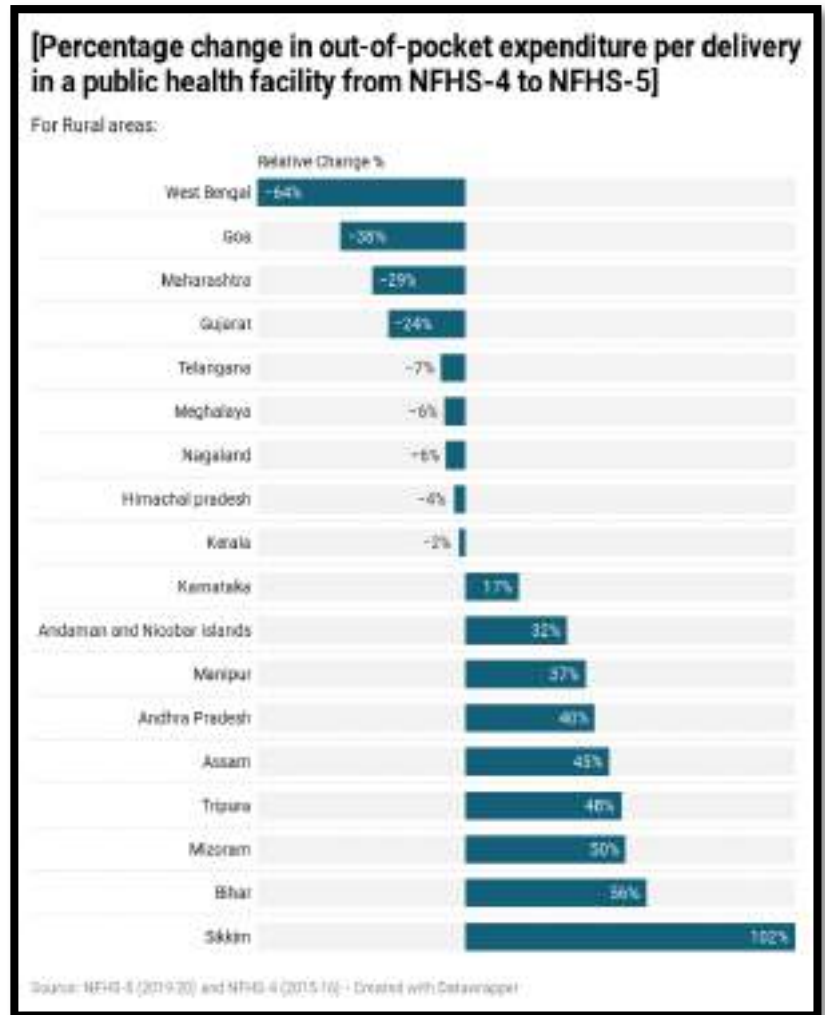


Figure 5.10



Conclusion

The study attempted to assess the progress and efficiency of Maternal healthcare and Institutional delivery utilizations among the Indian states and Union Territories. The results of this analysis reveal that there is a strong relationship between the indicators of maternal health and institutional care. And there is an appreciable change among the indicators from NFHS-4 to NFHS-5 that creates a positive trend among the states, with few exceptional cases. The NFHS data shows an increasing trend among the indicators- Registration of pregnancies, Institutional Births and Births attended by Skilled Personnel during 2015-16 and 2019-20. There is an increasing trend in other indicators like delivery through C-section, teenage pregnancy and out-of-pocket expenditure per delivery in a public facility in majority of the states which is a major hindrance towards provisioning of affordable and better health care facility to mothers and child. The Rural Health Statistics showed that the inequalities in the maternal health care coverage by socio- economic status have narrowed down in the southern states due to the high ANM coverage (RHS, 2018-19). It also revealed that the states which have achieved the progress in health infrastructure and personnel with the adequate institutional services are doing better than other states in the maternal healthcare indicators. Since the analysis carried out in this study is based on the common states from both rounds of NFHSs. Thus, it does not make any conclusive argument on national level dynamics. However, based on the data of NFHS-4 and 5, it can be concluded that more targeted efforts in the spheres of allocation of health resources, and quality of service delivery are required to ensure that women are able to access the necessary health facilities of which antenatal and delivery care form an essential part.

Photo Credit: Sreetama Basu

Adult Health and Non-Communicable Diseases in Rural India

A statistical analysis of trends in adult health and non-communicable diseases



Photo Credit: Asmita Jain

Background

Non-Communicable Diseases or NCDs are also commonly known as chronic diseases. According to the Government of India's National Health Portal under the Ministry of Health and Family Welfare, NCDs "are medical conditions or diseases that are not caused by infectious agents." (*Non-Communicable Diseases*, 2019). These are kind of diseases which occur over a long period of time and are directly influenced by a combination of genetic, psychological, physical, behavioural and environmental factors. Such diseases have long term consequences and tend to primarily affect adults, however, making children vulnerable to ill health as well. NCDs include a wide variety of diseases such as malnutrition, anaemia, obesity, cardiovascular diseases, hypertension, diabetes, and different types of cancers.

The World Health Organisation has indicated that the "NCDs disproportionately affect people in low- and middle-income countries where more than three-quarters of global NCD deaths 32 million occur." (*Noncommunicable Diseases*, n.d.). In case of India, Nothan et al. (2017) reported that "Non-communicable diseases (NCDs) contribute to around 5.87 million (60%) of all deaths in India." NCDs also cause vulnerable and socially disadvantaged people a setback and prevent the overall development of the individuals and households.

Recognizing the grave risks posed by NCDs for adult health and overall wellbeing, the United Nations has included themes covering major risk factors of NCDs in SDG goals. SDG 3 calls upon nations to ensure healthy lives for all. Target 3.4 directs nation states to reduce premature mortality from NCDs, particularly from cardiovascular diseases, cancer, diabetes or chronic respiratory disease. Likewise, target 3.5 and target 3.9a recommend states to strengthen the prevention and treatment of tobacco and alcohol abuse by implementing the World Health Organization Framework Convention on Tobacco Control.

The main objectives of this section of the present study are as follows:

- To analyse the changes in indicators of adult health and NCDs during 2015-16 and 2019-20 and compare the status of adult health and NCDs among males and females.

The following indicators of adult health and NCDs are covered in this section of the report:

- Body Mass Index and Obesity
- Anaemia
- Blood Sugar
- Hypertension
- Alcohol and Tobacco Consumption
- Cancer Screenings

**BODY MASS INDEX
AND
OBESITY**



BODY MASS INDEX AND OBESITY

According to World Health Organisation, Body Mass Index (BMI) is a common anthropometric measure for indicating nutritional status among children and adults. The BMI of a person takes into account his/her height and weight to determine whether a person is overweight/obese or underweight. The health risks of an individual have often been said to be correlated to the BMI of the same. The NFHS 4 and 5 consider less than 18.5 kg/m² for men and women aged between 15-49 years old (excluding pregnant women and women with a birth preceding in 2 months.) as 'low Body Mass Index' or 'underweight'. It has often been directly connected to malnutrition and anaemia.

The appropriate BMI lies between 18-25 kg/m². India as a whole has faced what is known as a double burden of malnutrition and obesity among its adult population. Inadequate dietary patterns and low levels of physical activity might be a few factors causing the same. However, in recent studies, BMI has often been contested as a faulty indicator of an individual's health and a false determinator of Body Fat Mass. Many studies agree that BMI is not just related to health issues but social issues as well and therefore, "a BMI-determined categorization of an individual should not be used exclusively in counselling or in the design of a treatment regimen" (Nuttall, 2015).

- A comparison of figure 6.1 and 6.2 shows a significant decline in the percentage of females with low BMI (<18.5 kg/m²) during 2015-16 and 2019-20. The percentage of males with low BMI (<18.5 kg/m²) has also declined in the same duration but at slower rate.
- Decline in the underweight female (in %) was observed in majority of the selected states whereas the prevalence of underweight among men has increased in Kerala, Sikkim, Lakshadweep, Goa and Andhra Pradesh.
- Andaman and Nicobar Islands has seen the highest decline in the underweight male and female by 81.18 % and 47.1 % respectively during 2015-16 and 2019-20.
- Kerala on the other hand, has experienced an upsurge in percentage share for both males and females with low BMI by a 47.67 % and 1.96 % respectively.

MALES WITH LOW BMI IN RURAL INDIA (IN %)

The following graph reveals the absolute and relative change in the number of males with a low BMI among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the male population with low Body Mass Index in National Family Health Survey 4 and 5 and are arranged in order of best performing state to worst performing state.

State/UT	NFHS4	NFHS5	% Change in low BMI (M)
Andaman & Nicobar	0.0	1.3	+133.33
Assam	25.7	13.8	-46.31
Tamil Nadu	24.6	16.8	-31.71
Nagaland	20.8	7.8	-62.50
Himachal Pradesh	17.8	13.7	-22.47
Tripura	17	13.1	-23.53
Mizoram	23.7	16.9	-28.69
Manipur	18.9	8.5	-54.50
West Bengal	11.1	9.1	-18.02
West Bengal	20.3	16.8	-17.24
Gujarat	29.8	24.7	-16.78
Mizoram	6.2	4	-35.48
Karnataka	10.4	9.2	-11.54
Odisha	26.9	23.8	-11.52
Andhra Pradesh	16.9	17.2	+1.78
Goa	14.7	14.4	-2.04
Lakshadweep	11.1	14.3	+27.93
Madhya Pradesh	8.8	4.4	-49.55
Kerala	8.8	12.7	+43.64

Source: Estimates of NFHS 4 (2009-10) & NFHS 5 (2019-21) - Derived with GIS software

Figure: 6.1

FEMALES WITH LOW BMI IN RURAL INDIA (IN %)

The following graph reveals the absolute and relative change in the number of females with a low BMI among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the female population with low Body Mass Index in National Family Health Survey 4 and 5 and are arranged in order of best performing state to worst performing state.

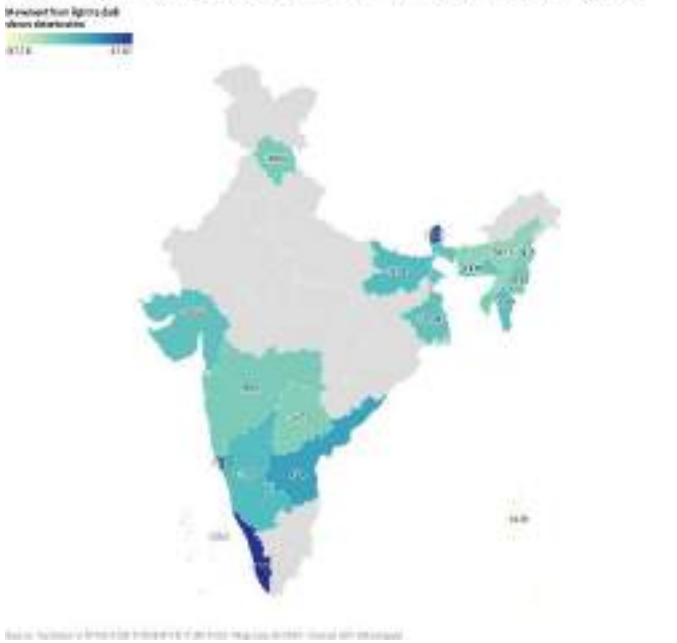
State/UT	NFHS4	NFHS5	% Change in low BMI (F)
Andaman & Nicobar	19.5	8.2	-57.95
Lakshadweep	19.5	12.4	-35.89
Goa	32.3	18	-44.27
Assam	27	18.2	-32.22
West Bengal	24.6	17.4	-29.27
Mizoram	13	6.8	-46.92
Telangana	29	21.6	-25.52
Kerala Pradesh	20.1	16.2	-19.40
Karnataka	24.4	19.9	-18.44
Mizoram	30	25	-16.67
Tripura	20.1	16.9	-15.92
Bihar	31.8	26.9	-15.41
Himachal Pradesh	16.7	14.5	-13.17
Manipur	9	7.8	-12.22
Madhya Pradesh	12.3	11	-10.57
Gujarat	34.3	30.9	-9.91
Nagaland	11.8	10.8	-8.47
Sikkim	6.8	6.8	-0.00
Goa	10.2	10.6	+3.92

Source: Estimates of National Family Health Survey 4 (2009-10) & 5 (2019-21) - Derived with GIS software

Figure: 6.2

% CHANGE IN NUMBER OF MEN WITH LOW BMI

The following map reveals the relative percentage change in the number of males with a low BMI among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the male population with low Body Mass Index in National Family Health Survey 4 and 5.



