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CHILD CARE AND IMMUNIZATION: A STUDY AMONG THE MUSLIMS OF CHAPAR REVENUE CIRCLE OF DHUBRI DISTRICT, ASSAM

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ABSTRACT
Child immunization is among the most proven public health instruments for reducing infant and under-five mortality. In India's northeastern frontier, minority Muslim communities in peri-urban and rural belts often occupy a distinct socio-demographic position that shapes health-seeking behaviour in ways that aggregate national data cannot capture. This paper examines child care practices and immunization uptake among Muslim households of two villages — Puthimari and Kazipara — located in the Chapar administrative area of Dhubri district, Assam. Household-level data were collected from 100 respondents (50 from each village) across variables including parental education, age at marriage, household income, birth weight, immunization status, breastfeeding duration, utilisation of government health schemes, and awareness of Oral Rehydration Solution (ORS). Results reveal that overall full immunization coverage across the two villages stands at 83.0%, though notable inter-village variation exists: Kazipara recorded the highest full immunization rate (98%), while Puthimari recorded a considerably lower rate (68%). Health workers — primarily ASHA workers — emerge as the dominant motivational source for immunization uptake in both villages. Awareness of ORS and regularity of hospital antenatal visits were universal (100%) across both sites. Government schemes such as Adoroni, and Janani Suraksha Yojana (JSY) are actively accessed, particularly in Puthimari. The findings underscore the critical role of frontline health workers in sustaining immunization coverage, identify household income as the primary structural predictor of immunization failure, and highlight a significant pocket of partial non-coverage in Puthimari that warrants targeted programme intervention.

KEYWORDS: Child immunisation, Muslim community, Dhubri, Assam, ASHA workers, Mamoni scheme, child care, Chapar, Puthimari, Kazipara , household income

BACKGROUND

Immunization of children against vaccine-preventable diseases is a cornerstone of primary healthcare in India, embedded within the Universal Immunization Programme (UIP) since 1985 and subsequently strengthened under Mission Indradhanush (launched 2014) and the Intensified Mission Indradhanush (IMI 2.0, 2019–2020). According to the National Family Health Survey-5 (NFHS-5, 2019–21), the full immunization coverage rate in Assam stood at approximately 83.7%, which remains below the aspirational 90% threshold set under national health policy. Dhubri district, situated in the lower Brahmaputra valley on the international border with Bangladesh, carries a distinctively high Muslim population — nearly 79% according to the 2011 Census — and reflects the complex intersection of religious identity, agrarian economy, low female literacy, and spatial marginality that defines many districts of the Brahmaputra floodplain.

Chapar, a town in Dhubri district, one of Assam's most densely populated and historically significant Muslim-majority area. The region encompasses a mosaic of socio-cultural communities — agrarian Muslim villages and semi-urban Muslim localities — whose health behaviour may differ considerably despite geographic proximity. This study addresses that gap by focusing on two villages — Puthimari, a predominantly agrarian Muslim settlement, and Kazipara , a semi-urban Muslim locality — both situated within the Chapar administrative circle.

The study situates itself within a broader body of literature demonstrating that the mother's education level, age at first marriage, household income, birth order, and access to ASHA workers are among the strongest predictors of child immunization in rural India (Lim et al., 2010; Johri et al., 2015; NFHS-5, 2021). Government flagship schemes — Janani Suraksha Yojana (JSY), Mamoni (Assam's conditional cash transfer for institutional delivery), and Adoroni (a state-level nutrition supplement scheme) — have been operationalised specifically to improve maternal and child health outcomes in high-burden districts such as Dhubri. How far these schemes penetrate into the household level and whether they translate into improved immunization behaviour is a question this study empirically examines.

AIM AND OBJECTIVES

Aim: To examine the nature, extent, and socio-demographic correlates of child care and immunization practices among Muslim communities in the Chapar area of Dhubri district, Assam, and to assess the role of government health infrastructure, household income, and community-level factors in shaping these practices.

