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Bridging Health Inequality for Achieving the Sustainable Development Goals: Evidence from Rural–Urban Infant Mortality in India

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Abstract: *Globally 47 percent of newborn deaths occur among the children under the age of five, and nearly 2.4 million lives are lost every year. Moreover, the day of birth accounts for around one-third of deaths for newborns, and nearly three-quarters happen within the first week of life. Most of the newborn deaths occur due to complications related to preterm birth, intrapartum events like birth asphyxia, or infections like sepsis. Decreasing health inequality is essential to reach the sustainable development goals of good health and well-being and reduced inequality. Even though India has significantly improved, infant mortality still exists in both rural and urban areas, which is a challenge for achieving inclusive development. This paper emphasizes the inequality of IMR in both rural and urban India. This study used secondary data from 2011 to 2020.This study is a descriptive and policy-oriented approach to analyzing trends of IMR in rural and urban areas. This paper measure inequality by using of absolute and relative gaps. This study found that IMR persistently reduced in both rural and urban areas, which implies a betterment of child health care. The rural IMR was 48 in 2011, reduced to 31 in 2020, whereas the urban IMR decreased from 29 to 19 for the same period. In spite of this improvement, rural IMR is higher than urban IMR during the study period. Even though the absolute rural-urban gap contracted from 19 to 12 deaths per 1000 live births, relative inequality still existed, with rural infant mortality remaining about 1.6 times higher than urban infant mortality. This study suggested focusing on rural health for the betterment of child health in rural India.*

Keywords*: Infant Mortality Rate (IMR), Rural–Urban Inequality, Sustainable Development Goals (SDGs).*

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Introduction

Nearly 2.4 million infants each year die before reaching their first birthday, with almost half of all infant deaths taking place during the first five years of life. Generally, approximately one-third of all newborn fatalities occur within 24 hours after delivery, whereas about three-quarters of them occur during the infant's first week of existence. Global Infant Mortality Rates vary enormously, with Africa featuring the highest rate (81.5) in Somalia, followed closely by the Central African Republic (79.3), Guinea Equatorial (76.9), Sierra Leone (70.1), and Nigeria (65.6). The greatest IMR in South Asia is found in Pakistan (50.3), followed closely by Afghanistan (42), India (30.5), Maldives (23.7), Nepal (23.4), Bhutan (23), and Bangladesh (22). Sri Lanka recorded the lowest IMR (6.8) in South Asia. East and South Asia reported IMR as Timor-Leste (41.9), Laos (34.2), and Papua New Guinea (31.3). In Central American and Caribbean countries, Haiti has the most significant IMR (35) and Guatemala the second (23.4). Almost all of these decide by preterm complex, intrapartum complications like obstetric asphyxia, sepsis, and other infections, as much as decreasing disparities in health will indeed assist the UN's Sustainable Development Goals for health and wellness.

The Infant Mortality Rate (IMR) in India

The disparity in Infant Mortality Rates (IMR) is present both among different states and between rural and urban areas of India. Among larger states, Kerla has the lowest IMR at 7, while Tamil Nadu is next with an IMR of 11. Maharashtra and Karnataka have IMRs of 13 and 15, respectively. Among smaller states, Manipur has the lowest IMR at 3, followed closely by Goa and Sikkim with an IMR of 5. Among union territories, Ladakh has the lowest IMR at 5, followed by Puducherry at 6, Dadra and Nagar Haveli and Daman and Diu with an IMR of 7, and Andaman and Nicobar Islands at 8. The states with the highest IMR numbers are Madhya Pradesh (40), Chhattisgarh (38), Uttar Pradesh (38), Odisha (32), Assam (32), Rajasthan (30), and Meghalaya (30). IMRs in rural areas of India are approximately 29 and urban areas are approximately 18. In Chhattisgarh, IMRs in rural areas are about 40, while in urban areas, they are about 28. Madhya Pradesh and Uttar Pradesh have IMRs in rural areas at 43 and 41, respectively, while in urban areas, they are at 28 and 27, respectively.

Causes of Infant Mortality in India

According to the Cause of Death Statistics for the years 2020-22 published by the Office of the Registrar General & Census Commissioner in India, the primary contributors to infant mortality in the country include: Prematurity and low birth weight (31.6%), Pneumonia (16.2%), Birth asphyxia and birth trauma (10.2%), Other Non-Communicable Diseases (7.8%), Congenital anomalies (5.3%), Sepsis (4.1%), Fever of unknown origin (3.9%), Diarrheal diseases (3.6%), Injuries (2.8%), Ill-defined or unknown causes (11.5%), and all Other Causes of death (2.8%).

Methodology

Data : Secondary data collected from National Health Profile of India, 2023and Sample Registration System.

Tools : Trend Analysis ($\mathbf{Y = \alpha+\beta x}$)

Objectives of the study

To examine the infant mortality rates in rural and urban areas of India from 2011 to 2020.

To forecast the rural and urban IMR in India until 2035.

To assess rural–urban disparities in infant mortality using absolute and relative measures.

