A Comparative Study of Stillbirths, Maternal age in Rural & Urban Bihar- An Analysis

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ABSTRACT

This descriptive study examines the distribution of stillbirth cases by maternal age and gestational age in rural and urban Bihar during 2021, using the provided state-level case tables. The unit of analysis is the stillbirth case, and the results are presented as counts and within-setting proportions rather than population-based stillbirth rates because denominators were not available. Rural Bihar recorded 7,289 stillbirth cases, with the largest share among mothers aged 20–24 years and 25–29 years, and most events occurring at 37–39 weeks of gestation. Urban Bihar recorded 52 stillbirth cases, showing a similar concentration in the 20–29 age range, though at a much smaller absolute scale. These findings describe the burden pattern within the available data and identify priority areas for antenatal surveillance, intrapartum monitoring, and referral readiness, especially in rural facilities. The analysis is descriptive and is therefore best understood as a useful basis for programmatic review rather than as evidence of causation or program effect. It provides a positive foundation for identifying priority areas, strengthening service delivery, and guiding further operational action.

Keywords: Stillbirth, Maternal age, Rural health, Urban health, Gestational age, Bihar, Descriptive analysis.

INTRODUCTION

Stillbirth remains an important public health concern and a sensitive indicator of maternal and newborn care quality in India, including Bihar. Standard stillbirth reporting requires a clear case definition, transparent data source, and explicit statement of the unit of analysis to ensure comparability and correct interpretation. In Bihar, district and rural-urban differences in maternal and newborn outcomes suggest that service access and quality remain uneven across settings.

The present study uses provided state-level case tables to describe the distribution of stillbirth cases by maternal age and gestational age in rural and urban Bihar in 2021. The analysis is intended to support programmatic understanding of the observed case pattern and should be interpreted as a descriptive distribution of recorded cases rather than as evidence of risk or causation. It is useful for identifying priority areas for public health action and for guiding service delivery improvements.

Objectives

- To describe the distribution of stillbirth cases by maternal age and gestational age in rural Bihar for 2021.
- To describe the distribution of stillbirth cases by maternal age and gestational age in urban Bihar for 2021.
- To compare rural and urban case distributions and identify the age groups and gestational periods with the largest shares of stillbirth cases.
- To suggest programmatic priorities that is directly supported by the available descriptive data.

METHODOLOGY

This study is a descriptive comparison of stillbirth case counts by maternal age group and gestational age for rural and urban Bihar in 2021. The source of data is the provided state-level stillbirth tables derived from the Bihar Vital Statistics Report (2021). The unit of analysis is the stillbirth case, not the pregnancy, live birth, or mother.

Maternal age was grouped as <15, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45+, and not stated. Gestational age was grouped as <32 weeks, 32–36 weeks, 37–39 weeks, 40 weeks, 41+ weeks, and not stated. The analysis summarizes absolute counts and percentages within rural and urban settings to show the distribution of cases. Because population denominators were not available, stillbirth rates could not be calculated, and no inferential or multivariable analysis was performed.

RESULTS

Rural Bihar

Rural Bihar recorded 7,289 stillbirth cases in 2021. The largest number of cases occurred among mothers aged 20–24 years, followed by 25–29 years, and most cases were recorded at 37–39 weeks of gestation (Table 1). This indicates that the largest share of recorded cases in the rural dataset was concentrated in young adult mothers and at term gestation. The distribution is useful for identifying service priorities, but it does not show the underlying risk in the population because the denominator is unavailable.

Table 1: Rural stillbirth cases in Bihar, 2021

Age of mother (years)	**<32 weeks**	**32–36 weeks**	**37–39 weeks**	**40 weeks**	**41+ weeks**	**Not stated**	**Total**
<15	0	0	0	0	0	0	0
15–19	29	222	435	57	8	0	751
20–24	95	1,008	2,289	350	77	0	3,819
25–29	82	478	1,252	202	48	0	2,062
30–34	20	131	301	59	10	0	521
35–39	2	31	70	14	2	0	119
40–44	0	4	3	3	1	0	11
45+	2	1	1	1	1	0	6
Not stated	0	0	0	0	0	0	0
State total	**230**	**1,875**	**4,351**	**686**	**147**	**0**	**7,289**

Source: Bihar Vital Statistics Report / published stillbirth table cited by the authors.

Urban Bihar

Urban Bihar recorded 52 stillbirth cases in 2021. As in rural Bihar, the largest share of cases was observed among mothers aged 20–24 years, followed by 25–29 years, with most cases occurring at 37–39 weeks of gestation (Table 2). The absolute burden was much smaller than in rural Bihar, but the age and gestational pattern was

broadly similar. This supports a cautious interpretation that the same broad care windows may be important in both settings, while acknowledging that the available tables do not allow risk estimation.