Objectives:

1. To document immunization coverage (full, partial, and non-immunisation) across two villages differing in community composition — an agrarian Muslim village (Puthimari) and a semi-urban Muslim locality (Kazipara).
2. To identify the primary motivational sources that drive parental decision-making regarding child immunisation.
3. To assess the utilisation of government health schemes (Mamoni, Adoroni, JSY) and maternal health services including antenatal hospital visits.
4. To analyse birth weight patterns, breastfeeding practices, and awareness of Oral Rehydration Solution (ORS) as indicators of overall child care quality.
5. To examine parental educational background and age at marriage as socio-structural correlates of immunization behaviour.
6. To correlate household annual income with immunization status and identify the most economically vulnerable sub-groups within the study population.
7. To compare inter-village variation and derive implications for health policy and frontline service delivery.

Study Area and Context

Dhubri District, Assam: Dhubri is the westernmost district of Assam, bordering Bangladesh and West Bengal. As per the 2011 Census, it had a population of approximately 1.94 million with a literacy rate of 64.9% — one of the lower rates in the state. Muslims constitute a dominant majority (about 79.67%) in this district. Livelihoods are dominated by agriculture, petty trade, and informal labour. Access to quality healthcare has historically been constrained by poor road connectivity, limited institutional infrastructure, and sociocultural barriers to women's healthcare-seeking autonomy.

Chapar: Chapar lies within Chapar-Salkocha Development Block and functions as a local commercial and administrative centre. It is characterised by a mixture of agrarian villages and semi-urban localities. The two study villages — Puthimari and Kazipara — represent this diversity and allow for meaningful comparative analysis within the same administrative circle.

Puthimari is an agrarian Muslim village where farming is the dominant occupation. Family sizes tend to be larger, with higher birth orders recorded than in Kazipara . Husbands' mean marriage age (25.2 years) is higher than in Kazipara , but wives' mean marriage age (18.1 years) indicates that early marriage remains common. Individual cases of marriage as young as 15 and 16 years are recorded in this village, reflecting the persistence of child marriage in agrarian Muslim settings in the region. Household incomes are predominantly in the range of ₹90,000–₹1,40,000 per annum.

Kazipara is a semi-urban Muslim locality with greater occupational diversification — drivers, shopkeepers, masons, factory workers, and some college-educated residents. It shows the highest immunization coverage of the two sites and the most systematic engagement with ASHA workers, reflecting the advantages of proximity to urban health infrastructure and relatively higher household incomes clustering around ₹1,30,000 – ₹2,00,000 annually.

METHODOLOGY

Research Design: This study employs a cross-sectional, descriptive household survey design with a comparative component across two village communities.

Data Collection: Household-level data were collected from 50 households in each of the two villages (N = 100). Each household selected had at least one child below five years of age. Data were gathered through structured interview schedules administered to mothers or primary caregivers, with supporting information from husbands where available. The interview schedule captured: parental education levels, age at marriage (husband and wife), household income and occupation, birth order of the index child, birth weight, present age of the child, immunization status (full, partial, or none), vaccines received (Polio at birth, BCG at birth, Measles, Vitamin A, Hepatitis B), source of motivation for immunisation, awareness of ORS, regularity of hospital antenatal visits, first feed given to newborn, duration of exclusive breastfeeding, post-birth health issues of child, and utilisation of government health services.

Sampling: A purposive household sampling approach was used, targeting households with children below 60 months in each settlement. In cases of multiple eligible households, selection was systematically rotated across different sections of each village to ensure spatial representation.

Data Analysis: Data were tabulated, coded, and subjected to descriptive statistical analysis including frequency distributions, percentages, and cross-tabulations. Annual household incomes were grouped into four analytical brackets — Below ₹1,00,000; ₹1,00,000–₹1,50,000; ₹1,50,001–₹2,00,000; and Above ₹2,00,000 — and cross-tabulated against immunization status to assess the income-immunization relationship. Inter-village comparisons were computed to identify differential patterns in immunization behaviour, child care practices, and health scheme utilisation.

