

Review Article

From ashes to numbers: the Punjab partition of 1947 as a historical social determinant of health evidence from NFHS-4, NFHS-5 and NFHS-6 (2015–2024)

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ABSTRACT

Punjab National Family Health Survey (NFHS) profile presents a paradox that contemporary health systems analysis cannot resolve. A state that leads north India in institutional delivery rates (94.3%, NFHS-5, highest in the region) and records one of its lowest infant mortality rates (approximately 14 per 1,000 live births, NFHS-5) simultaneously records child anemia at 71.1% (NFHS-5, exceeding the national figure of 67.1%), overweight or obesity in women aged 15 - 49 years at over 41% (among India five highest states), a caesarean section rate of 38.5% (far above WHO 10-15% optimal threshold), and a sex ratio at birth of only 904 girls per 1,000 boys. This review undertakes a descriptive secondary analysis of Punjab's health profile across NFHS-4 (2015 - 16), NFHS-5 (2019 - 21), and NFHS-6 (2023 - 24), integrating NFHS-6 national comparator data released in May 2026. It argues that this paradox cannot be explained by contemporary policy variables alone. The Green Revolution agricultural model itself, the product of refugee economic reconstruction after the Partition of 1947, created a dietary monoculture that underlies the present burden of anaemia. Partition-derived intergenerational trauma contributes to the chronic stress physiology measurable in community health indicators. The cultural devaluation of women entrenched during Partition's systematic gendered violence persists in a skewed sex ratio. The opioid epidemic is geographically concentrated in historically displaced border districts. Punjab NFHS data, read against its specific Partition history, establishes a case for recognizing the 1947 catastrophe as a historical social determinant of health with implications for community medicine practice and public health policy in Punjab and its diaspora.

Keywords: Partition 1947, Social determinants of health, Child anaemia, Intergenerational trauma, Historical trauma, Obesity

INTRODUCTION

Punjab National Family Health Survey profile consistently defies straightforward interpretation. Among India's best-performing states on structural maternal and child health indicators institutional delivery rates, skilled birth attendance, infant mortality it simultaneously records some of the country's most alarming figures for child anaemia, adult obesity, caesarean section rates and sex ratio at birth.^{1,2} This paradox has not been explained by contemporary health systems scholarship.

This review proposes a historically grounded explanation. Punjab's demographic and health profile is the product of a specific historical trajectory that began with the Partition of 1947, the most catastrophic event in its modern history. The Partition displaced 10-14 million people from the Punjab region, killed an estimated 2.3-3.2 million, subjected 75,000-100,000 women to systematic sexual violence, and destroyed in weeks the composite civilisation built across centuries.^{3,4,15} The communities that rebuilt Punjab afterwards traumatised refugees who arrived with nothing, reconstructed the state's economy

through the Green Revolution of the 1960s-1970s, creating material prosperity and improved healthcare infrastructure while simultaneously establishing dietary patterns, social structures, and psychological legacies whose health consequences are measurable in present-day NFHS data.

Mohatt and colleagues (2014) proposed historical trauma as a social determinant of health: cumulative collective wounding across generations that creates community-wide patterns of grief, altered social behaviour, and modified health-seeking.⁵ Qureshi, Misra, and Poshni (2023) applied this framework specifically to the 1947 Partition in the context of the South Asian diaspora.⁶ This review is the first to apply it to Punjab's resident population against empirical NFHS evidence.

METHODS

Data sources

Secondary data were extracted from: NFHS-4 Punjab State Fact Sheet (2015-16), IIPS/ICF; NFHS-5 Punjab State Fact Sheet (2019-21), IIPS; NFHS-6 India National Fact Sheet (2023-24), released 29 May 2026.^{1,2,7,8} Punjab-specific NFHS-6 state fact sheets were not independently available at the time of analysis; national NFHS-6 figures are used as comparators throughout, with this limitation explicitly stated. Supplementary data were drawn from ORF Expert Speak (2026) and CEDA Ashoka University (2024).^{9,10} Historical demographic benchmarks were from Hill et al (2008).³

Variables and analysis

Key indicators extracted: total fertility rate (TFR); infant mortality rate (IMR); institutional delivery rate; C-section rate; sex ratio at birth; child stunting and wasting; child anaemia (0-57 months); anaemia in women 15-49 years; overweight or obesity in women and men 15-49 years; full immunisation coverage; and life expectancy. Descriptive comparison across three NFHS rounds was undertaken, noting direction of change and Punjab's position relative to the national average. Narrative synthesis was applied to contextualise clinically anomalous indicators through the historical trauma framework.^{5,6}

Ethics

This study uses publicly available, de-identified aggregate survey data. No primary data were collected, and ethics committee approval was not required.

RESULTS

Punjab's comprehensive NFHS profile

Table 1 presents Punjab's key health indicators across three NFHS rounds with national comparators. Table 2

contextualises NFHS-6 national findings against Punjab's NFHS-5 baseline.