Source: Estimates of NFHS 4 (2009-10) & NFHS 5 (2019-21) - Derived with GIS software

Figure 6.3

% CHANGE IN NUMBER OF WOMEN WITH LOW BMI

The following map reveals the relative percentage change in the number of females with a low BMI among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the female population with low Body Mass Index in National Family Health Survey 4 and 5.



Source: Estimates of NFHS 4 (2009-10) & NFHS 5 (2019-21) - Derived with GIS software

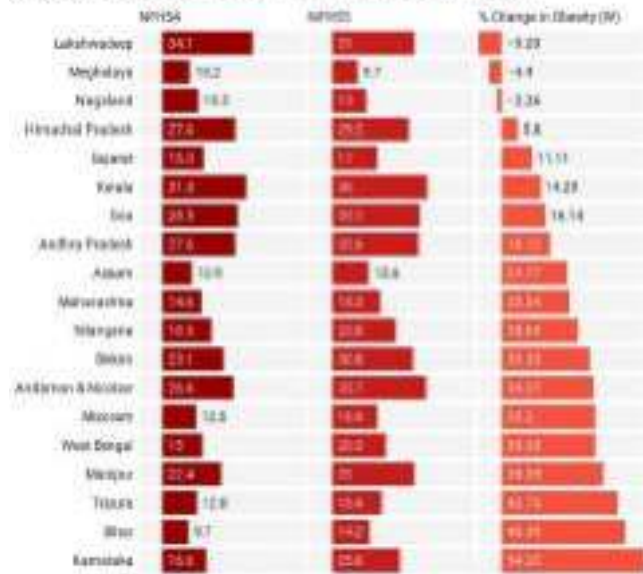
Figure 6.4

OBESITY

- The Body Mass Index is also an important indicator of obesity levels or amount of fat percentage on a person's body. Obesity pose a major risk factor for non- communicable diseases and increase morbidity both in children and adults. This section discusses the obesity levels among adults across rural India.
- According to the World Health Organisation, obesity is defined as “abnormal or excessive fat accumulation that may impair health” (Obesity and Overweight, 2020). Obesity traditionally leads to a high-risk factor in non-communicable diseases such as heart conditions, strokes or cancers.
- NFHS 4 & 5 describe ‘obesity’ or ‘overweight’ as BMI above 25.0 kg/m² for the males and females between 15-49 years old (excluding pregnant women and women with a birth preceding in 2 months).
- The trend of obesity among male and female in figure 6.5 and 6.6 show that obesity among female is lower than male in rural India.
- Female obesity has increased in most of the states except Meghalaya, Nagaland and Lakshadweep where it has declined by 4.9%, 2.26 %, 9.09% respectively during 2015-16 and 2019-20.
- The highest increment among female obesity during 2015-16 and 2019-20 was observed in Karnataka followed by Bihar, Tripura, Manipur, West Bengal and Mizoram.
- Male obesity has also increased in all the states except Andhra Pradesh where obesity among males remained same during 2015-16 and 2019-20.
- Mizoram followed by Lakshadweep, Nagaland, Manipur, Telangana, Manipur and Karnataka are the states where the percentage of obese males has increased significantly during 2015-16 and 2019-20.

FEMALES WITH OBESITY IN RURAL INDIA (IN %)

The following graph reveals the absolute change and relative change in a number of females who are overweight among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the female population with obesity in National Family Health Survey 4 and 5 and are arranged in order of best performing state to worst performing state.

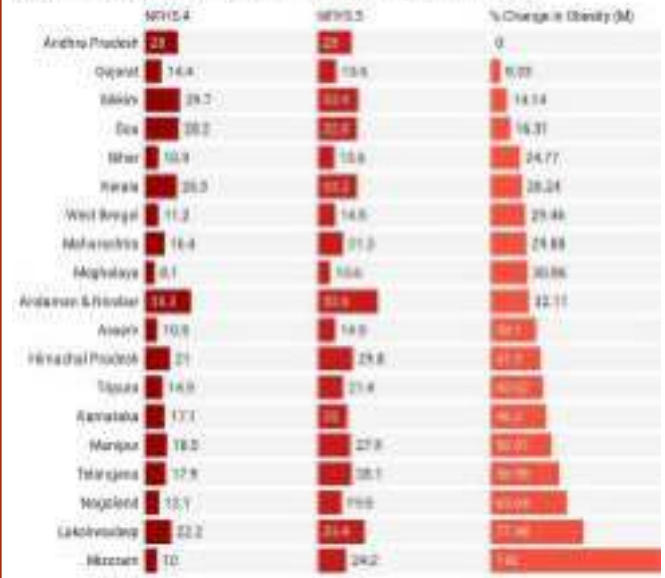


Source: Department of Statistics, Family Health Survey, 2002-03 & 2009-10. Created with Datawrapper.

Figure 6.5

MALES WITH OBESITY IN RURAL INDIA (IN %)

The following map reveals the relative percentage change in the number of males who are overweight among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the male population with obesity in National Family Health Survey 4 and 5 and are arranged in order of best performing state to worst performing state.



Source: Department of Statistics, Family Health Survey, 2002-03 & 2009-10. Created with Datawrapper.

Figure 6.6

% CHANGE IN NUMBER OF WOMEN WITH OBESITY

The following map reveals the relative percentage change in the number of females who are overweight among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the female population with obesity in National Family Health Survey 4 and 5.

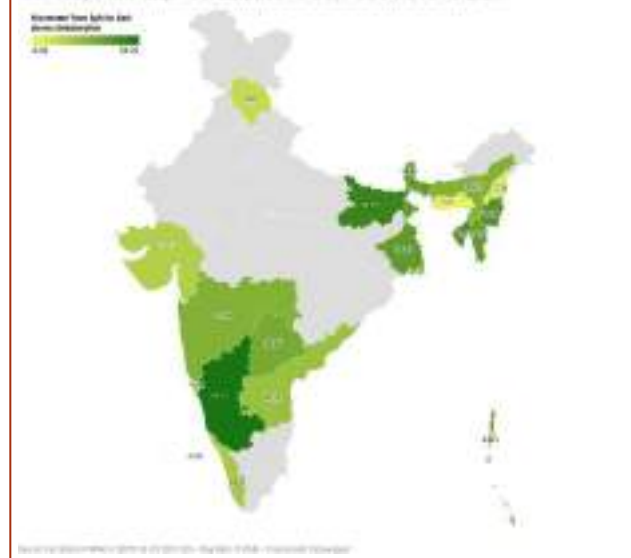


Figure 6.6

% CHANGE IN NUMBER OF MEN WITH OBESITY

The following map reveals the relative percentage change in the number of males who are overweight among 19 Indian States and UTs. The figures have been calculated taking into account the figures of the male population with obesity in National Family Health Survey 4 and 5.

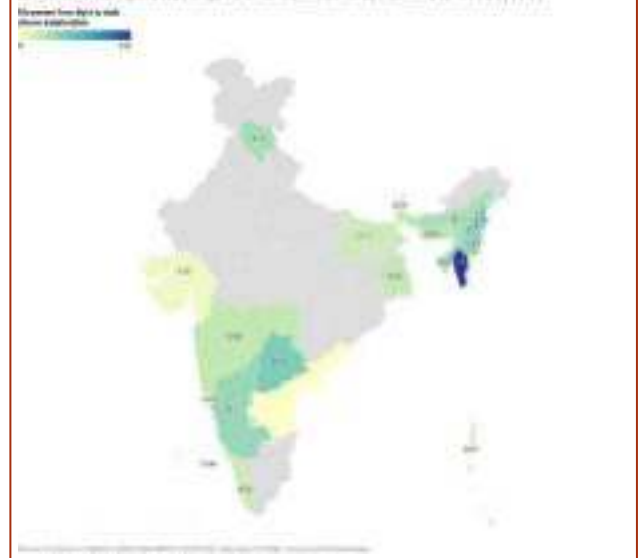
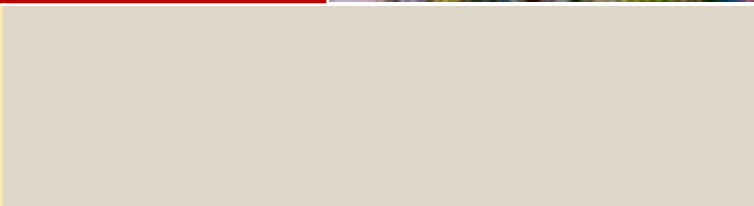
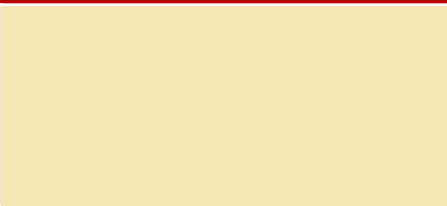


Figure 6.7

The BMI plays a pivotal role in identifying an important blood related disorder which is Anaemia. According to the Qin (2015), higher BMI levels indicated a lesser risk of contracting Anaemia whereas lesser BMI levels indicate a higher risk of contracting Anaemia. We'll take a closer look at different haemoglobin levels among women and men in India, which is the major cause of anaemia in following section.



ANAEMIA

According to the NFHS-4 & 5, Anaemia is a condition that is marked by low levels of haemoglobin in the blood. Iron is a key component of haemoglobin, and iron deficiency is estimated to be responsible for half of all anaemia cases globally. Anaemia is a serious concern for pregnant women and children because it can impair cognitive development, stunt growth, and increase morbidity from infectious diseases (WHO, 2017)

Anaemia is a health condition in which the counts of red blood cells or the haemoglobin concentration is lower than normal. Haemoglobin is essential to carry oxygen and if one has too few or abnormal red blood cells or not enough haemoglobin, there will be a less capacity of the blood to carry oxygen to the body's tissues. It can be caused by blood loss, decreased red blood cell production, and increased red blood cell breakdown. Causes of blood loss include trauma and gastrointestinal bleeding. (Janz et al., 2013).

- The percentage of anaemic non-pregnant women was highest in West Bengal followed by Tripura, Gujarat, Assam, and Bihar (more than 60 per cent) in 2019-20 (Figure 6.9).
- During 2015-16 and 2019-20, the percentage of anaemic non-pregnant women has increased in all states except Lakshadweep, Andaman and Nicobar Island, Meghalaya and Andhra Pradesh (Figure 6.9 and 6.10).

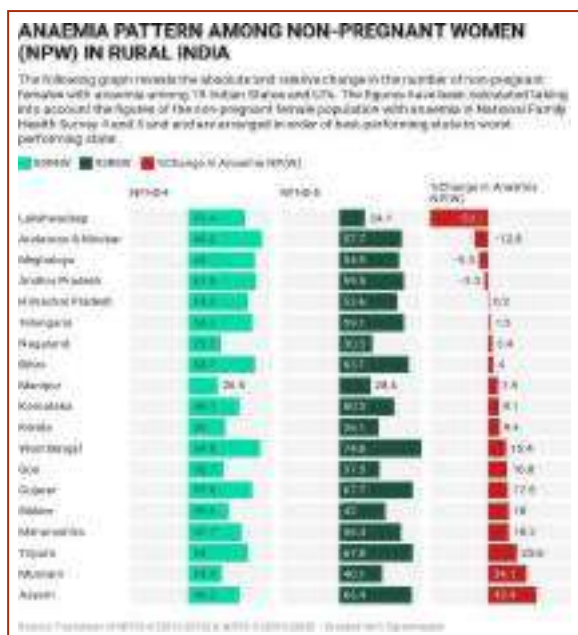


Figure: 6.9

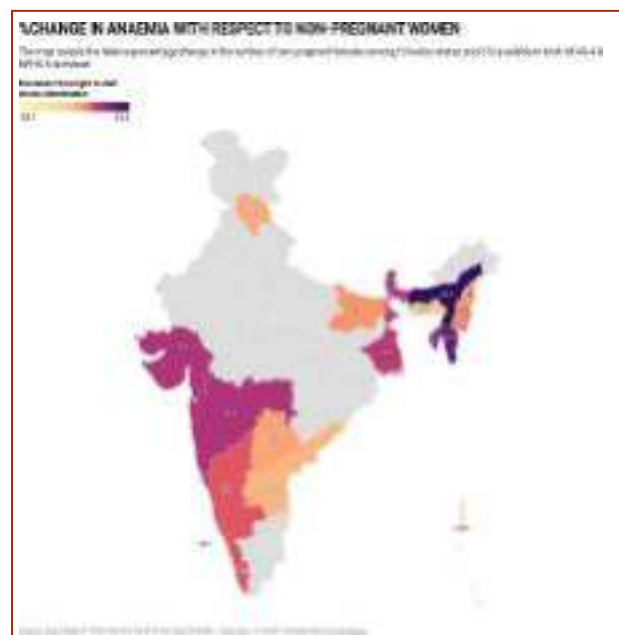


Figure: 6.10

- Gujarat followed by Bihar, West Bengal and Tripura has the higher percentage of anaemic pregnant women (more than 60 per cent) in 2019-20 (Figure 6.11).
- The anaemia among pregnant women has increased during 2015-16 and 2019-20 as majority of the states show an increase in the percentage of anaemic pregnant women in this period except Nagaland, Meghalaya, Himanchal Pradesh, Maharashtra, Telangana and Andaman & Nicobar Islands where the percentage of anaemic pregnant women has declined in the same period (Figure 6.11).