Ethical Considerations: All respondents participated voluntarily. Informed verbal consent was obtained prior to each interview. No personally identifiable data are disclosed in this report.

RESULTS

Sample Profile: Parental Education

Educational attainment varies across the two villages and between spouses within each community.

Table 1: Parental Education Levels by Village

Education Level	Puthimari – Husband	Puthimari – Wife	Kazipara – Husband	Kazipara – Wife
No formal schooling (Nil)	6 (12.0%)	10 (20.0%)	2 (4.0%)	4 (8.0%)
Lower Primary (up to Class 4)	14 (28.0%)	18 (36.0%)	8 (16.0%)	12 (24.0%)
Middle / Upper Primary (Class 5–8)	12 (24.0%)	10 (20.0%)	14 (28.0%)	16 (32.0%)
Secondary / H.S.L.C. (Class 9–10)	10 (20.0%)	8 (16.0%)	16 (32.0%)	12 (24.0%)
Higher Secondary and above	8 (16.0%)	4 (8.0%)	10 (20.0%)	6 (12.0%)

In Puthimari, illiteracy and lower-primary education dominate among both husbands and wives, with 20% of wives having no formal schooling. Kazipara shows a comparatively better educational distribution, with 32% of husbands having reached secondary level and 20% having attained higher secondary or above. Female education in both villages lags behind male education, consistent with the broader gender gap in educational attainment documented for Dhubri district in NFHS-5 data.

Age at Marriage

Table 2: Mean Age at Marriage by Village

Village	Mean Age at Marriage – Husband (years)	Mean Age at Marriage – Wife (years)
Puthimari	25.2	18.1
Kazipara	24.3	19.9
Overall (N=100)	**24.8**	**19.0**

The mean age at marriage for wives across both villages (19.0 years) is close to the legal minimum, with individual cases in Puthimari where wives were married as young as 15 and 16 years. This persistence of child marriage in agrarian settings is a recognised structural risk factor for high birth orders, reduced maternal autonomy in health decisions, and eventual immunization dropout. Kazipara shows a comparatively healthier mean wife marriage age of 19.9 years, reflecting the moderating influence of semi-urban residence and greater female educational attainment.

Household Income and Occupation

In Puthimari, farming is the overwhelmingly dominant occupation, supplemented in some households by daily-wage labour and petty trade. Household incomes are predominantly in the range of ₹90,000–₹1,40,000 per annum, with a notable proportion below ₹1,00,000. Kazipara shows greater occupational diversity, with drivers, masons, shopkeepers, and some government-employed persons. Reported household incomes in Kazipara cluster around ₹1,30,000–₹2,00,000 annually, generally higher than Puthimari. This income differential between the two villages is an important contextual variable shaping healthcare access, scheme utilisation, and immunization behaviour, as the income-immunization cross-tabulation in Section 5.12 demonstrates.

Birth Order

Birth orders recorded in the dataset reveal that many Puthimari mothers are on their third, fourth, or fifth child. Several respondents are on their fifth or sixth child, and birth orders as high as 14 and 15 are recorded in a few cases, reflecting the persistence of large family sise norms in this agrarian community. Kazipara shows relatively lower birth orders, with the majority of index children being the first or second child. This difference in birth order distribution between the two villages is a critical explanatory variable for the immunization coverage gap documented in Section **Immunization Status (below)**.

Birth Weight of Children

Birth weight is an important proxy for antenatal nutrition and the quality of maternal healthcare received during pregnancy.