To suggest suitable measures for attaining equitable child health outcomes in alignment with the Sustainable Development Goals,

Table 1.1

Rural–Urban IMR Gap in India

Year	Rural IMR	Urban IMR	Absolute Gap (R–U)	Relative Gap (R/U)
2011	48	29	19	1.66
2012	46	28	18	1.64
2013	44	27	17	1.63
2014	43	26	17	1.65
2015	41	25	16	1.64
2016	38	23	15	1.65
2017	37	23	14	1.61
2018	36	23	13	1.57
2019	34	20	14	1.70
2020	31	19	12	1.63

Source: Computed

The rural infant mortality rate was 48 infant deaths per 1,000 live births in 2011; it dropped to 31 infant deaths per 1,000 live births in 2020, and there were urban areas where the rate was 29 infant deaths per 1,000 live births in 2011 and 19 infant deaths per 1,000 live births in 2020. The percentage of infant deaths among rural areas still exceeded that of urban areas in 2020. Although the absolute rural-urban gap had contracted over the study period from 19 to 12 deaths per 1,000 live births.

From Table 1.1, it can be clearly seen that the IMR ratio between rural & urban areas was consistently above or equal to 1.50 and has sustained an increasing trend from 1.50 up-to 1.70. Therefore, this indicates that regardless of the overall decrease in the IMR; there was consistently a 50-70 percent greater chance of an infant dying in rural areas compared to an infant with a similar background from an urban area. Year 2019 reported the highest IMR Ratio of 1.70.

Table 1.2
Rural IMR in India

Year	Rural IMR
2011	48
2012	46
2013	44
2014	43
2015	41
2016	38
2017	37
2018	36
2019	34
2020	31
2021	29.9
2022	28.1
2023	26.3
2024	24.4
2025	22.6
2026	20.8

2027	19.0
2028	17.2
2029	15.4
2030	13.6
2031	11.8
2032	10.0
2033	8.2
2034	6.4
2035	4.6

Table 1.3. Urban IMR in India

Year	Urban
2011	29
2012	28
2013	27
2014	26
2015	25
2016	23
2017	23
2018	23
2019	20
2020	19
2021	18.4
2022	17.3
2023	16.3
2024	15.2
2025	14.1
2026	13.0
2027	12.0
2028	10.9
2029	9.8
2030	8.7
2031	7.7
2032	6.6

2033	5.5
2034	4.4
2035	3.4

The infant mortality rate refers to the probability of a child dying between birth and the age of one, quantified per 1000 live births, indicating that a child may not survive to their first birthday. India is categorized into two regions: rural and urban areas. The data presented in the table reveals a consistent decline in the rural infant mortality rate (IMR). Notably, the rural IMR remains higher than that of urban regions. Furthermore, disparities persist in both rural and urban IMR across India. Specifically, the rural IMR decreased from 48 in 2001 (as indicated in Table 1.2) to 31 in 2020. Projections suggest that the rural infant mortality rates will continue to decline, with estimates of (13.6) in 2030, (11.8) in 2031, (10.0) in 2032, (8.2) in 2033, (6.4) in 2034, and (4.6) in 2035.

The urban rate in table 1.3 is presented with a slow and continuous decrease from 2011 to 2035. The urban IMR of 29 in 2011 showed that the urban conditions and access to services improved with its slow reduction to 25 by 2015. Then, the IMR was stable at 23 between 2016 and 2018, indicating a temporary halt in progress. But, after 2018, more noticeable reduction occurred. The decline starting from 2022 was no longer pronounced but rather consistent. The urban IMR is cut down from 17.3 in 2022 to 12.0 in 2027, which is followed by a further drop to 8.7 in 2030, thereby depicting the development, healthcare, and policy effective areas progressively. Moreover, looking at the long term, the trend is still going downward, and the figure of 3.4 by 2035 reflects still substantial areas of population living in cities and suburbs with better conditions and access.

Conclusion

The disparity in Infant Mortality Rate (IMR) existed among various states within India. Additionally, there is a significant inequality between rural and urban areas in India. The research indicated that the absolute gap was 19 in 2011, which was subsequently reduced to 12 by 2020. Furthermore, the relative gap was recorded at 1.66 in 2011, followed by a slight decrease to 1.63 in 2013. However, the year 2019 witnessed the highest IMR ratio at 1.70. This suggests that the IMR inequality in rural areas is 70 percent greater than that in urban areas. Consequently, the IMR in rural regions surpasses that of urban areas. The results emphasize the importance of a multi-faceted strategy that combines the three elements: infrastructure, workforce and policy changes to deliver consistent decreases in infant mortality. Therefore, policymakers should focus on rural areas to achieve a lower IMR and address the needs of these communities.

Policy Suggestions to Reduce Rural–Urban Inequality in IMR in India

- Neonatal care units and upgrading of Primary Health Centres (PHCs) and Community Health Centres (CHCs).
- The rural areas will be provided with 24×7 delivery services, essential medical supplies, and equipment.
- The rural health sector will be staffed with skilled doctors, nurses, and midwives who will be attracted by various incentives like higher salaries, good housing, and career development.
- Institutional births will receive support through the Janani Suraksha Yojana (JSY) and similar initiatives.

- ❖ Antenatal care (ANC), postnatal care (PNC), and newborn follow-up services will be made available in rural areas.
- ❖ All rural poor will be covered under Ayushman Bharat (PM-JAY) so as to lessen out-of-pocket payment
- ❖ Taking care of maternal and neonatal complications will be cashless.
- ❖ Potable drinking water, sanitation, and hygiene will be promoted through the Swachh Bharat Mission, thus, reducing the incidence of infections that otherwise lead to infant deaths.
- ❖ The high-IMR states, tribal regions, and economically backward districts will get special interventions planned around their needs.

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