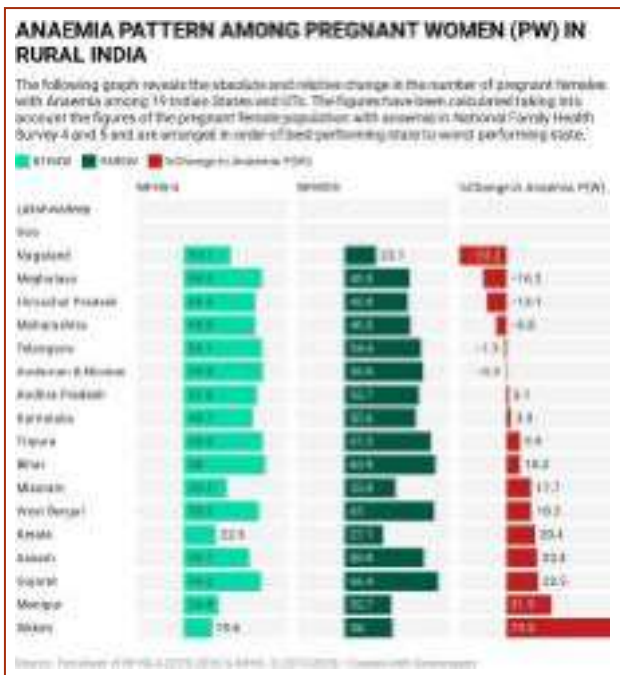


Figure: 6.11

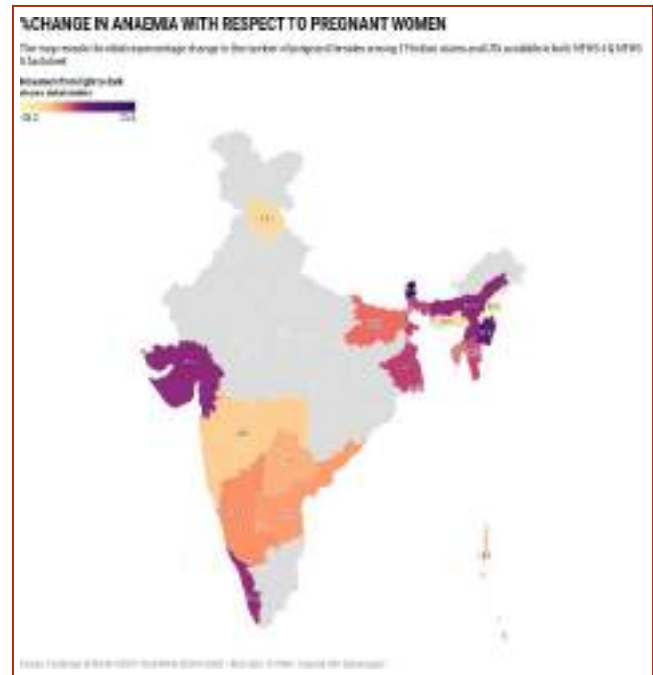


Figure: 6.12

- The prevalence of anaemia in case of non-pregnant women records the highest percentage decrease in the states like Lakshadweep, Andaman & Nicobar and Meghalaya during 2015-16 and 2019-20. Likewise, in case of pregnant women, Nagaland, Meghalaya & Himachal Pradesh show the highest percentage decrease in the cases of anaemia.
- The NFHS-5 data shows that prevalence of anaemia among women (total) is highest in West Bengal followed by Gujarat, Tripura and Bihar. In these states, more than 60 per cent women were anaemic in 2019-20 (Figure 6.13).

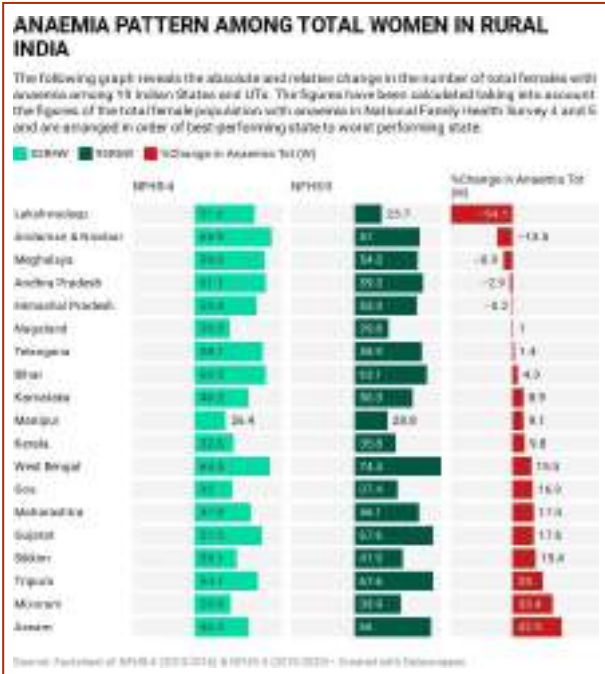


Figure: 6.13

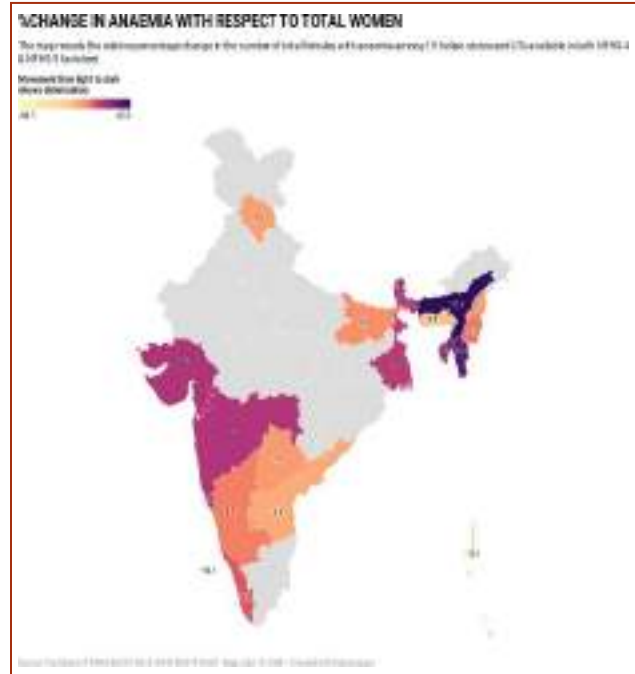


Figure: 6.14

- The relative change shows an increasing trend of anaemia among women across rural India except Lakshadweep, Andaman and Nicobar Islands, Meghalaya, Andhra Pradesh and Himanchal Pradesh (Figure 6.14).
- The North-eastern states such as Assam, Mizoram, Tripura and Sikkim show highest increase in the anaemic women during 2015-16 and 2019-20 (Figure 6.14).
- Like women, the percentage of anaemic men is also highest in West Bengal (42.4 per cent) followed by Assam (37.5 per cent), Tripura (34.9 per cent) and Bihar (30.1 per cent) in 2019-20. However, as compared to women, the percentage of anaemic men are less across states.
- Out of 19 states/UTs, 7 states have shown decline in the percentage of anaemic men during 2015-16 and 2019-20. The highest decline was observed in Andhra Pradesh followed by Manipur, Andaman and Nicobar Islands, Meghalaya, Nagaland, Telangana and Bihar.
- In contrast, the percentage of anaemic men increased significantly (more than 20 per cent) in Kerala followed by Assam, West Bengal, Maharashtra and Tripura.

According to a report published by Iranian Biomedical Journal, it is estimated that Iron deficiency (anaemia) elevated HbA1c levels in diabetic individuals with controlled plasma glucose levels.

Furthermore, higher blood sugar levels damage the functioning of kidneys, which leads to anaemia. (Christy et al.,2014). Keeping in mind the interconnected nature between the anaemia and diabetes, the next section will explore trends relating to Blood sugar levels (diabetes)

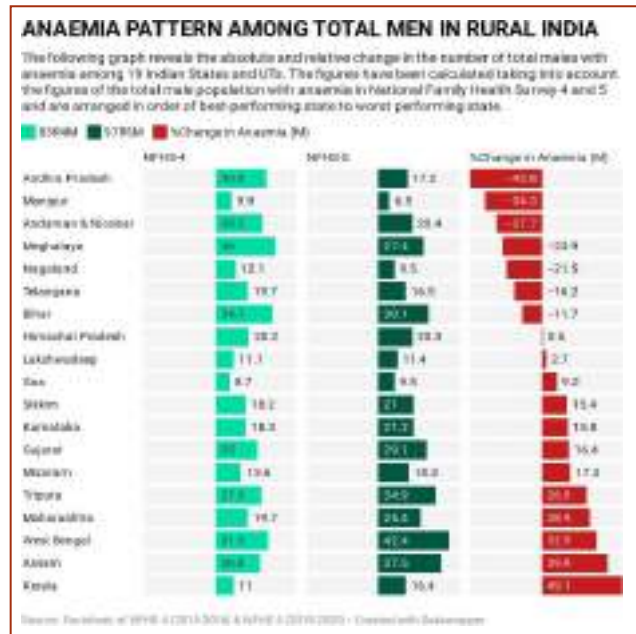


Figure: 6.15

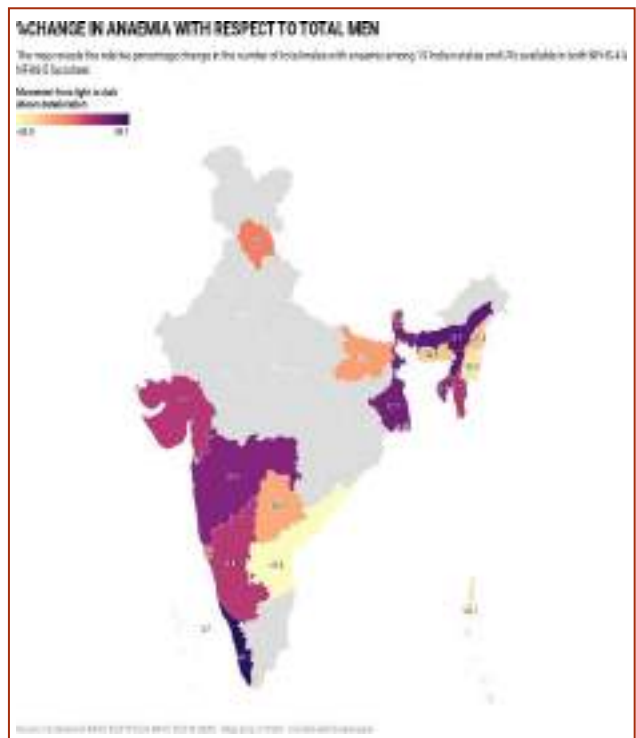
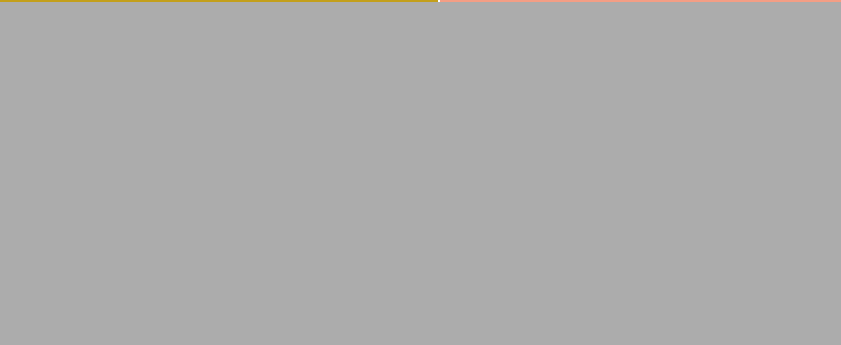


Figure:6.16



**BLOOD
SUGAR
(Diabetes)**



HIGH BLOOD SUGAR LEVELS

The Blood Sugar Level is the measure of the amount of glucose present in a person's body. It is expressed in milligram/deciliter (mg/dl). According to the American Diabetes Association (2013), when considering random blood glucose value, a range from 79-140 mg/dl is considered normal while glucose level ranging from 140-200 mg/dl is considered prediabetic and finally glucose level higher than 200 mg/dl are considered diabetic. However, NFHS considers glucose level ranging from 141-160 mg/dl as 'high blood sugar' level and greater than 160 mg/dl as 'very high blood sugar' level.

