

Factors influencing the Third Birth Transition among Kuki Tribal Women in Manipur

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ABSTRACT

India's fertility transition has progressed substantially, yet higher-order fertility remains influenced by socio-economic inequalities and culturally embedded reproductive preferences, particularly among tribal populations. This study examines the socio-demographic determinants of third-birth transition among Kuki tribal women in the hill districts of Manipur, with particular emphasis on the role of marriage timing, women's education, reproductive exposure and the sex composition of existing children. A community-based cross-sectional study was conducted among 941 eligible women with at least two live births in Chandel, Churachandpur, Senapati and Sadar Hills during March-December 2018. Data were collected through a pre-tested semi-structured schedule and analysed using descriptive statistics and binary logistic regression, including stepwise modelling. Third-birth transition was defined as having three or more live births. In the full model, wife's age at marriage ($p = 0.012$), present age ($p = 0.004$) and sex of the second child (male versus female: $p = 0.035$) were significant predictors. Stepwise analysis identified wife's education as an important early predictor, while the final model retained age at marriage ($p = 0.003$), present age ($p = 0.001$) and sex of the second child ($p = 0.032$) as significant determinants. Women marrying later had lower odds of third-birth transition, whereas greater reproductive exposure increased the likelihood. Having a male second child substantially reduced the probability of a third birth, indicating the continuing influence of son preference. The findings demonstrate that fertility transition among Kuki women is shaped by both demographic exposure and gendered reproductive preferences. Strengthening female education, promoting delayed marriage, expanding culturally appropriate family-planning services and addressing son preference through gender-equitable interventions may support further fertility decline in Manipur's tribal communities.

Keywords: Fertility transition, Third-birth transition, Kuki women, Son preference, Manipur

INTRODUCTION

India has undergone a substantial fertility transition, characterised by declining fertility and increasing acceptance of smaller family norms; however, the pace of transition remains uneven across social groups, economic conditions and geographical regions. The National Population Policy (NPP), 2000 placed replacement-level fertility and long-term population stabilisation at the centre of national demographic policy, while the National Rural Health Mission (NRHM), 2005 aimed to expand reproductive, maternal and child-health services, particularly in rural and underserved areas. Despite these initiatives, fertility has remained relatively high among disadvantaged and tribal populations because of persistent inequalities in education, economic opportunities, health infrastructure, contraceptive access, age at marriage and reproductive-health services, together with culturally embedded fertility norms. Bhagat and Chattopadhyay (2004) demonstrated substantial variation in fertility across tribal communities, highlighting the importance of community-specific analysis rather than reliance on aggregate Scheduled Tribe estimates. This issue is particularly relevant in North-East India, where tribal communities possess distinctive social, cultural, kinship and demographic characteristics. In Manipur, the Kuki tribes, concentrated mainly in the

hill districts, represent an important population for understanding fertility transition. Their traditional social structure has been influenced by expanding education, changing occupations, improved communication and transportation, government development programmes and changing religious and social practices. These transformations may have altered marriage patterns, reproductive preferences and family-size norms. Thus, the fertility behaviour of Kuki women provides an important context for examining how socio-economic change interacts with reproductive decision-making in a culturally distinctive tribal population.

Women's education is widely recognised as a major determinant of fertility decline. Jejeebhoy (1995) argued that education promotes women's autonomy, reproductive knowledge and participation in fertility decisions, while encouraging delayed marriage, later childbearing and smaller families. However, fertility beyond the first two births is also strongly influenced by the sex composition of existing children and son preference. Clark (2000) demonstrated that preference for sons can influence reproductive decisions when couples seek to achieve a desired number of sons within a smaller family. Similarly, Nath and Land (2008) found that couples with two surviving sons were less likely to proceed to a third birth than couples without a surviving son, confirming the importance of child-sex composition in higher-order fertility. In Manipur, Nath and Singh (2012) identified son preference and other socio-demographic characteristics as important determinants of fertility differentials and third-birth transition. More recently, Mishra and Parasnis (2022) showed that Indian couples with two daughters were substantially more likely to intend a third child than couples with mixed-sex children, although education and media exposure weakened this effect. These findings indicate that the transition from the second to the third birth is a critical stage at which emerging small-family norms may interact with persistent gender preferences. Nevertheless, empirical evidence on this process among Kuki tribal women remains limited, particularly regarding the combined effects of education, age at marriage, age at first birth, economic status, reproductive exposure, child survival and the sex composition of the first two children. Accordingly, the present study examines the socio-demographic determinants of third-birth transition among Kuki tribal women in Manipur, with particular emphasis on whether the absence of a son among the first two children increases the likelihood of a third birth and whether this relationship varies by women's education and other socio-demographic characteristics. The study aims to provide community-specific evidence for understanding fertility persistence and informing culturally appropriate reproductive-health and family-planning interventions in Manipur's hill districts.