Table 3: Birth Weight of Index Children by Village

Birth Weight Category	Puthimari (n=50)	Kazipara (n=50)	Total (N=100)
2.5 to 3 kg (Normal)	41 (82.0%)	44 (88.0%)	85 (85.0%)
Above 3 kg	9 (18.0%)	3 (6.0%)	12 (12.0%)
2.0 to 2.5 kg (Borderline)	0 (0.0%)	3 (6.0%)	3 (3.0%)
Below 2 kg (Low Birth Weight)	0 (0.0%)	0 (0.0%)	0 (0.0%)

The majority of children in both villages were born within the normal 2.5–3 kg range — 82% in Puthimari and 88% in Kazipara . No cases of low birth weight (below 2 kg) were recorded in either village, which is a positive indicator of antenatal care quality. Puthimari shows a higher proportion of above-3 kg births (18%), possibly reflecting the agricultural

food environment of farming households. Three borderline cases (2.0–2.5 kg) are recorded in Kazipara , though all remain above the clinical low birth weight threshold.

Immunization Status
This is the central outcome variable of the study.

Table 4: Immunization Status by Village

Immunization Status	Puthimari (n=50)	Kazipara (n=50)	Total (N=100)
Fully Immunised	34 (68.0%)	49 (98.0%)	83 (83.0%)
Partially Immunised	13 (26.0%)	1 (2.0%)	14 (14.0%)
Not Immunised	3 (6.0%)	0 (0.0%)	3 (3.0%)

The aggregate full immunization rate of 83.0% across both villages is broadly in line with the NFHS-5 Assam state average of 83.7%, though the inter-village disparity is striking. Kazipara 's near-complete immunization rate of 98% stands in sharp contrast to Puthimari's 68% full coverage and 6% non-immunization rate — the only village in the study where non-immunised children are recorded. The three non-immunised children in Puthimari all belonged to mothers with high birth orders (5th child or above) who cited previous experience as their motivational source, suggesting a pattern of habituation-based complacency in high-parity households where later-schedule vaccines are progressively neglected.
Vaccines Covered: All fully immunised households in both villages reported receiving the standard five vaccines tracked in the dataset: Polio at birth, BCG at birth, Measles, Vitamin A, and Hepatitis B — fully aligned with the Universal Immunization Programme schedule.

Motivational Sources for Immunisation
Understanding who motivates parents to seek immunization is critical for programme planning and service delivery design.

Table 5: Primary Motivation for Immunization Uptake by Village

Motivation Source	Puthimari (n=50)	Kazipara (n=50)	Total (N=100)
Health Personnels / ASHA Workers	36 (72.0%)	49 (98.0%)	85 (85.0%)
Previous Experience (own)	10 (20.0%)	0 (0.0%)	10 (10.0%)
Husband	4 (8.0%)	0 (0.0%)	4 (4.0%)
Family Members	0 (0.0%)	1 (2.0%)	1 (1.0%)

Health personnels — primarily ASHA workers and sub-centre health staff — are the single most important motivational source across both villages, accounting for 85.0% of all immunization decisions. In Kazipara , this figure reaches 98%, underscoring the near-total role of ASHA workers in immunization motivation in that community. The contrast with Puthimari is revealing: 20% of Puthimari respondents cited previous experience as their motivational source — a group that overlaps substantially with partially and non-immunised cases — suggesting that reliance on experiential habit rather than active ASHA engagement correlates strongly with immunization dropout in this village. Four Puthimari households cited the husband as the motivational source, pointing to male gatekeeping of health decisions in a subset of agrarian households, which further reduces the autonomous health-seeking capacity of mothers.

Antenatal Hospital Visits, ORS Awareness, and Maternal Health Behaviour
Antenatal care (ANC) and awareness of basic child health interventions like Oral Rehydration Solution (ORS) are widely used as proxy indicators of maternal health literacy and health-seeking behaviour. The following tables present a detailed breakdown of these variables across both study villages.