- In 2019-20, less than 11 per cent males reported high blood sugar. However, in case of females, it is less than 10 per cent.
- The percentage of males with high blood sugar is high in West Bengal followed by Goa, Tripura and Kerala. However, in case of female, it is high in Goa followed by Tripura, West Bengal and Kerala. It shows that these are the same states where there are higher percentage of males and females with high blood sugar as compared to other states.
- Out of 19 States/UTs, 11 have shown a decline in the percentage of males with high blood sugar. However, in case of female only 7 states/UTs have shown a decline during 2015-16 and 2019-20.
- Manipur, Nagaland, Mizoram & Kerala are the states where the condition has improved both for males and females as these states show a declining trend in high blood sugar level.
- In case of Male, the states like Karnataka, Tripura, Himachal Pradesh & Andhra Pradesh have seen progress in terms of decline in percentage of males with high blood sugar, however, the same is not true in case of female.
- States like Bihar, Gujarat, Meghalaya, Maharashtra & Assam have shown significant increase in the percentage of males and females with high blood sugar level.

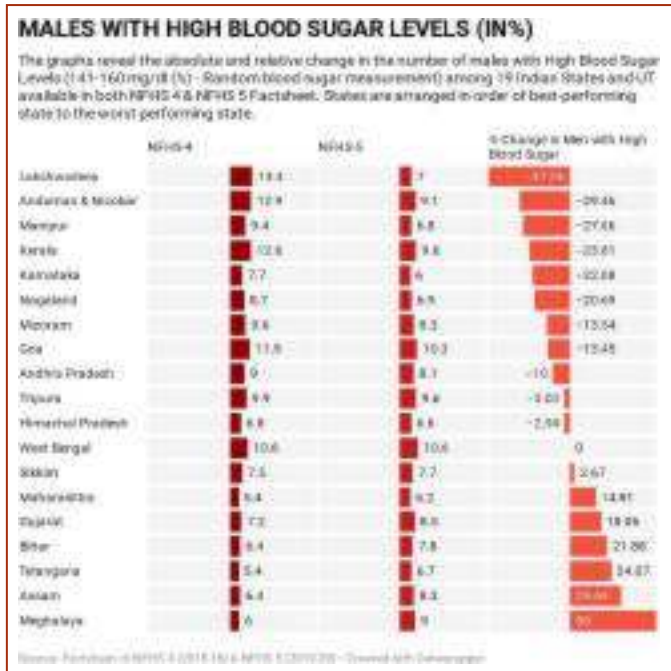


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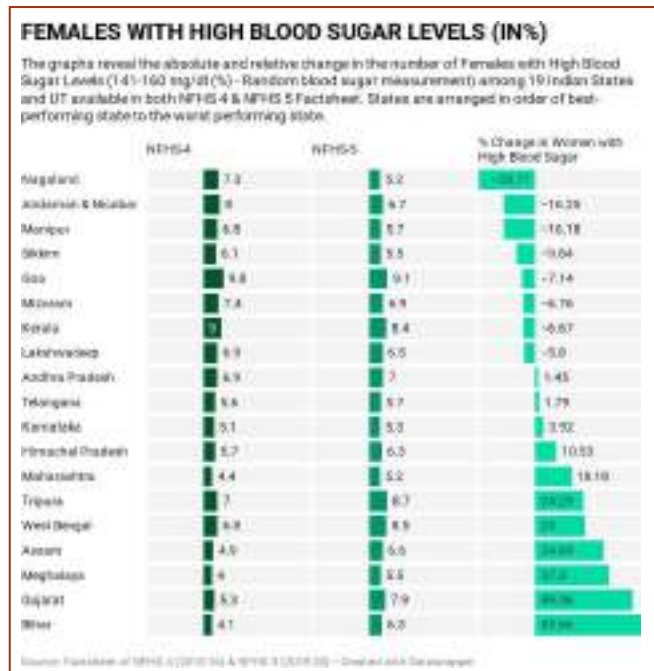


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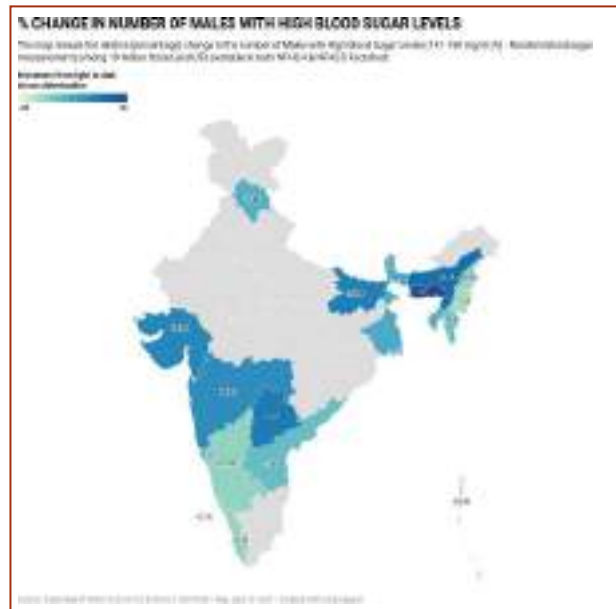


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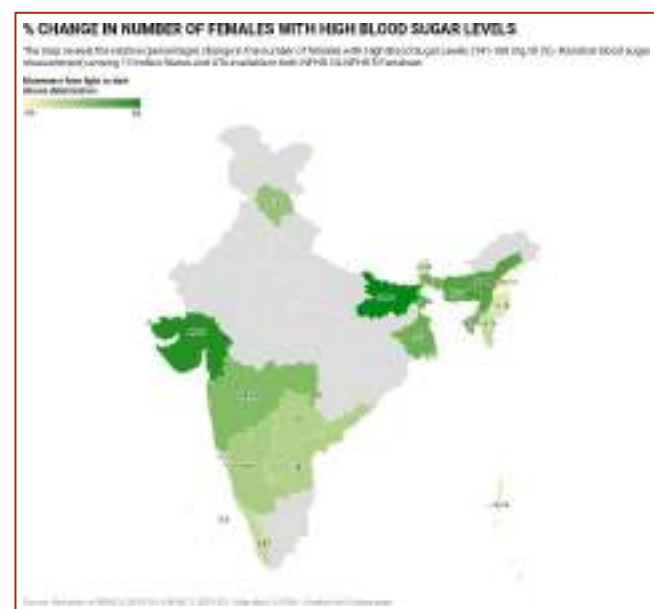


Figure: 6.20

VERY HIGH BLOOD SUGAR LEVELS

As mentioned earlier, the NFHS considers a person with glucose level greater than 160 mg/dl (%) as ‘person suffering from very high blood sugar level’.

- Except Kerala, Goa and Andhra Pradesh, the percentage of males with very high blood sugar level is less than 10 per cent across states in 2019-20 (Figure 6.21).
- In case of female, except Kerala and Lakshadweep, the percentage of females with very high blood sugar level is less than 10 per cent across states in 2019-20 (Figure 6.22).
- However, during 2015-16 and 2019-20, the percentage of males and females with very high blood sugar increased in all the states (except Lakshadweep and Andaman and Nicobar Islands in case of males).
- Sikkim, Telangana, Himanchal Pradesh and Karnataka which experienced significant increase in case of percentage of males with high blood sugar (Figure 6.21).
- Lakshadweep, Kerala, Bihar, Karnataka, Maharashtra and Gujarat are the states which experienced significant increase in case of percentage of females with high blood sugar (Figure 6.22).

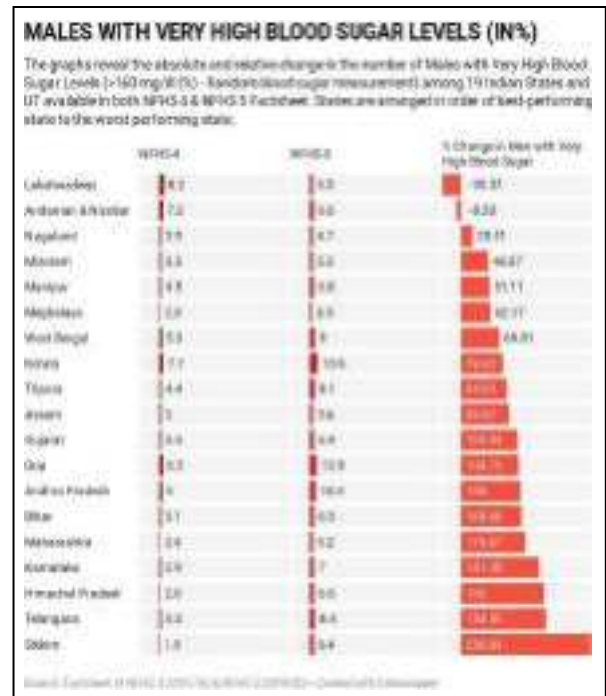


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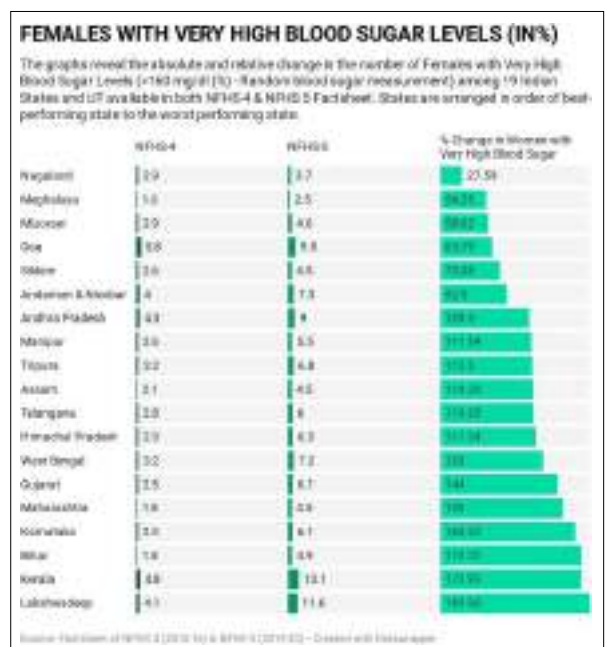


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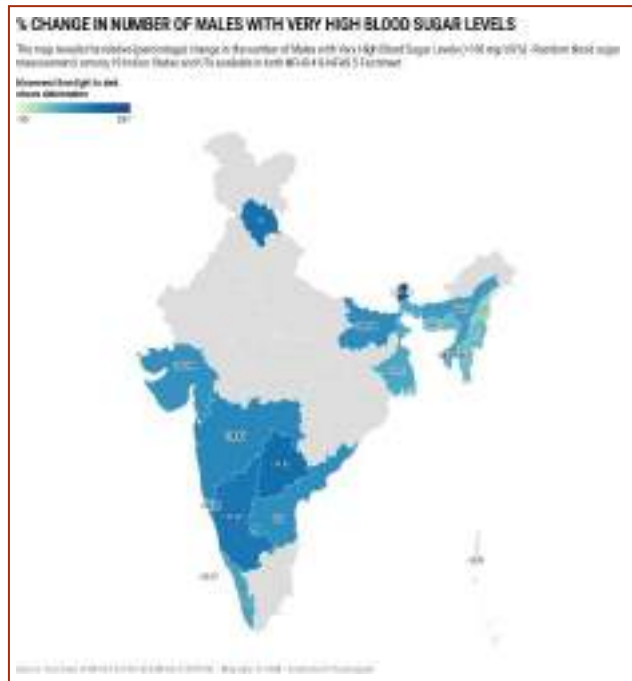


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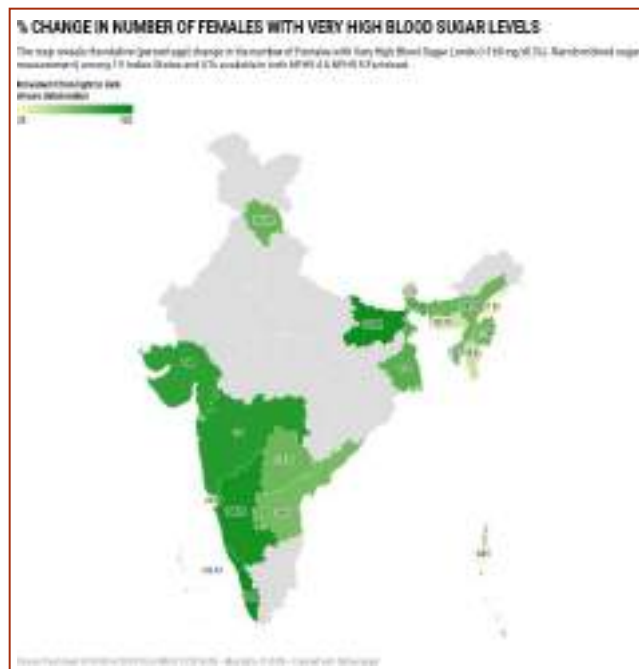


Figure: 6.24



HYPERTENSION



Hypertension is a serious health risk and an important factor for cardiovascular morbidity and mortality. The World Health Organization categorizes high blood pressure as hypertension when the systolic pressure is more than 140 mmHg and diastolic pressure is more than 90 mmHg.