LITERATURE REVIEW

The recent findings indicate that India's fertility transition has advanced substantially, but important differentials persist by education, socio-economic status, region and social group. Arokiasamy (2007) emphasised the changing relationship between family-size norms, fertility decline and the sex composition of children, while James (2011) identified female education and broader socio-economic transformation as major drivers of fertility reduction. Guilmoto (2012) conceptualised the interaction between declining fertility and persistent son preference as a "fertility squeeze," whereby couples seek both a small family and a preferred number of sons. Using NFHS-4 data, Bose and Trent (2020) found that son preference and the number of sons already born significantly influence reproductive intentions, while higher female education reduces gender-biased preferences. Chao, Guilmoto, KC and Ombao (2020) similarly demonstrated that declining fertility combined with son preference can intensify sex-ratio imbalances as couples attempt to achieve their preferred sex composition within smaller families. Aksan (2021), analysing successive NFHS rounds, showed that the sex composition of previous births continued to influence higher-order fertility and that son preference remained important despite overall fertility decline. Particularly relevant to third-birth behaviour, Mishra and Parasnis (2022) found that Indian couples with two daughters were 7–9 times more likely to intend a third child than couples with a mixed-sex composition; however, education and media exposure weakened this association without eliminating the influence of son preference. Evidence from Manipur reinforces these national patterns. Nath and Singh (2012) identified son preference as an important determinant of fertility differentials and third-birth transition, while Asghar (2014) reported that age at marriage, age at first conception, education, occupation, family structure and income influenced fertility among Manipuri Muslim women, with son preference contributing to higher fertility. Devi, Singh and Singh (2021) documented continuing fertility transition across generations in Manipur and highlighted the importance of education, marriage patterns and socio-economic conditions. Gogoi, Hazarika, Sanu and Hazarika further showed that education,

income, religion, residence and community influence son preference, indicating substantial socio-cultural variation in reproductive attitudes. Collectively, these studies suggest that educational and socio-economic advancement generally promotes fertility decline, whereas son preference and an undesired sex composition of existing children can encourage additional births.

The transition from the second to the third birth therefore represents a critical stage of fertility decline because it combines desired family size with reproductive exposure, sex composition, child survival and socio-economic circumstances. Anukriti (2018) demonstrated that fertility incentives interact with gender preferences, indicating that reproductive decisions are shaped by both economic motivations and cultural expectations. Kumar and Sinha (2020) similarly emphasised the continuing influence of son preference where families attempt to reconcile smaller family norms with the perceived economic and social value of sons. Bose and Trent (2020), Chao et al. (2020) and Aksan (2021) collectively show that gender preferences become particularly consequential at higher birth orders as couples seek to achieve a preferred sex composition within a declining family size. Mishra and Parasnis (2022) further established that the absence of a son among the first two children can substantially increase the intention to have a third child, even after accounting for socio-economic characteristics. Evidence from tribal populations also suggests that fertility transition is constrained by educational disadvantage, economic insecurity, geographical isolation and limited reproductive-health services. Bhagat and Chattopadhyay (2004) demonstrated considerable heterogeneity in tribal fertility, supporting the need for community-specific analysis rather than reliance on aggregate Scheduled Tribe estimates. Child survival is another relevant mechanism: higher infant and child mortality may encourage replacement births, whereas improved survival can facilitate smaller family norms. Thus, existing research points to three interconnected determinants of third-birth transition namely socio-economic transformation, reproductive exposure and gender preference. Nevertheless, most available evidence is based on national surveys or broad social categories, and relatively little research specifically examines Kuki tribal women in the hill districts of Manipur. In particular, the joint effects of women's and husbands' education, age at marriage, age at first birth, economic status, child survival and the sex composition of the first two children remain inadequately documented. The present study addresses this gap by examining the socio-demographic determinants of third-birth transition among Kuki women, with particular emphasis on whether having no son among the first two children increases the likelihood of a third birth and how this relationship varies across socio-demographic characteristics.