Table 6a: Regularity of Antenatal Hospital Visits by Village

Response	Puthimari (n=50)	Kazipara (n=50)	Total (N=100)
Yes — visited hospital regularly during pregnancy	50 (100.0%)	50 (100.0%)	100 (100.0%)
No — did not visit regularly	0 (0.0%)	0 (0.0%)	0 (0.0%)

Every single respondent across both villages — regardless of income, educational level, or birth order — confirmed that they visited a government hospital or sub-centre regularly for antenatal checkups during their most recent pregnancy.

This universality of ANC uptake is particularly significant in Puthimari, where educational attainment is lower and a proportion of households fall below ₹1,00,000 annual income. It indicates that ASHA worker mobilisation and scheme incentives (Mamoni, JSY) have successfully normalised institutional antenatal care-seeking even in low-income agrarian households.ss

Table 6b: Awareness of Oral Rehydration Solution (ORS) by Village

Response	Puthimari (n=50)	Kazipara (n=50)	Total (N=100)
Yes — aware of ORS and its use	50 (100.0%)	50 (100.0%)	100 (100.0%)
No — not aware of ORS	0 (0.0%)	0 (0.0%)	0 (0.0%)

ORS awareness is similarly universal. All 100 respondents demonstrated knowledge of Oral Rehydration Solution — the WHO-recommended first-line intervention for managing diarrhoeal dehydration in infants and children under five. This level of awareness in a low-literacy, low-income Muslim-majority rural setting reflects decades of community health education through ASHA workers, sub-centre outreach, and health campaigns under the National Health Mission (NHM). ORS awareness is particularly notable in Puthimari, where 20% of wives have no formal schooling, confirming that oral health communication through frontline workers can successfully transmit critical child care knowledge independent of formal education.

Table 6c: First Feed Given to Newborn by Village

First Feed	Puthimari (n=50)	Kazipara (n=50)	Total (N=100)
Breast milk (colostrum)	50 (100.0%)	50 (100.0%)	100 (100.0%)
Formula / Animal milk / Water / Other	0 (0.0%)	0 (0.0%)	0 (0.0%)

All 100 mothers across both villages reported that breast milk — specifically colostrum, the thick yellowish first milk — was the first feed given to their newborn. No case of prelacteal feeding (formula, honey, animal milk, or plain water before breastfeeding) was recorded. This is fully compliant with WHO and Government of India guidelines on early initiation of breastfeeding within one hour of birth. Colostrum feeding provides critical passive immunity to the newborn and its universal practice in both communities reflects both cultural tradition and successful health messaging.

Table 6d: Duration of Breastfeeding by Village

Duration of Breastfeeding	Puthimari (n=50)	Kazipara (n=50)	Total (N=100)
Up to 1 year	2 (4.0%)	6 (12.0%)	8 (8.0%)
1 to 2 years	8 (16.0%)	22 (44.0%)	30 (30.0%)
2 to 3 years	28 (56.0%)	18 (36.0%)	46 (46.0%)
More than 3 years / Continuing	12 (24.0%)	4 (8.0%)	16 (16.0%)

A striking difference between the two villages emerges in breastfeeding duration. In Puthimari, 80% of mothers breastfed for 2 years or beyond, with 24% continuing past 3 years. In Kazipara , breastfeeding duration is comparatively shorter — 44% of mothers stopped between 1 and 2 years. This pattern reflects the interplay of several factors: in Puthimari, limited access to affordable supplementary foods and the cultural norm of extended nursing (reinforced by Islamic tradition encouraging nursing up to two years) sustain longer breastfeeding. In Kazipara , higher household incomes, greater female labour participation, and better access to complementary foods likely facilitate earlier weaning without nutritional compromise.

Post-Birth Health Issues

The overwhelming majority of children across both villages (97 of 100 respondents) reported no significant health issues after birth. In Puthimari, three respondents noted fever, cold, and cough as post-birth ailments for which they had sought treatment through government facilities. This low reported morbidity rate, while subject to potential recall bias, is broadly consistent with the high breastfeeding coverage, universal antenatal care, and largely adequate immunization recorded across the study area.

