



PPR in India: Outbreaks Fall by 70%, but New Data Reveal Gaps in Sheep and Goat Immunity

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India has recorded a substantial decline in reported Peste des Petits Ruminants (PPR) outbreaks, but recent serological evidence shows that disease control remains incomplete. PPR, caused by PPR virus (PPRV), primarily affects sheep and goats and can cause fever, oral lesions, nasal and ocular discharge, diarrhoea, respiratory distress and death. India's National PPR Eradication Programme supports the international objective of eradicating the disease by 2030. Government outbreak records and a large post-vaccination study provide measurable indicators of progress while identifying geographical and population-level gaps that require attention.

Reported outbreaks have declined by approximately 70%

Table 1. National PPR outbreak trend

Indicator	Reported figure
Outbreaks in 2019	98
Outbreaks in 2025	29
Absolute reduction	69
Percentage reduction	70.4%

Source: Press Information Bureau, Government of India, 2026.

The reduction from 98 to 29 represents a 70.4% decline in reported outbreaks over six years. However, these figures describe outbreaks, not the total number of infected animals or the percentage of the livestock population free from infection. A separate study covering 20 States and Union Territories reported a decline in confirmed outbreaks from 57 in 2023 to 20 in 2025, a reduction of 64.9%. This study-specific trend supports the broader picture of declining disease occurrence, but it represents a different dataset from the national government figures. The two datasets show a consistent downward direction, but they should not be merged because their reporting periods and coverage differ. Continued laboratory surveillance is needed to determine whether the decline reflects sustained interruption of transmission.

A survey of 52,133 samples measured population immunity

A 2026 post-vaccination assessment examined sheep and goats following the second annual mass-vaccination round.

Table 2. Scale and results of the immunity assessment

Indicator	Result
Serum samples tested	52,133
Antibody-positive samples	37,387
Epidemiological units surveyed	1,666
States and Union Territories covered	20
Pre-vaccination seroprevalence in 2023	41%

Indicator	Result
Seroprevalence in 2025–26	71.7%
95% confidence interval	71.0–72.4%
Increase in seroprevalence	Approximately 30.7 percentage points

Source: Vinod Kumar et al., Viruses, 2026.

Of the 52,133 samples tested, 37,387 were antibody-positive, giving an overall seroprevalence of 71.7%. Compared with the reported baseline of 41% in 2023, this represents an increase of approximately 30.7 percentage points, or a relative increase of about 74.9%. The 95% confidence interval of 71.0–72.4% indicates the statistical precision of the overall estimate under the study's sampling assumptions. It does not mean that animals across every Indian state have the same antibody prevalence. The samples were collected within 90 days of vaccination. Consequently, the findings primarily describe the measured post-vaccination antibody response rather than long-term immunity several years after vaccination.

Earlier baseline data show how widely immunity varied

The 2026 paper also describes pre-vaccination findings from a separate national assessment conducted during 2023–2025.

Table 3. Earlier baseline assessment described in the 2026 study

Indicator	Reported figure
Serum samples	83,196
Villages covered	3,099
States and Union Territories represented	33
Lowest reported state-level seroprevalence	1.4% in Nagaland
Highest reported state-level seroprevalence	82.13% in Telangana
Difference between reported extremes	80.73 percentage points

Source: Baseline findings cited in Vinod Kumar et al., Viruses, 2026. The authors describe these baseline results as unpublished data.

The reported range—from 1.4% to 82.13%—illustrates the extent of geographical variation before the post-vaccination assessment. The difference between the two extremes was 80.73 percentage points. Because these baseline findings are described as unpublished data within the 2026 paper, they should be treated as supporting context rather than as an independently published survey. They also should not be directly compared with the later 20-state assessment without accounting for differences in sampling and timing.

Sheep had higher antibody prevalence than goats

Table 4. Species-wise PPRV antibody prevalence

Indicator	Sheep	Goats
Samples tested	14,397	37,736
Antibody-positive samples	11,256	26,131
Seroprevalence	78.2%	69.3%
Difference between species	\multicolumn{2}{c}{8.9 percentage points}	

Source: 2026 population-immunity assessment.

Sheep had a seroprevalence of 78.2%, compared with 69.3% in goats. The difference was statistically significant in the study ($p < 0.005$). Goats accounted for approximately 72.4% of the samples, while sheep accounted for approximately 27.6%. These proportions describe the study sample and should not be interpreted as the national sheep-to-goat population ratio. The lower measured antibody prevalence in goats identifies a group for closer monitoring. It does not, by itself, establish that goats are inherently less responsive to vaccination; animal movement, vaccination history, age structure and management may also influence the findings.