OBJECTIVES

The present study aims to examine the socio-demographic determinants of third-birth transition among Kuki tribal women in the hill districts of Manipur. Specifically, it seeks to assess the effects of women's and husbands' age at marriage, present age, educational attainment, household economic status, family type and desired number of sons on the likelihood of having a third or higher-order birth. Particular emphasis is placed on determining whether the sex of the second child, especially the absence of a son among the first two children, significantly increases the probability of proceeding to a third birth. The study also aims to identify the most influential predictors through binary and stepwise logistic regression and provide community-specific evidence for understanding fertility persistence and strengthening culturally appropriate reproductive-health and family-planning interventions.

MATERIALS AND METHODS

A community-based cross-sectional study was conducted among 941 eligible mothers having at least two live births in the hill areas of Manipur, covering Chandel, Churachandpur, Senapati and Sadar Hills, from March to December 2018. A cluster sampling design was adopted, with clusters defined according to Population of Manipur, 2008 (Government of Manipur). Primary data were collected using a pre-tested, semi-structured interview schedule. For the present study, the Kuki tribal population comprised Kuki, Thadou, Vaiphei, Mate, Zou, Paite, Haokip, Gangte, Saikot, Hmar and Simte communities, grouped together on the basis of broadly shared racial and cultural characteristics. Descriptive and inferential statistical methods were supplemented by binary logistic regression to identify socio-demographic determinants of third-birth transition. The dependent variable was coded 1 for women with three or more live births and 0 for those with a maximum of two live births. Explanatory variables included spouses' age at marriage, wife's current age, sex of the second child, spouses' education, monthly family income, family type and desired number of sons. Categorical variables were dummy-coded, while education was ordinal

coded from 1 (below matriculation) to 4 (graduate or above). Associations were assessed using Wald statistics, odds ratios (ORs) and 95% confidence intervals (CIs). Analyses were performed using SPSS.

ANALYSIS AND RESULTS

Binary logistic regression was employed to identify the socio-demographic factors associated with third-birth transition, defined as having three or more live births compared with having at most two. The results presented in Table 1 indicate that wife's age at marriage, present age and sex of the second child were statistically significant predictors, whereas husband's age at marriage, educational attainment of both spouses, family income, family type and desired number of sons did not attain statistical significance at the 5% level. Wife's age at marriage showed an inverse association with third-birth transition (OR = 0.548, $p = 0.012$; 95% CI: 0.342-0.879). Thus, each additional year in the wife's age at marriage was associated with approximately 45.2% lower odds of experiencing a third or higher-order birth, suggesting that delayed marriage may shorten reproductive exposure and constrain higher-order fertility. In contrast, present age of the wife was positively associated with the outcome (OR = 1.627, $p = 0.004$; 95% CI: 1.169-2.264), indicating approximately 62.7% higher odds of third-birth transition for each additional year of age, although this association should be interpreted in the context of cumulative reproductive exposure. The sex of the second child also emerged as a significant determinant. Taking a female second birth as the reference category, a male second birth was associated with substantially lower odds of proceeding to a third birth (OR = 0.152, $p = 0.035$; 95% CI: 0.026-0.861), corresponding to an estimated 84.8% reduction in the odds. This finding provides evidence of a sex-composition effect and suggests that couples whose second child is a son may be more likely to stop childbearing, whereas those without a son may be more likely to proceed to a third birth. The odds ratios for wife's education (OR = 1.024, $p = 0.968$), husband's education (OR = 0.581, $p = 0.314$), monthly family income (OR = 0.961, $p = 0.281$), joint family structure (OR = 0.735, $p = 0.741$), wife's desired number of sons (OR = 2.917, $p = 0.161$) and husband's desired number of sons (OR = 3.381, $p = 0.225$) were not statistically significant. Although the latter two variables showed positive associations, their confidence intervals included unity, indicating insufficient evidence of independent effects in the full model.