Utilisation of Government Health Schemes

Puthimari demonstrates near-universal utilisation of government maternal health schemes, with most households accessing some combination of Mamoni (Assam's conditional cash transfer for institutional delivery), Adoroni (state-level nutrition benefit), and Janani Suraksha Yojana or JSY (central government cash incentive for institutional delivery). This active scheme engagement in Puthimari suggests that despite the lower immunization rate in that village, the formal health system has successfully created a transactional relationship with households through financial incentives — a foundation that can be built upon for improving immunization completion.

In Kazipara , a large majority of households reported not accessing any specifically named government scheme, despite near-universal immunization and antenatal care-seeking. This likely reflects higher household incomes in Kazipara

reducing the perceived necessity of scheme-linked cash transfers, and possibly a greater tendency among semi-urban respondents to self-finance healthcare rather than depend on government assistance.

Immunization Status and Household Income: A Cross-Tabulation

Household income is one of the most robust structural determinants of health-seeking behaviour in the existing literature. The present data allow for a cross-tabulation of immunization status against reported annual household income for both villages, enabling an assessment of whether economic standing shapes immunization outcomes in this Muslim community of Chapar area.

Table 7: Immunization Status by Household Annual Income — Puthimari (n=50)

Annual Income Bracket	Total HHs	Fully Immunised	Partially Immunised	Not Immunised
Below ₹1,00,000	14	7 (50.0%)	5 (35.7%)	2 (14.3%)
₹1,00,000 – ₹1,50,000	22	16 (72.7%)	5 (22.7%)	1 (4.5%)
₹1,50,001 – ₹2,00,000	10	8 (80.0%)	2 (20.0%)	0 (0.0%)
Above ₹2,00,000	4	3 (75.0%)	1 (25.0%)	0 (0.0%)
Total	**50**	**34 (68.0%)**	**13 (26.0%)**	**3 (6.0%)**

In Puthimari, a clear income gradient in immunization coverage is visible. Among the lowest income households (below ₹1,00,000 annually), full immunization coverage drops to just 50%, with 14.3% of children completely unimmunised — the most vulnerable sub-group in the entire study. As income rises to the ₹1,00,000–₹1,50,000 bracket, full immunization improves markedly to 72.7%. In the ₹1,50,001–₹2,00,000 range, it reaches 80% and non-immunization disappears entirely.

This gradient confirms that economic deprivation is a significant independent risk factor for immunization incompleteness in the agrarian Muslim context of Puthimari, operating through multiple pathways: inability to bear indirect costs of health facility visits such as transport and lost wages, lower maternal decision-making authority in income-poor households, and reduced access to information networks.

Table 8: Immunization Status by Household Annual Income — Kazipara (n=50)

Annual Income Bracket	Total HHs	Fully Immunised	Partially Immunised	Not Immunised
Below ₹1,00,000	4	4 (100.0%)	0 (0.0%)	0 (0.0%)
₹1,00,000 – ₹1,50,000	16	15 (93.8%)	1 (6.3%)	0 (0.0%)
₹1,50,001 – ₹2,00,000	20	20 (100.0%)	0 (0.0%)	0 (0.0%)
Above ₹2,00,000	10	10 (100.0%)	0 (0.0%)	0 (0.0%)
Total	**50**	**49 (98.0%)**	**1 (2.0%)**	**0 (0.0%)**

In Kazipara , the income-immunization relationship takes a different form. Even the lowest income households (below ₹1,00,000) in Kazipara show 100% full immunisation, and only one household across the entire village records partial immunisation. This near-universal coverage across all income brackets indicates that in Kazipara , income is not the binding constraint on immunization behaviour. Rather, the near-total ASHA worker motivation rate (98%), lower birth orders, and semi-urban facility access effectively neutralise the income effect, ensuring that even the poorest Kazipara households achieve full immunisation.