In NFHS-5 survey, hypertension has been further divided into two parts – slightly above normal blood pressure (systolic pressure lies between 140 -159 mmHg and diastolic pressure lies between 90-99 mmHg) and moderate to severely elevated blood pressure (systolic pressure greater than 160 mmHg and diastolic pressure greater than 100 mmHg).

Sedentary lifestyle, changing food patterns which include high amounts of saturated and trans-fat and higher levels of tobacco and alcohol consumption are some of the key attributing factors for high prevalence of hypertension in rural India.

SLIGHTLY ABOVE NORMAL BLOOD PRESSURE

- As compared to females, the slightly above normal blood pressure is high among males.
- In 2019-20, Sikkim has the highest percentage of males and females with slightly above normal blood pressure. In general, the North-Eastern states have higher percentage of males and females with slightly above normal blood pressure.
- The percentage of males and females with slightly above normal blood pressure is high in southern states of Kerala, Karnataka, Andhra Pradesh and Telangana.
- The relative change during 2015-16 and 2019-20 shows that out of 19 states/UTs, only Lakshadweep and Assam have shown decline in the percentage of females with slightly above normal blood pressure.
- However, in case of males, there are four states- Assam, Tripura, Andaman and Nicobar Islands and Himanchal Pradesh which showed decline in males with slightly above normal blood pressure.
- This trend shows an increase in the slightly above normal blood pressure among rural males and females.

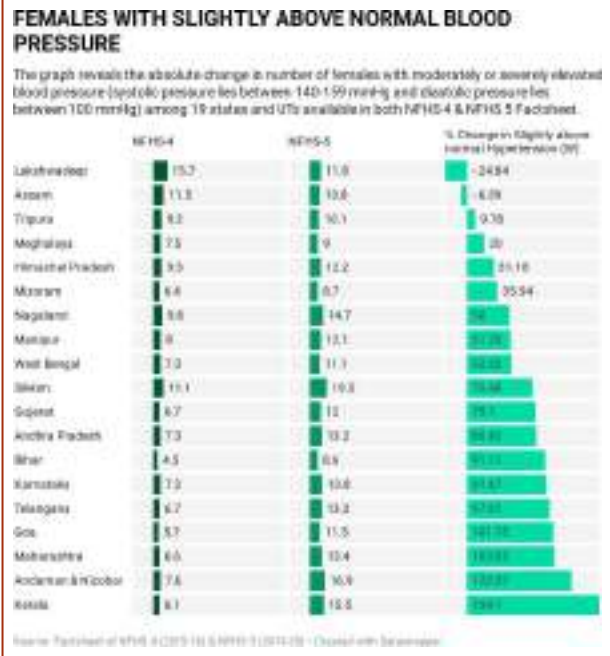


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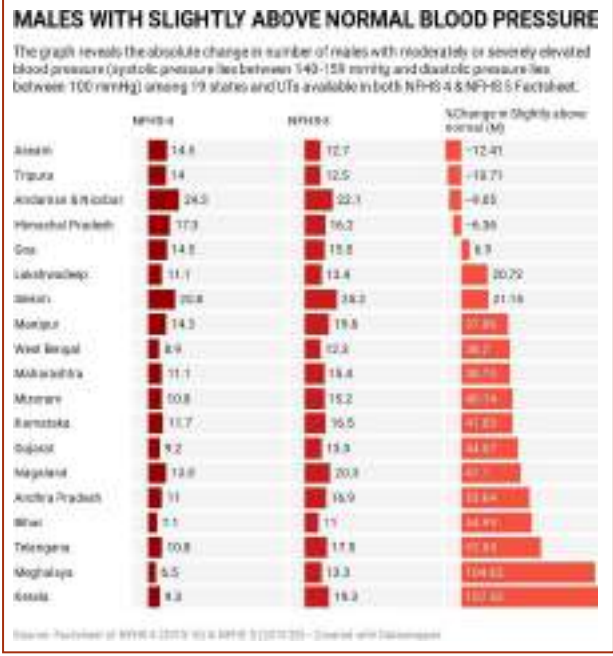


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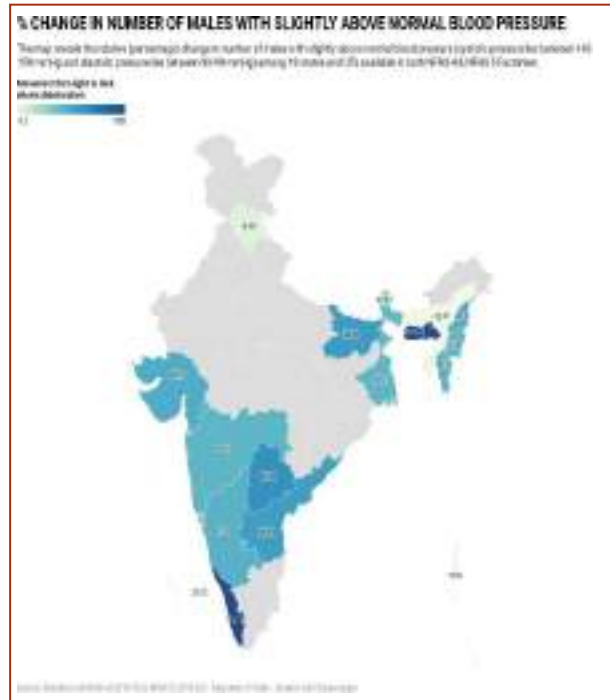


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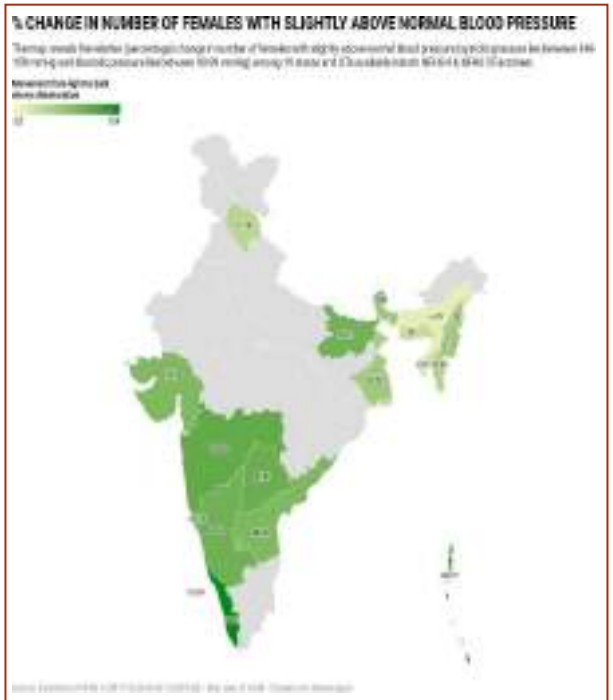


Figure: 6.28

MODERATELY or SEVERELY ELEVATED BLOOD PRESSURE

The figure-6.29 and 6.30 illustrate the present status of hypertension in rural India. The key trends which emerge out are as follows:

- The percentage of males and females with hypertension was highest in Sikkim, 15.2 per cent and 12.4 per cent, respectively.
- However, in majority of the states, the percentage of males and females with moderate to severely elevated blood pressure is less than 10 per cent. The occurrence of hypertension, both slightly above normal and moderate to severe, is higher among females than male in rural India.
- All 19 states/UTs have registered an increase in cases of moderate to severely elevated blood pressure among males and females during 2015-16 and 2019-20.

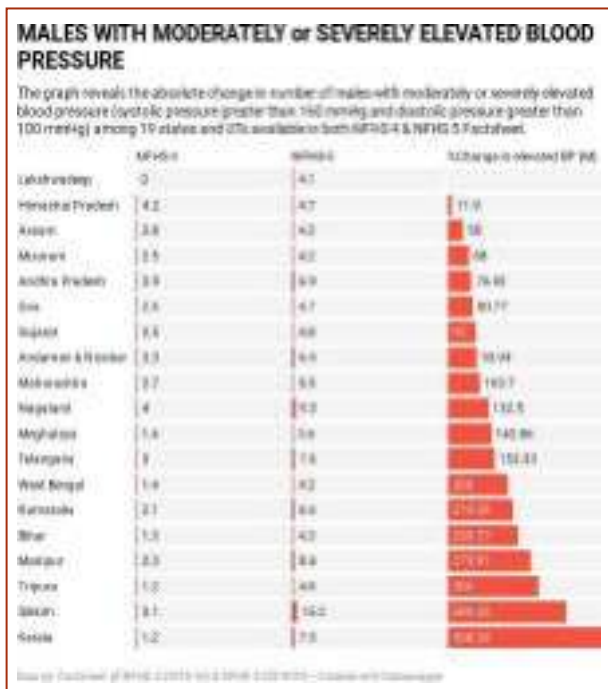


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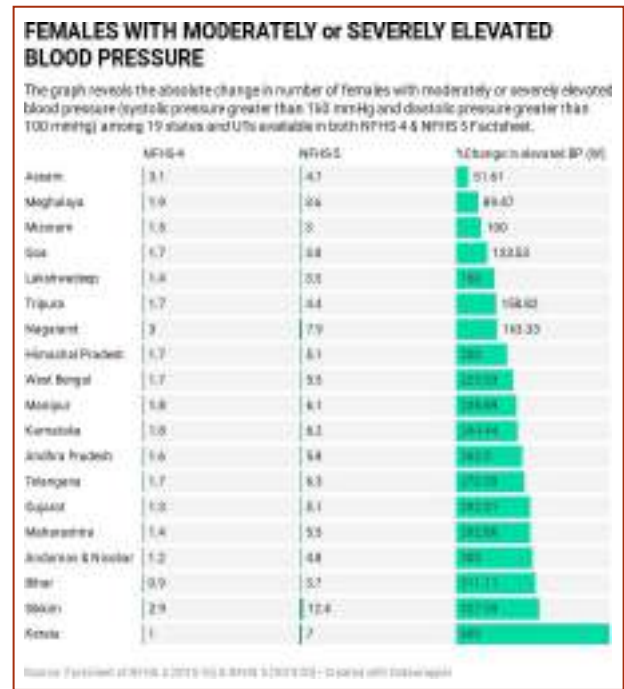


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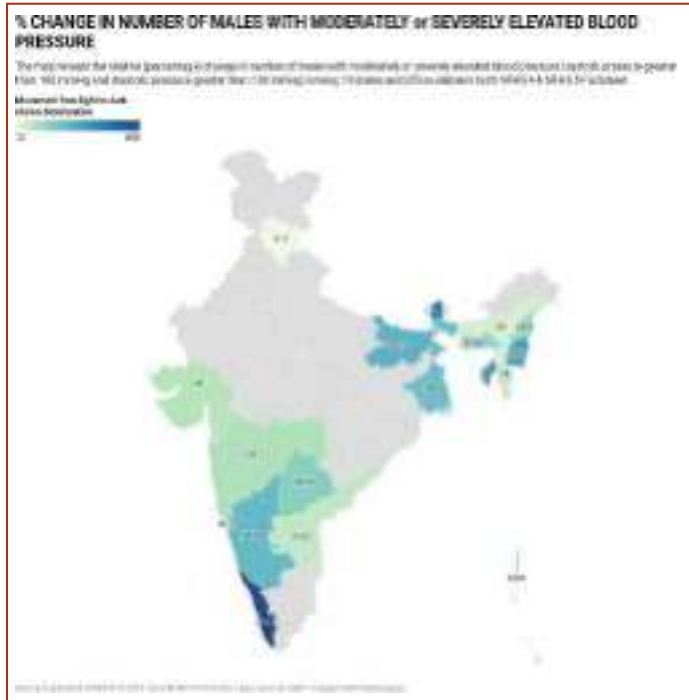