Table - 1: Odds Ratios of Factors on Third Birth Transition

Variable	OR (e^{β})	P-value	95%CI for OR
Age at marriage of wife (in year)	0.548	0.012	0.342, 0.879
Age at marriage of husband (in year)	1.176	0.358	0.824, 1.678
Present age of wife (in yr)	1.627	0.004	1.169, 2.264
Sex of 2 nd birth: Female	1.000		
Male	0.152	0.035	0.026, 0.861
Education of wife (in level)	1.024	0.968	0.341, 3.075
Education of husband (in level)	0.581	0.314	0.191, 1.768
Monthly family income (in '000 Rs.)	0.961	0.281	0.890, 1.038
Type of family: Nuclear	1.000		
Joint	0.735	0.741	0.121, 4.468
Desire number of son by wife	2.917	0.161	0.651, 3.287
Desire number of son by husband	3.381	0.225	0.478, 4.175
Constant	0.004	0.174	

The stepwise logistic regression in Table 2 provides further insight into the relative contribution of individual predictors. In Step 1, wife's education entered the model as the only significant predictor (OR = 0.518, $p = 0.010$; 95% CI: 0.316-0.849), indicating that higher educational level was associated with approximately 48.2% lower odds of third-birth transition. When present age was introduced in Step 2, both variables remained significant: present age was positively associated with third-birth transition (OR = 1.214, $p = 0.006$), while wife's education retained a protective effect (OR = 0.427, $p = 0.005$). In Step 3, wife's age at marriage became significant (OR = 0.698, $p = 0.004$), while present age remained positively associated (OR = 1.451, $p = 0.002$) and education continued to show an inverse association (OR = 0.508, $p = 0.043$). These findings indicate that educational attainment and reproductive exposure jointly contribute to third-birth behaviour. In the final Step 4 model, wife's age at marriage (OR = 0.684, $p = 0.003$; 95% CI: 0.529-0.885) and present age (OR = 1.518, $p = 0.001$; 95% CI: 1.184-1.947) remained significant. The sex of the second child also became a significant predictor (OR = 0.196, $p = 0.032$; 95% CI: 0.043-0.894), confirming the importance of child-sex composition. Wife's education, although retained in the final model, was no longer statistically significant (OR = 0.567, $p = 0.105$). Thus, the analysis suggests that marriage timing, reproductive exposure and the sex composition of existing children are the principal determinants of third-birth transition among the Kuki women studied. In particular, the substantially lower odds associated with having a male second child indicate that the absence of a son among the first two children may encourage continued childbearing, highlighting the demographic relevance of son preference in the fertility transition of Kuki tribal communities.

Table - 2: Stepwise Odds Ratios of Factors on Third Birth Transition

Step	Variable	OR (e^{β})	P-value	95%CI for OR
1	Education of wife (in level)	0.518	0.010	0.316, 0.849
	Constant	10.924	0.000	
2	Present age of wife	1.214	0.006	1.058, 1.394
	Education of wife (in level)	0.427	0.005	0.236, 0.772
	Constant	0.071	0.163	
3	Age at marriage of wife	0.698	0.004	0.558, 0.874
	Present age of wife	1.451	0.002	1.159, 1.816
	Education of wife (in level)	0.508	0.043	0.264, 0.977
	Constant	0.163	0.356	
4	Age at marriage of wife	0.684	0.003	0.529, 0.885
	Present age of wife	1.518	0.001	1.184, 1.947
	Sex of 2 nd live birth	0.196	0.032	0.043, 0.894
	Education of wife (in level)	0.567	0.105	0.286, 1.124
	Constant	0.278	0.548	