Table 9: Combined Income-Immunization Cross-Tabulation — Both Villages (N=100)

Annual Income Bracket	Total HHs	Fully Immunised	Partially Immunised	Not Immunised
Below ₹1,00,000	18	11 (61.1%)	5 (27.8%)	2 (11.1%)
₹1,00,000 – ₹1,50,000	38	31 (81.6%)	6 (15.8%)	1 (2.6%)
₹1,50,001 – ₹2,00,000	30	28 (93.3%)	2 (6.7%)	0 (0.0%)
Above ₹2,00,000	14	13 (92.9%)	1 (7.1%)	0 (0.0%)
Total	**100**	**83 (83.0%)**	**14 (14.0%)**	**3 (3.0%)**

The combined cross-tabulation reveals a pronounced and consistent income gradient across the full study sample. Full immunization coverage rises from 61.1% among the poorest households (below ₹1,00,000) to 93.3% in the ₹1,50,001–₹2,00,000 bracket and 92.9% among the highest income group. Conversely, non-immunization is entirely concentrated in the two lowest income brackets — all three non-immunised children belong to households earning below ₹1,50,000 annually, and two of the three are in below-₹1,00,000 households in Puthimari. This finding confirms that economic vulnerability is the primary structural predictor of immunization failure in this study population and identifies below-₹1,00,000 households in Puthimari as the highest-priority target group for programme intensification.

DISCUSSION

The data from 100 Muslim households across Puthimari and Kazipara reveal a differentiated and analytically rich picture of child care and immunization behaviour that challenges uniform characterisations of Muslim communities in Dhubri as either engaged or disengaged with public health systems.

The Immunization Coverage Gap: The 30 percentage point gap in full immunization coverage between Kazipara (98%) and Puthimari (68%) is the most significant finding of this study. This gap cannot be attributed to a single factor but emerges from the convergence of several structural and behavioural determinants. Kazipara 's advantages are multiple: higher household incomes, greater occupational diversification, lower birth orders, near-complete ASHA worker motivation, and semi-urban proximity to health facilities. Puthimari's vulnerabilities are equally interconnected: predominantly agrarian, lower incomes, higher birth orders including very high-parity households, younger wife marriage ages, and a significant proportion of immunization decisions driven by habitual past experience rather than active health worker engagement.

The three non-immunised children in Puthimari all belong to high-parity mothers (5th child and above) who relied on previous experience as their guide, suggesting that in large families, immunization fatigue is a real phenomenon — parents assume that since earlier children were immunised, the same will happen for later ones, without actively tracking vaccination schedules. This is a well-documented behavioural pattern in high-birth-order contexts across South Asia (Acharya et al., 2019; NFHS-5 district data).

Income as the Primary Structural Predictor: The income-immunization cross-tabulation constitutes the most policy-relevant finding of this study. In Puthimari, full immunization coverage among below-₹1,00,000 households is just 50% — a figure far below both the state average and the overall study average. The income gradient is steep and consistent: each upward income step is accompanied by a meaningful improvement in full immunization rates. This confirms that economic deprivation operates as a structural barrier to immunization completion through multiple pathways — transport costs to health facilities, opportunity cost of lost daily wages, lower maternal health-seeking autonomy in income-poor households, and reduced social network integration that limits exposure to health information. The Kazipara data provide a critically important comparator: in that semi-urban village, where ASHA engagement is near-total and facility access is relatively easy, income effects on immunization are substantially neutralised. This comparison demonstrates that structural income disadvantage is not destiny — it can be overcome through sufficiently intensive frontline health worker engagement and facility access improvement.

ASHA Workers as the Central Institution: The data confirm with remarkable consistency that ASHA workers are the backbone of immunization motivation in both communities. Over 85% of immunization decisions across both villages are attributed to health personnels. Sustaining and strengthening ASHA coverage, particularly through targeted follow-up of high-birth-order and low-income households in Puthimari, is the most actionable short-term policy lever available. The four Puthimari households citing the husband as motivational source — all of which contain partially immunised children — point to a secondary concern around male gatekeeping in health decisions, which may require community-level engagement strategies targeting men.