State-level results show substantial geographical variation

Table 5. Selected state-level findings

State	Reported seroprevalence
Telangana	85.4%
Mizoram	39.8%
Difference	45.6 percentage points

Source: 2026 population-immunity assessment.

Telangana recorded a seroprevalence of 85.4% in the post-vaccination assessment, while Mizoram recorded 39.8%. The difference of 45.6 percentage points illustrates how a national average can conceal substantial regional variation. The study also reported different vaccination coverage levels between states. For example, reported coverage was 99.6% in Bihar, 99.5% in West Bengal, 94.9% in Andhra Pradesh and 74% in Uttarakhand. These are programme-reported coverage figures, whereas seroprevalence measures antibodies in sampled animals. A high vaccination coverage figure does not automatically translate into the same percentage of antibody-positive animals. The geographical variation supports prioritising further assessment in areas with low antibody prevalence rather than relying solely on national averages.

More than one-third of surveyed units had intermediate or low seroprevalence

Table 6. Distribution of 1,666 epidemiological units

Seroprevalence category	Number of units	Percentage
High: above 70%	1,054	63.3%
Intermediate: 31–70%	370	22.2%
Low: 30% or below	242	14.5%
Total	1,666	100%

Source: 2026 population-immunity assessment.

The largest category comprised 1,054 units with seroprevalence above 70%. However, 242 units had seroprevalence of 30% or below, and another 370 fell within the intermediate category. Combined, these intermediate- and low-seroprevalence units accounted for 612 of the 1,666 units, or 36.7% of those surveyed. This does not mean that 36.7% of the units had active PPR outbreaks; it indicates that their measured antibody prevalence did not fall into the study's high-seroprevalence category. The 242 low-seroprevalence units represent a practical target for follow-up. Repeat sampling and vaccination records could help determine whether the low values reflect missed animals, uneven vaccination, population turnover or other local factors.

Antibody prevalence was similar across age groups

Table 7. Age-wise PPRV antibody prevalence

Age group	Samples tested	Seroprevalence
6–12 months	18,002	70.8%
1–2 years	17,316	71.8%
Older than 2 years	16,842	72.6%

Source: 2026 population-immunity assessment.

The difference between the youngest and oldest groups was 1.8 percentage points. The 6–12-month group had the lowest reported seroprevalence, at 70.8%. The youngest group accounted for approximately 34.5% of the stated total sample size, while animals older than two years accounted for approximately 32.3%. The article's reported age-group sample counts should be checked against the final published table before reproducing exact percentages of the total sample, as the subgroup counts do not sum exactly to the overall sample total. The relatively similar age-wise results indicate that detectable antibodies were

present across all three sampled age categories. Because young animals continually enter the eligible population, age-specific monitoring remains important for determining whether vaccination campaigns are reaching newly eligible animals.

Vaccination records and surveillance are the next measurable priorities

Government guidance identifies several operational measures for improving disease-control programmes, including vaccination planning, animal registration and ear tagging, recording vaccination information in the National Digital Livestock Mission system, sero-monitoring and outbreak management. These measures can make future programme results easier to evaluate against defined indicators.

Table 8. Indicators for monitoring progress towards 2030

Indicator	Latest figure or benchmark
Nationally reported PPR outbreaks in 2025	29
Outbreaks in the 20-state study in 2025	20
Overall post-vaccination seroprevalence	71.7%
Epidemiological units with seroprevalence $\leq 30\%$	242
Units with intermediate or low seroprevalence	612
Global eradication target year	2030

Sources: Government of India; Vinod Kumar et al.; FAO and WOA.

Future reports would be more informative if they published state-wise outbreak counts, the number of animals vaccinated, verified coverage denominators, laboratory-confirmed cases and repeated seroprevalence results using comparable sampling methods. Together, these measures would help distinguish a reduction in reported outbreaks from demonstrated interruption of viral transmission.

Conclusion

India's PPR programme has recorded a 70.4% decline in nationally reported outbreaks between 2019 and 2025. A separate large-scale assessment found that antibody prevalence increased from 41% to 71.7%, based on 52,133 samples from 1,666 epidemiological units across 20 States and Union Territories. The same assessment found an 8.9-percentage-point difference between sheep and goats, a 45.6-percentage-point difference between selected state-level results, and 242 epidemiological units with seroprevalence of 30% or below. Earlier baseline findings cited in the study also reported wide variation across 33 States and Union Territories. These results indicate that national progress can coexist with local immunity gaps. Targeted vaccination, accurate digital records, repeat serological assessment and continued laboratory surveillance will be essential to demonstrate sustained interruption of PPR transmission and progress towards the 2030 eradication goal.

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