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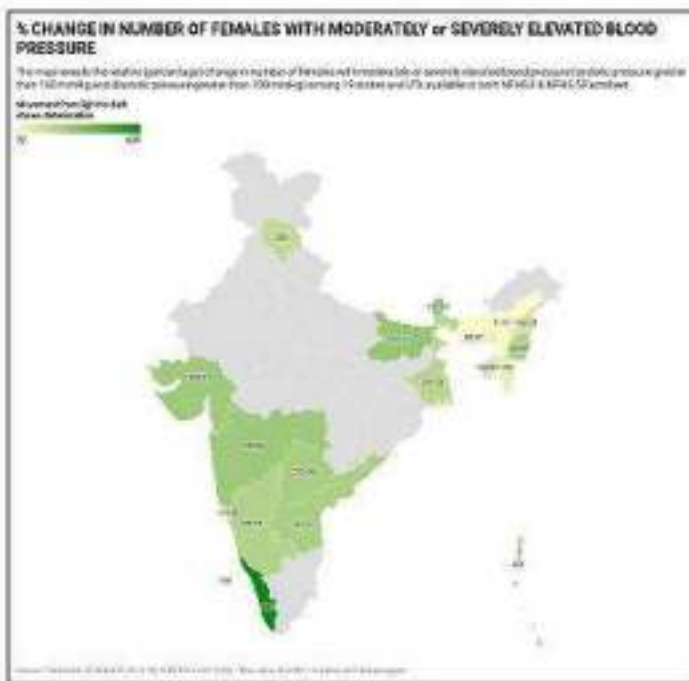


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**TOBACCO
AND
ALCOHOL
CONSUMPTION**



TOBACCO CONSUMPTION

It is well established that consumption of tobacco and tobacco related products has adverse health impacts and it is linked to high disease burden in India. The risk of cancer among users of tobacco, especially oral cavity and pharyngeal cancer, is relatively high (Singh & Singh, 2016). The pattern and prevalence of tobacco use is dependent on social customs and cultural value associated with tobacco (Mohan et al., 2018).

The key findings related to pattern of tobacco consumption among males and females are as follows:

- Across all states/UTs, tobacco consumption among men was significantly higher than women both in 2015-16 and 2019-20.
- Tobacco consumption among males has registered a significant decline during 2015-16 and 2019-20 in most of the states/UTs except Sikkim, Maharashtra, Andaman & Nicobar and Lakshadweep. The prevalence of tobacco consumption among men remains high in 2019-20 in absolute numbers.

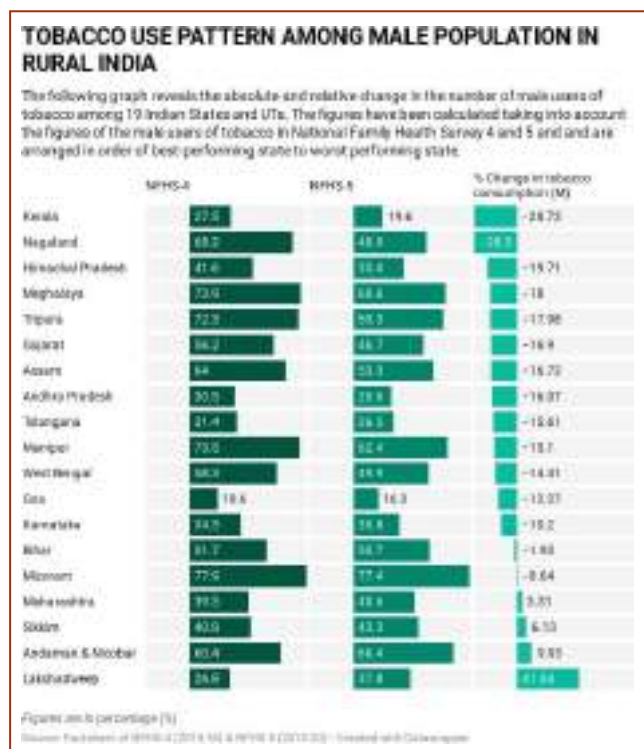


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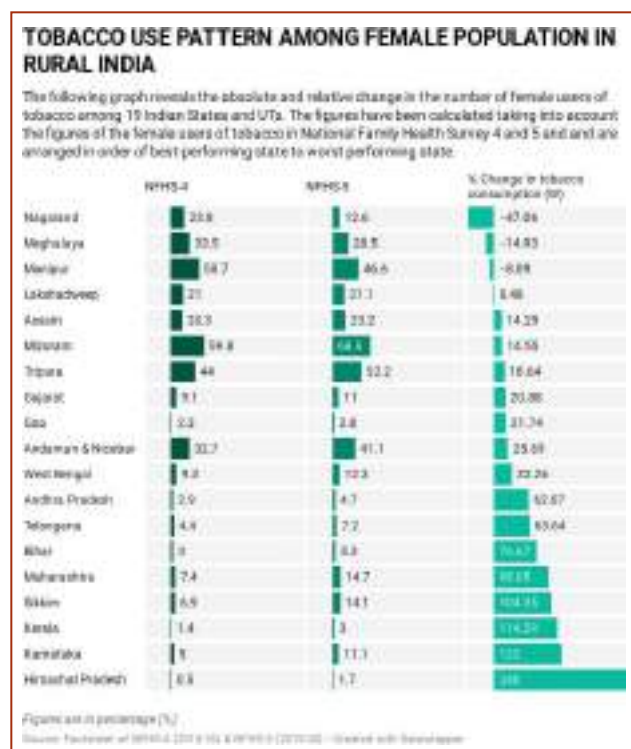


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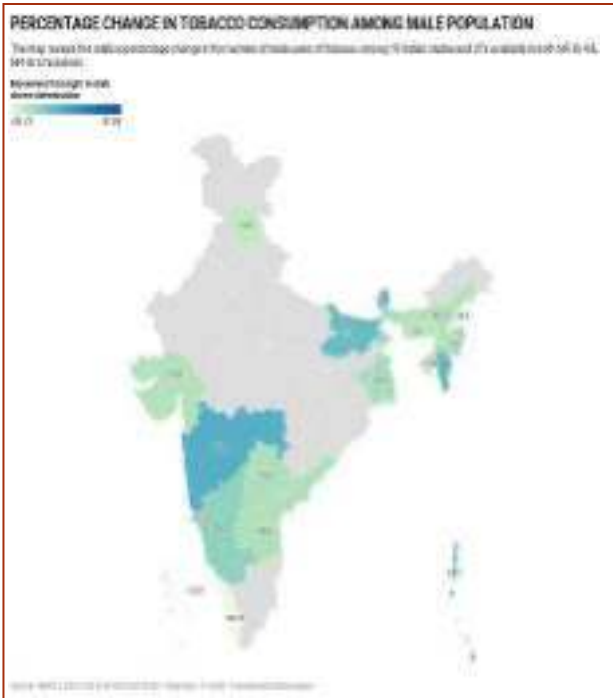


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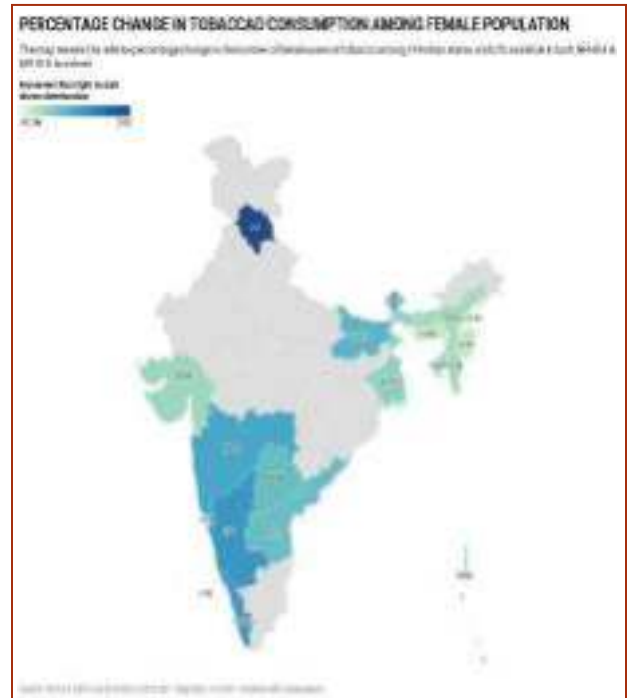


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- The prevalence of tobacco consumption among females is highest in North-eastern states with Mizoram having highest percentage of rural females consuming tobacco (68.5 per cent) followed by Tripura (52.2 per cent), and Manipur (46.6 per cent) in 2019-20. The tobacco consumption among females is also high in Andaman and Nicobar Islands (41.1 per cent).
- The relative change in the percentage of females consuming tobacco during 2015-16 and 2019-20 shows a opposite trend as compared to males with significant increase in most of the states except Nagaland, Meghalaya and Manipur.

ALCOHOL CONSUMPTION

Alcohol as a beverage is consumed, albeit in varying levels, in almost all societies in India. Alcohol consumption is related to numerous medical conditions and its impact on health outcomes are complex and multidimensional in nature (Das et al., 2006). More than 3.5% of the global disease burden can also be linked to alcohol (Murray & Lopez, 1997).

The key findings related to alcohol consumption among males and females are as follows:

- As compared to males, the consumption of alcohol is very low among females in rural India.
- The alcohol consumption among males is highest in Telangana followed by Andaman and Nicobar Islands, Sikkim and Manipur. The north-eastern states show higher consumption of alcohol among males as compared to other states.
- The relative change in the percentage of male alcohol users during 2015-16 and 2019-20 shows that the alcohol consumption among males has declined in all states and the highest decline was observed in Kerala followed by Bihar, Mizoram, Gujarat, Nagaland and Karnataka.

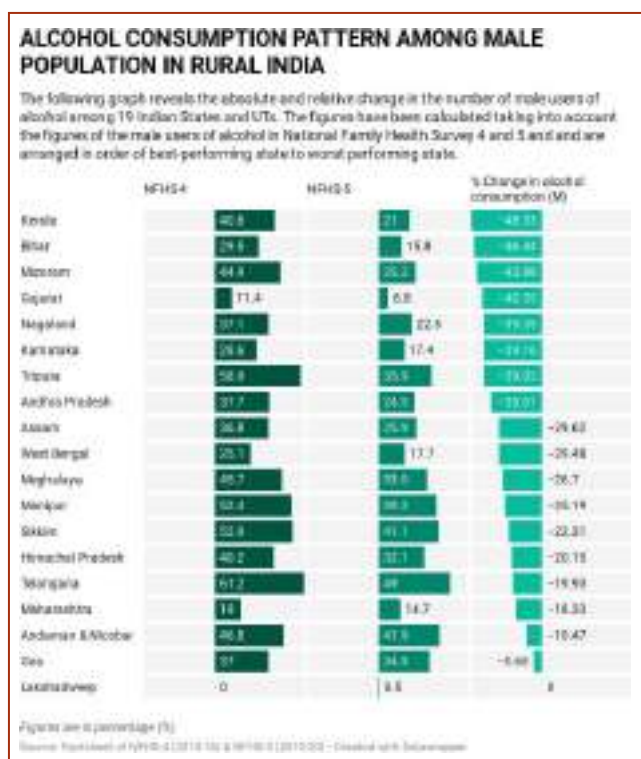


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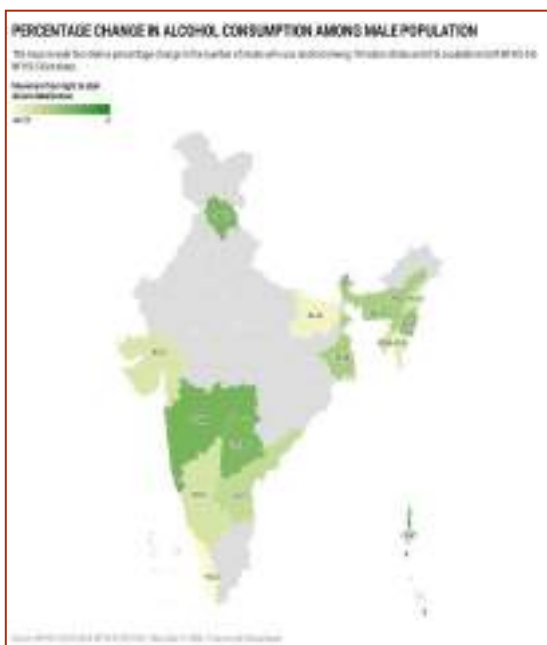