Table 2: Urban stillbirth cases in Bihar, 2021

Age of mother (years)	**<32 weeks**	**32–36 weeks**	**37–39 weeks**	**40 weeks**	**41+ weeks**	**Not stated**	**Total**
<15	0	0	0	0	0	0	0
15–19	0	1	1	0	0	0	2
20–24	2	12	20	0	1	0	35
25–29	1	4	7	1	0	0	13
30–34	0	1	1	0	0	0	2
35–39	0	0	0	0	0	0	0
40–44	0	0	0	0	0	0	0
45+	0	0	0	0	0	0	0
Not stated	0	0	0	0	0	0	0
State total	**3**	**18**	**29**	**1**	**1**	**0**	**52**

Source: Bihar Vital Statistics Report / published stillbirth table cited by the authors.

DISCUSSION

The descriptive pattern shows that recorded stillbirth cases in both rural and urban Bihar are concentrated among women aged 20–29 years and at 37–39 weeks of gestation. This finding is consistent with the need to prioritize antenatal risk identification, monitoring near term, and intrapartum readiness, especially in rural facilities. However, the tables provide a clear descriptive picture of stillbirth distribution across maternal age groups and help identify priority areas for targeted maternal health action. The findings therefore support **programmatic prioritization**, not causal inference.

The much larger number of rural cases compared with urban cases may reflect the larger rural population, differential access to services, or both, but the present dataset cannot distinguish among these explanations. Similarly, the concentration at term gestation may indicate a critical window for improved labour monitoring and referral, but descriptive data alone cannot establish whether care failures caused the events. For stronger inference, future work would require denominators and, ideally, individual-level data for multivariable analysis.

LIMITATIONS

This study has important limitations. First, the analysis is based on case counts only and does not include denominators, so stillbirth rates cannot be calculated. Second, the data are aggregated and do not permit adjustment for confounders such as place of residence, maternal comorbidity, parity, education, or gestational age. Third, the results should be interpreted as a distribution of recorded cases, not as causal evidence or a measure of population risk. Finally, the analysis is limited to the information available in the tables and may not capture unreported or misclassified events.

CONCLUSIONS

This descriptive analysis shows that recorded stillbirth cases in Bihar in 2021 were concentrated in rural areas, among mothers aged 20–29 years, and at term gestation. The findings identify clear areas for program attention, especially intrapartum monitoring, referral preparedness, and high-risk antenatal screening in rural services. Because the analysis is descriptive and denominator data are unavailable, the results should be used to guide operational priorities rather than to make causal claims. The strongest public health value of the study lies in its ability to point to where preventive and quality-improvement efforts are most likely to be useful.

RECOMMENDATIONS

- Strengthen intrapartum monitoring and emergency obstetric readiness in rural facilities, because the largest number of recorded cases occurred at term gestation in rural Bihar.
- Prioritize antenatal risk screening for women aged 20–29 years, since this group accounts for the largest share of recorded stillbirth cases in both settings.
- Improve referral coordination and transport for women with obstetric danger signs, especially in rural areas.
- Continue perinatal audit and stillbirth review at facility and district levels to identify preventable gaps in care.
- Maintain urban quality assurance so that the smaller but persistent burden of term stillbirths remains under surveillance.

These recommendations are drawn directly from the observed distribution in the dataset and should be presented as operational priorities rather than proof of effect.

REFERENCES

1. Bihar Vital Statistics Report. Stillbirth Patterns in Bihar, 2021. PubMed Central. https://pmc.ncbi.nlm.nih.gov/articles/PMC12239305/
2. International Institute for Population Sciences (IIPS) and ICF. National Family Health Survey (NFHS-5) 2019–21: Bihar. Mumbai: IIPS; 2021.
3. Kumar A, Singh A, Rai RK, et al. Deferred and referred deliveries contribute to stillbirths in the Indian state of Bihar: results from a population-based survey of all births. BMC Pregnancy and Childbirth. 2019; 19(1):74.
4. National Health Systems Resource Centre (NHSRC). Bihar Health Dossier. New Delhi: NHSRC; 2021.
5. Prasad R, Kumar A, Mishra V. Population-based estimates of stillbirth, induced abortion and miscarriage in the Indian state of Bihar. International Journal of Epidemiology. 2014; 43(2):123–131.
6. Times of India. Stillbirths up by 24% in Bihar during Covid. Patna edition; 2022.