Education and Age at Marriage: Female education remains low in both villages, particularly in Puthimari where 20% of wives have no formal schooling. Early marriage — with individual cases at 15 and 16 years in Puthimari — compounds educational disadvantage by truncating schooling and reducing maternal health agency. The mean wife marriage age of 18.1 years in Puthimari, with individual cases below the legal minimum, represents a legal and social protection failure with direct health consequences.

Universal Antenatal Care and ORS Awareness: The 100% antenatal hospital visit rate and 100% ORS awareness across both villages are achievements deserving explicit recognition. They demonstrate that basic health awareness and institutional care-seeking have been successfully normalised among Muslim households in this Dhubri area — contradicting the persistent policy discourse that Muslim communities in Assam's border districts are resistant to modern healthcare. These universal indicators suggest that the foundation for full immunization coverage exists in both communities; the remaining gap in Puthimari is primarily a matter of last-mile follow-up and income support rather than fundamental health system rejection.

CONCLUSION

This study offers empirically grounded, village-level evidence on child care and immunization practices among Muslim communities of Chapar area, Dhubri district, Assam, based on 100 households across Puthimari and Kazipara . Several significant conclusions emerge.

First, the aggregate full immunization coverage of 83.0% across both villages is broadly in line with the NFHS-5 Assam average and challenges the assumption that Muslim communities in Dhubri's border belt are systematically disengaged from immunization services.

Second, a striking 30 percentage point inter-village gap in full immunization coverage — Kazipara at 98% versus Puthimari at 68% — reveals that geographic proximity does not guarantee equivalent health outcomes. Settlement type, occupational structure, birth order distribution, household income, and ASHA worker engagement are the decisive differentiating factors.

Third, household income is the primary structural predictor of immunization failure in this study population. Full immunization coverage among below-₹1,00,000 households in Puthimari stands at only 50%, and all three non-immunised children in the study belong to households earning below ₹1,50,000 annually. This income gradient has direct programme implications and identifies the poorest Puthimari households as the highest-priority intervention target.

Fourth, ASHA workers are the decisive institution behind immunization motivation in both communities, accounting for 85% of immunization decisions overall and 98% in Kazipara . Sustaining and intensifying ASHA engagement in high-birth-order, low-income Puthimari households is the most actionable programmatic lever for improving coverage.
Fifth, universal antenatal care-seeking and ORS awareness confirm that foundational health knowledge and care behaviour are deeply embedded in both communities, providing a strong platform from which immunization completion rates can be improved through targeted intervention.
Sixth, early marriage among women in Puthimari and the prevalence of high birth orders are structural risk factors that require intersectoral responses involving education, legal enforcement of the Prohibition of Child Marriage Act, and community-level engagement with religious and social leaders.

Policy Recommendations:

- Intensified and more frequent ASHA home visits to below-₹1,00,000 and high-birth-order households in Puthimari, with specific focus on tracking later-schedule vaccines such as Measles, Vitamin A second dose, and Hepatitis B booster.
- Introduction of transport support or micro-incentives specifically targeting households below ₹1,00,000 annual income to overcome indirect cost barriers to immunization facility visits.
- Integration of immunization tracking into scheme disbursement visits by ASHA workers and Auxiliary Nurse Midwives (ANMs), using Mamoni and JSY beneficiary lists as the primary outreach register.
- Community-level immunization registers to track partial coverage and enable proactive outreach to households with incomplete vaccination schedules.
- Awareness campaigns addressing child marriage and its health consequences, engaging local religious institutions and village councils in both sites.
- Male engagement strategies targeting husbands in households where male gatekeeping has been identified as the primary decision-making mechanism for immunisation.

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