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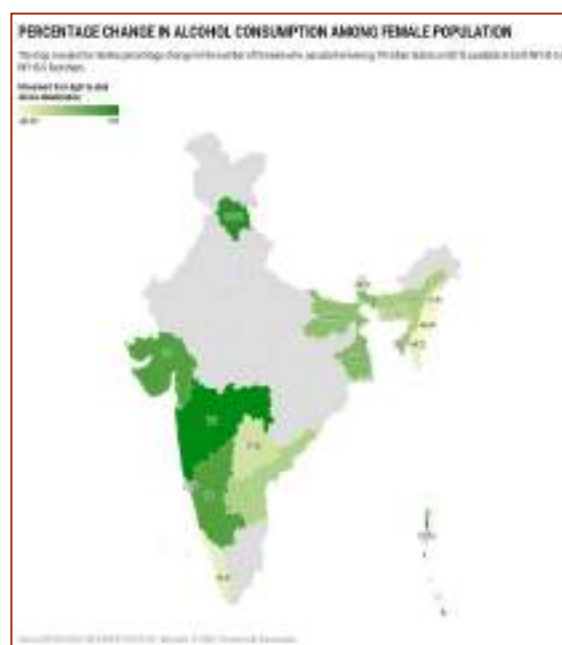
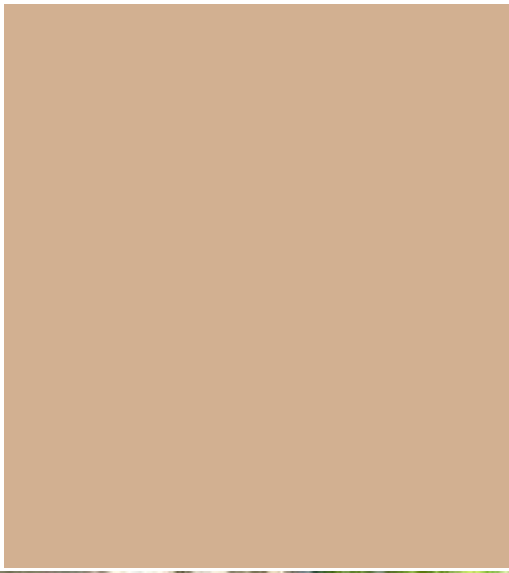


Figure 6.40

- The consumption of alcohol among females is very less in rural India (less than 10 per cent in 2019-20) except Sikkim which reported highest percentage of alcohol consumption among females (18.4 per cent).
- The relative change in the percentage of female alcohol users indicates that out of 19 states/UTs, only seven have shown a decline in the consumption of alcohol among females during 2015-16 and 2019-20. There is marginal increase in the consumption of alcohol among rural females in other states.



CANCER SCREENING

CANCER SCREENING

Cancer is a group of related diseases, in all types of cancers, some of the body's cells begin to divide without stopping and spread into surrounding tissues. This can happen in almost any tissue or organ of the human body, which is made up of trillions of cells¹. The abnormal cells grow without any control or go beyond the usual boundaries that invade adjoining parts of the body and spreads to other organs. Breast, colorectal, lung, cervical, Oral and thyroid cancer are the most common among women (World Health Organisation, 2018)

The NFHS-4 collected the information on cervical, breast and oral cavity screening and examinations for the first time. According to NFHS-4, less than one per cent of men and women aged between 15-49 years had cancer. In the latest round of NFHS-5 (phase-1), women of age-group 30-49 years had been asked whether they had undergone cervical, breast and oral cancer screening, thereby reducing the over estimation of cancer screening that took place in NFHS-4 (Gunnal, Guha and Akhil, 2020).

The key findings from the factsheets of NFHS-5 are as follows:

- The NFHS-5 (2019-20) estimates show that less than 5 per cent women of aged 30-49 years had undergone for the screening of cervix cancer. In 2019-20, the highest screening of cervix cancer among rural women of aged 30-49 years is reported in Andhra Pradesh (4.8 per cent), followed by Telangana (3.9 per cent), Mizoram (3.3 per cent) and Kerala (3.3 per cent).
- The Assam, West Bengal, Gujarat and Nagaland have reported least percentage of women aged 30-49 years who have undergone for the screening of cervix cancer.
- In case of screening of breast cancer, less than 3 per cent rural women of aged 30-49 years reported that they had undergone for the screening of breast cancer.
- The Andaman & Nicobar Islands and Kerala are the two states which reported 2.6 per cent and 2 per cent women of aged 30-49 years who have undergone for the screening of breast cancer, respectively. However, in other states the percentage share is one per cent or less. The states like West Bengal, Gujarat and Tripura have recorded dismal performance in breast cancer screening.

¹<https://www.cancer.gov/about-cancer/understanding/what-is-cancer>

- The screening of oral cancer among rural women of aged 30-49 years is equally non-uniform across states and UTs. In 2019-20, three states/UTs- Andaman & Nicobar Islands and Andhra Pradesh, and Telangana have reported 10.2 per cent, 6.8 per cent and 2.1 per cent women of aged 30-49 years who have undergone through screening of oral cancer whereas in majority of the states/UTs, this percentage is less than 1 per cent.

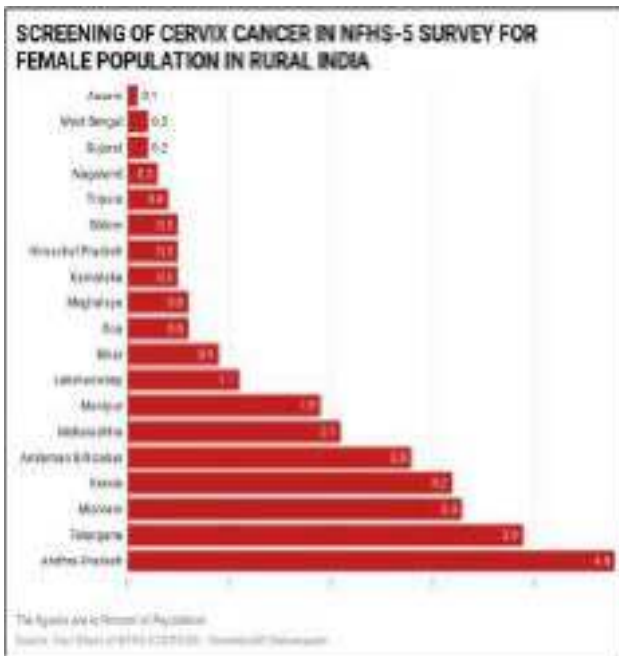


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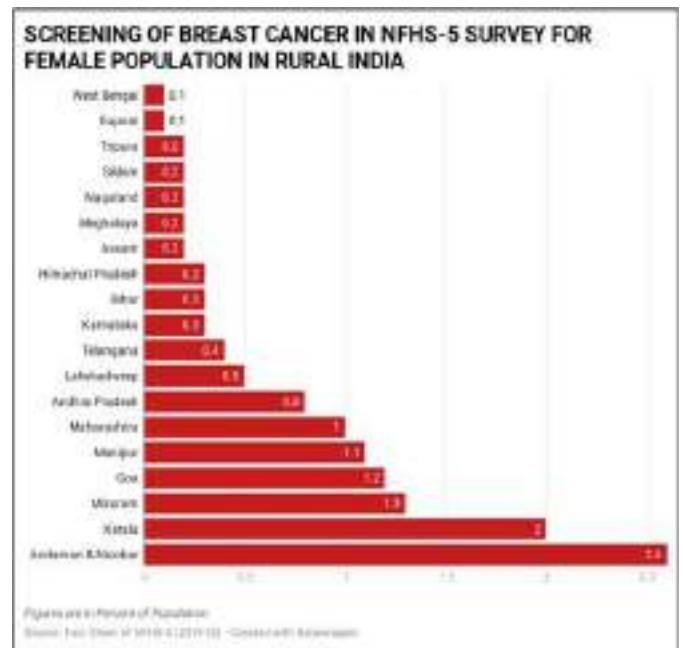


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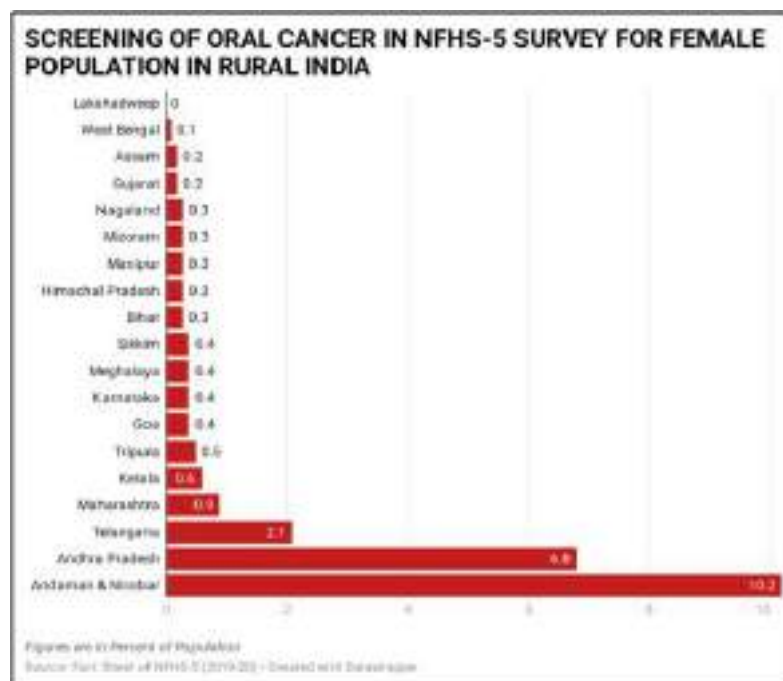


Figure: 6.43

CONCLUSION

In this section of the report, the main objective was to assess the status of Adult Health and Non-Communicable Diseases in the rural areas of 19 Indian states and Union Territories. The analysis has been carried out in accordance with the indicators of adult health and non-communicable diseases which were available in the factsheets of both NFHS-4 and NFHS-5.

With regards to Body Mass Index, there is marked improvement with decline in the percentage of males and females with low BMI in rural India. In contrast, the obesity among rural males and females has increased during 2015-16 and 2019-20. The problems of malnutrition and obesity is particularly common in low and middle-income countries as it stems from a similar genetic issues or changes in the lifestyle.

There is an increasing trend in the prevalence of anaemia among rural women (non-pregnant, pregnant and total). The north-eastern states have experienced a significant increase in the prevalence of anaemia among women. As compared to females, the prevalence of anaemia among men is low across states. West Bengal and Assam have reported highest percentage anaemic males, however, it is very low in Manipur.

Majority of the states have reported increasing percentage of males and females with high blood sugar level and very high blood sugar level during 2015-16 and 2019-20. This observation can be attributed to both genetic and environmental (lack of physical activities along with an intake of a high-calorie diet) factors.

In majority of the states, the percentage of males and females with moderate to severely elevated blood pressure is less than 10 per cent. The occurrence of hypertension, both slightly above normal and moderate to severe, is higher among females than male in rural India. All 19 states/UTs have registered an increase in cases of moderate to severely elevated blood pressure among males and females during 2015-16 and 2019-20. Sedentary lifestyle, drastic food pattern changes (including high amounts of saturated and trans-fat) and higher tobacco and alcohol consumption are contributors to the increase in hypertension in rural India.

Across all 19 states/UTs, tobacco and alcohol consumption among men is significantly higher than women. The consumption of tobacco among men has declined during 2015-16 and 2019-20. In contrast, female tobacco users have increased in most of the states with highest concentration in North-eastern states. The alcohol consumption among males is higher than females in rural India. However, all 19 states/UTs have reported decline in the consumption of alcohol among males during 2015-16 and 2019-20. In contrast, the alcohol consumption among females has increased in most of the states. Out of 19 states/UTs, 12 states/UTs have reported increase in the alcohol consumption among females.

The cancer screening data for women aged 30-49 years in NFHS-5 have reported a low level of screening of cervical cancer (less than 5 per cent), breast cancer (less than 3 per cent) and oral cancer (less than 10 per cent) among rural women in India.