The resilience story: what punjab has achieved

Against the backdrop of a province that lost 2.3-3.2 million people and 10-14 million displaced persons in 1947, Punjab's NFHS structural indicators constitute a remarkable demographic recovery. The TFR of 1.6 is stable across NFHS-4 and NFHS-5; the lowest among large north Indian states reflects a population that rebuilt itself with exceptional discipline. Institutional delivery at 94.3% (NFHS-5) and IMR of approximately 14 per 1,000 live births place Punjab well above its regional peers. Life expectancy at 72.4 years exceeds the national average. These achievements are inseparable from their historical context: the refugee communities of 1947 rebuilt Punjab's economy through the Green Revolution, creating per-capita income levels that consistently rank among India's highest, and the material conditions for improved healthcare utilisation.³

The shadow indicators: the historical fingerprint

Child anaemia: the green revolution's hidden cost

The most clinically alarming finding is the regression in child anaemia rising from 56.6% in NFHS-4 to 71.1% in NFHS-5, exceeding the national figure of 67.1%. This cannot be explained by poverty or limited healthcare access. A historically grounded analysis points to a structural cause: the Green Revolution that rebuilt Punjab's refugee economy was premised on wheat and rice monoculture, systematically displacing the dietary diversity of millets, pulses, seasonal vegetables that had characterised pre-Partition Punjabi nutrition. The resulting dietary pattern, persisting across three generations, underlies the anaemia burden NFHS documents.^{5,11} NFHS-6 dropped the blood-based anaemia biomarker from its protocol a decision that has drawn criticism from public health researchers leaving Punjab's most critical indicator unmeasurable going forward.¹¹

Sex ratio at birth: the persistence of female devaluation

Punjab's sex ratio at birth improved from 860 girls per 1,000 boys in NFHS-4 to 904 in NFHS-5 a real gain reflecting the Beti Bachao Beti Padhao campaign. However, 904 remains critically below the biologically expected value of approximately 950, indicating ongoing sex-selective abortion at meaningful scale. The historical roots of this indicator are traceable to the Partition's systematic equation of women's bodies with community honour an equation so absolute that fathers killed daughters rather than allow their capture, and the state's post-Partition recovery operation treated abducted women as national property rather than as persons with rights.^{4,6,16} Improved prosperity and healthcare coverage have ameliorated but not erased this cultural inscription.

Adult obesity and the dual burden

Women aged 15-49 in Punjab recorded overweight or obesity at over 41% in NFHS-5 among India's five highest states, more than double the national figure of 24% at that time. NFHS-6 shows national women's obesity rising to 30.7%, confirming that Punjab is already a decade ahead of the national trajectory on this NCD indicator. Men's obesity at 32.2% similarly exceeds the national figure. The state simultaneously records 71.1% child anaemia, the textbook dual burden of malnutrition. The dietary and activity transitions of an agricultural community that moved from refugee poverty to Green Revolution prosperity to a sedentary service economy within three generations faster than metabolic adaptation allows underlie this pattern.^{9,12}

The c-section crisis

Punjab's C-section rate of 38.5% (NFHS-5) and 55.5% in private facilities is among India's highest, and far above the WHO optimal threshold of 10-15%. NFHS-6 shows the national rate climbing to 27.2%, confirming that Punjab is the leading edge of a national trend. The concentration of maternity care in private facilities with financial incentives for surgical delivery, combined with the heightened anxiety around birth outcomes that characterises historically traumatised communities, contributes to this pattern.¹³

The opioid epidemic: historical trauma's most visible manifestation

Approximately 2.3 million people in Punjab use opioids or synthetic drugs, the highest per-capita rate in India.¹³ The supply routes follow the Golden Crescent corridor across the Radcliffe Line drawn in 1947. The epidemic is geographically concentrated in border districts Tarn Taran, Amritsar, Gurdaspur and Ferozepur, precisely where Partition violence was most intense, refugee resettlement most chaotic and intergenerational economic marginalisation deepest. This geographic pattern is consistent with international research linking historical trauma to elevated substance dependence in Indigenous North American, post-Holodomor Ukrainian and post-conflict African communities.^{5,6,14,17}

DISCUSSION

Punjab's NFHS paradox resolves analytically once the historical context is applied. The same Green Revolution that built the material conditions for high institutional delivery rates also created the dietary monoculture that underlies present anaemia. The same community resilience that rebuilt a destroyed province also generated an achievement-oriented, anxiety-prone social culture consistent with intergenerational trauma profiles. The same historical devaluation of female life that manifested as mass femicide during Partition manifests now as sex-

selective abortion. The achievement and the pathology share a common historical root.

The removal of the anaemia biomarker from NFHS-6 is a significant policy setback. The 71.1% child anaemia figure from NFHS-5 Punjab's most alarming indicator now has no comparable successor data point. This paper calls for the restoration of haemoglobin biomarker testing in the NFHS-7 protocol, at minimum for high-burden states including Punjab.¹¹

Several limitations must be acknowledged. Punjab-specific NFHS-6 state fact sheets were unavailable at the time of analysis; national comparators were used in their place. Attribution of specific NFHS indicators to Partition-derived historical trauma, rather than to subsequent historical events (1984 anti-Sikh pogroms, Khalistan period) or contemporary factors, requires prospective cohort research not yet available. This review establishes conceptual plausibility rather than causal proof.

CONCLUSION

Punjab's NFHS profile presents a paradox that contemporary health systems analysis cannot resolve. This review has argued that the 1947 Partition, which killed 2.3-3.2 million, displaced 10-14 million, and systematically violated 75,000-100,000 women, established structural conditions whose health consequences remain measurable seven decades later. The Green Revolution's dietary legacy, Partition-derived intergenerational trauma, the cultural residue of gendered violence, and the drug epidemic in historically displaced border communities all contribute to a health profile that is, in part, a long-delayed invoice for the events of 1947. Recognition of this historical social determinant is a prerequisite for designing effective community medicine interventions, informed public health policy, and trauma-aware clinical practice in Punjab.

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