Way Forward

- A well-functioning NCD surveillance system needs to be included in the public health system of India.
- NCD Surveillance system will collect data on regular basis which could be used for planning, implementation, monitoring and evaluation of intervention programs related to NCD.
- Preventive measures for NCDs need to be taken through the identification of the major risk factors.
- The public health centres in rural India need to be equipped with testing facilities for NCDs and proper treatments should be provided to the persons suffering from NCDs.

APPENDIX

List of Figures

	Child Nutrition
Figure 1.1	<i>Children under age 3 years breastfed within one hour of birth (%)</i>
Figure 1.2	<i>Children under age 6 months exclusively breastfed (%)</i>
Figure 1.3	<i>Percentage change in total children age 6-23 months receiving an adequate diet (From NFHS 4 to NFHS 5)</i>
Figure 1.4	<i>Relative change in % of Stunted children (From NFHS 4 to NFHS 5)</i>
Figure 1.5	<i>Relative change in Children under 5 who are wasted (From NFHS 4 to NFHS 5)</i>
Figure 1.6	<i>Relative change in Severely Wasted Children (From NFHS 4 to NFHS 5)</i>
Figure 1.7	<i>Relative change in Children under 5 who are Underweight</i>
Figure 1.8	<i>Percentage of Overweight Children (NFHS 5)</i>
Figure 1.9	<i>Map- The status of Composite Nutritional Score</i>
Figure 1.10	<i>Map- Relative change in % of Stunted children</i>
Figure 1.11	<i>Map- Relative change in Children under 5 who are wasted</i>
Figure 1.12	<i>Map- Relative change in Severely Wasted Children</i>
Figure 1.13	<i>Map- Relative change in Children under 5 who are Underweight</i>
Figure 1.14	<i>Relation between Anaemic children and Anaemic Pregnant Women</i>
Figure 1.15	<i>Relation between composite nutritional score and Anaemic Children</i>
Figure 1.16	<i>Relation between composite score and adequate diet</i>
	Child Health and Mortality
Figure 2.1	<i>Neonatal Mortality Rate- (NFHS 5)</i>
Figure 2.2	<i>Children born at home who were taken to a health facility for a check-up within 24 hours of birth (%) - (NFHS 4 and NFHS 5)</i>
Figure 2.3	<i>Children who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of delivery (%) - (NFHS 4 and NFHS 5)</i>
Figure 2.4	<i>Births attended by skilled health personnel (%) - (NFHS 4 and NFHS 5)</i>

Figure 2.5	<i>Map- Children born at home who were taken to a health facility for a check-up within 24 hours of birth (%) - (NFHS 5)</i>
Figure 2.6	<i>Map- Children who received postnatal care from a Doctor/Nurse/LHV/ANM/Midwife/other health personnel within 2 days of delivery (%) - (NFHS 5)</i>
Figure 2.7	<i>Map- Birth attended by skilled health personnel (%) - (NFHS 5)</i>
Figure 2.8	<i>Map- Neonatal Mortality Rate- (NFHS 5)</i>
Figure 2.9	<i>Infant Mortality Rates- (NFHS 4 and NFHS 5)</i>
Figure 2.10	<i>Birth delivered by C-section- (NFHS 4 and NFHS 5)</i>
Figure 2.11	<i>Children under three years of age breastfed within one hour- (NFHS 4 and NFHS 5)</i>
Figure 2.12	<i>Absolute values of C-section births, Children under 3 breastfed within one hour and IMR- (NFHS 5)</i>
Figure 2.13	<i>Map- Births by C-section deliveries (%) - (NFHS 5)</i>
Figure 2.14	<i>Map- Children under three years of age breastfed within one hour (%) - (NFHS 5)</i>
Figure 2.15	<i>Map- Infant Mortality Rates (%) - (NFHS 5)</i>
Figure 2.16	<i>Full Vaccination of children aged 12-23 months- (NFHS 4 and NFHS 5)</i>
Figure 2.17	<i>Map- Full vaccination of children between 12-23 months (%) - (NFHS 5)</i>
Figure 2.18	<i>Under-five Mortality Rate- (NFHS 4 and NFHS 5)</i>
Figure 2.19	<i>Map- Under-five mortality rate (per 1,000 live births) - (NFHS 5)</i>
Figure 2.20	<i>Scatter graph- The relationship between Under-five mortality rate and Full vaccination of children- (NFHS 5)</i>
	Gender-Based Violence
Figure 3.1	<i>Ever-Married Women Who Have Ever Experienced Spousal Violence(%)- NFHS- 4 & NFHS-5</i>
Figure 3.2	<i>Ever-Married Women Who Have Ever Experienced Violence during pregnancy(%)-NFHS- 4 & NFHS-5</i>
Figure 3.3	<i>Women Owning a House and/or Land (Alone or Jointly with Others) (%) - NFHS- 4 & NFHS-5</i>
Figure 3.4	<i>Scatter plot between Spousal Violence and women owning land/house (NFHS- 5)</i>

Figure 3.5	<i>Women having a Bank or Savings Account that they themselves use (%) -NFHS-4 & NFHS-5</i>
Figure 3.6	<i>Currently married Women who usually participate in Household Decisions (%) -NFHS- 4 & NFHS-5</i>
Figure 3.7	<i>Women who are literate (%) -NFHS- 4 & NFHS-5</i>
Figure 3.8	<i>Gender-gap in literacy rate between Men and Women (NFHS-5)</i>
Figure 3.9	<i>Scatter plot between Spousal Violence and women who are literate (NFHS-5)</i>
Figure 3.10	<i>Women with 10 or more Years of Schooling (%) -NFHS- 4 & NFHS-5</i>
Figure 3.11	<i>Men and Women with 10 or more years of schooling (NFHS-5)</i>
Figure 3.12	<i>Scatter Plot between Spousal violence and minimal education of women (NFHS-5)</i>
	Marriage, Fertility, And Family Planning
Figure 4.1	<i>Total Fertility Rate of Selected States</i>
Figure 4.2	<i>Predominantly used Methods of Family Planning across India (NFHS4).</i>
Figure 4.3	<i>Predominantly used methods of family planning across India (NFHS 5).</i>
Figure 4.4	<i>State-wise changes in ID/PPIUD usage between NFHS 4 & 5.</i>
Figure 4.5	<i>State-Wise changes in Condom usage between NFHS 4 & 5.</i>
Figure 4.6	<i>State-Wise changes In Pill Usage Between NFHS 4 & 5.</i>
Figure 4.7	<i>State-Wise Data for Female Versus Male Sterilization.</i>
Figure 4.8	<i>Relation Between TFR and Unmet Needs (%) From NFHS 4 Rural Data.</i>
Figure 4.9	<i>Relation Between TFR and Unmet Needs (%) From NFHS 5 Rural Data.</i>
Figure 4.10	<i>Relation Between Women's Schooling Years And Early Marriages.</i>
Figure 4.11	<i>Relationship Between Adolescent Girls' Marriages And Schooling Years.</i>
Figure 4.12	<i>Comparative Analysis Of Bottom Four States With Nagaland.</i>
	Maternal Health
Figure 5.1	<i>Registered Pregnancies for which the Mother Received the Mother and Child Protection Card (%)</i>
Figure 5.2	<i>Institutional Births (%)</i>
Figure 5.3	<i>Births Delivered by Caesarean section (%)</i>

Figure 5.4	<i>Caesarean section Deliveries in Public vs. Private Health facilities (%) NFHS 5</i>
Figure 5.5	<i>India- Map Births Delivered by Caesarean section (%)</i>
Figure 5.6	<i>Births Attended by Skilled Health Personnel (%)</i>
Figure 5.7	<i>Women Aged 15-19 Years who were Already Mothers or Pregnant at the Time of Survey (%)</i>
Figure 5.8	<i>India- Map Women Aged 15-19 who were Already Mothers or Pregnant at the Time of Survey (%)</i>
Figure 5.9	<i>Average Out-of-Pocket Expenditure Per Delivery in a Public Health Facilities (in RS.)</i>
Figure 5.10	<i>Percentage Change in Average Out-of-Pocket Expenditure Per Delivery in a Public Health Facility from NFHS 4 to NFHS 5</i>
	<i>Adult Health & Non-Communicable Diseases</i>
Figure 6.1	<i>Change in Number of Males with Low BMI</i>
Figure 6.2	<i>Change in Number of Females with Low BMI</i>
Figure 6.3	<i>Percentage Change in Number of Women with Low BMI</i>
Figure 6.4	<i>Percentage Change in Number of Men with Low BMI</i>
Figure 6.5	<i>Change in Number of Males with Obesity</i>
Figure 6.6	<i>Change in Number of Females with Obesity</i>
Figure 6.7	<i>Percentage Change in Number of Women with Obesity</i>
Figure 6.8	<i>Percentage Change in Number of Men with Obesity</i>
Figure 6.9	<i>Change in Anaemia with Respect to Non-Pregnant Women</i>
Figure 6.10	<i>Percentage Change in Anaemia with Respect to Non-Pregnant Women</i>
Figure 6.11	<i>Change in Anaemia with Respect to Pregnant Women</i>
Figure 6.12	<i>Percentage Change in Anaemia with Respect to Pregnant Women</i>
Figure 6.13	<i>Change in Anaemia with Respect to Total Women</i>
Figure 6.14	<i>Percentage Change in Anaemia with Respect to Total Women</i>
Figure 6.15	<i>Change in Anaemia with Respect to Total Men</i>
Figure 6.16	<i>Percentage Change in Anaemia with Respect to Total Men</i>
Figure 6.17	<i>Change in Number of Males with High Blood Sugar Levels</i>
Figure 6.18	<i>Change in Number of Females with High Blood Sugar Levels</i>

Figure 6.19	<i>Percentage Change in Number of Males with High Blood Sugar Levels</i>
Figure 6.20	<i>Percentage Change in Number of Females with High Blood Sugar Levels</i>
Figure 6.21	<i>Change in Number of Males with Very High Blood Sugar Levels</i>
Figure 6.22	<i>Change in Number of Females with Very High Blood Sugar Levels</i>
Figure 6.23	<i>Percentage Change in Number of Males with Very High Blood Sugar Levels</i>
Figure 6.24	<i>Percentage Change in Number of Females with Very High Blood Sugar Levels</i>
Figure 6.25	<i>Change In Number Of Males With Slightly Above Normal Blood Pressure</i>
Figure 6.26	<i>Change in Number of Females with Slightly Above Normal Blood Pressure</i>
Figure 6.27	<i>Percentage Change in Number of Males with Slightly Above Normal Blood Pressure</i>
Figure 6.28	<i>Percentage Change in Number of Females with Slightly Above Normal Blood Pressure</i>
Figure 6.29	<i>Change in Number of Males with Moderately and Severely Elevated Blood Pressure</i>
Figure 6.30	<i>Change in Number of Females with Moderately and Severely Elevated Blood Pressure</i>
Figure 6.31	<i>Percentage Change in Number of Males with Moderately and Severely Elevated Blood Pressure</i>
Figure 6.32	<i>Percentage Change in Number of Females with Moderately and Severely Elevated Blood Pressure</i>
Figure 6.33	<i>Change in Number of Males Who Use Tobacco</i>
Figure 6.34	<i>Change in Number of Females Who Use Tobacco</i>
Figure 6.35	<i>Percentage Change in Number of Males Who Use Tobacco</i>
Figure 6.36	<i>Percentage Change in Number of Females Who Use Tobacco</i>
Figure 6.37	<i>Change in Number of Males Who Use Alcohol</i>
Figure 6.38	<i>Change in Number of Females Who Use Alcohol</i>
Figure 6.39	<i>Percentage Change in Number of Females Who Use Alcohol</i>
Figure 6.40	<i>Percentage Change in Number of Males Who Use Alcohol</i>
Figure 6.41	<i>Screening of Cervix Cancer Among Females in Rural India</i>
Figure 6.42	<i>Screening of Breast Cancer Among Females in Rural India</i>
Figure 6.43	<i>Screening of Oral Cancer Among Females in Rural India</i>

List of Tables

Table 1.1	<i>Composite Score and its description</i>
Table 1.2	<i>Correlation between Anemic Children and Anemic Pregnant Women</i>
Table 5.1	<i>Correlation between Institutional Births and C-section Deliveries</i>
Table 5.2	<i>Regression between Institutional Births and C-section Deliveries.</i>
Table 5.3	<i>Correlation between Births Attended by Skilled Health Personnel and Institutional Births.</i>

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