DISCUSSION

The present study demonstrates that the transition from the second to the third birth among Kuki tribal women is shaped primarily by marriage timing, reproductive exposure and the sex composition of existing children. Wife's age at marriage was consistently and significantly negatively associated with third-birth transition in both the full model (OR = 0.548, $p = 0.012$) and the final stepwise model (OR = 0.684, $p = 0.003$). This finding indicates that later marriage substantially reduces the likelihood of progressing to a third birth, most plausibly through a

reduction in the duration of reproductive exposure. The result is consistent with the broader fertility-transition literature, which identifies delayed marriage and later initiation of childbearing as important mechanisms of fertility decline. In contrast, present age of the wife showed a positive association with third-birth transition (OR = 1.627 in the full model and OR = 1.518 in the final model), reflecting the cumulative opportunity for childbearing among older women and the greater likelihood that they have already experienced multiple births. These findings are broadly consistent with Devi, Singh and Singh (2021), who observed continuing changes in reproductive behaviour across generations in Manipur and emphasised the importance of marriage patterns and socio-economic transformation. The study also provides important evidence regarding the role of women's education. Although wife's education was not significant in the full model, it was the strongest predictor in the initial stepwise model (OR = 0.518, $p = 0.010$) and remained significant through Step 3. Its protective association suggests that increasing educational attainment may reduce the likelihood of higher-order fertility by encouraging later marriage, increasing reproductive knowledge and strengthening acceptance of smaller families. This finding supports the argument of Jejeebhoy (1995) concerning women's autonomy and reproductive decision-making and is also consistent with James (2011) and Mishra and Parasnis (2022), who highlighted education as an important factor weakening fertility and gender-biased reproductive preferences. The disappearance of statistical significance for education in the final model, however, suggests that part of its effect may operate indirectly through marriage timing and reproductive exposure rather than independently. The non-significant effects of husband's education, household income and family type further indicate that, within this particular tribal population, women's demographic and reproductive characteristics may be more immediately relevant to third-birth behaviour than these household-level characteristics.

A particularly important finding concerns the sex of the second child. In the full logistic model, having a male second child was associated with markedly lower odds of proceeding to a third birth (OR = 0.152, $p = 0.035$), while the final stepwise model produced a similar result (OR = 0.196, $p = 0.032$). Thus, compared with women whose second child was female, those whose second child was male had substantially lower odds of experiencing a third or higher-order birth. This pattern strongly suggests that the absence of a son among the first two children can encourage continued childbearing, providing evidence of the influence of son preference and desired child-sex composition on higher-order fertility among Kuki women. The finding closely corresponds with Nath and Land (2008), who reported that couples with two surviving sons were less likely to proceed to a third birth, and with Nath and Singh (2012), who identified son preference as an important determinant of third-birth transition in Manipur. It is also highly consistent with Mishra and Parasnis (2022), who found that couples with two daughters were substantially more likely to intend a third child than couples with a mixed-sex composition. Similarly, Guilмото (2012) described this interaction between declining family size and persistent son preference as a "fertility squeeze," whereby couples attempt to reconcile a small family with the desired number of sons. The non-significant effects of the stated desired number of sons in the present study should not necessarily be interpreted as evidence that son preference is absent; rather, actual sex composition of children appears to be a more proximate determinant of reproductive behaviour than stated preferences. The present findings indicate that Kuki women are participating in the broader fertility transition, but the emerging smaller-family norm continues to interact with culturally embedded gender preferences. The persistence of third births when a son has not been achieved has important implications for population stabilisation and reproductive-health programmes. Interventions should therefore combine female education, delayed marriage and accessible family-planning services with culturally sensitive efforts to address son preference and promote gender-equitable reproductive norms.

CONCLUSION AND IMPLICATION

This research concludes that third-birth transition among Kuki tribal women in the hill districts of Manipur is influenced primarily by marriage timing, reproductive exposure and the sex composition of existing children. Women marrying at older ages had significantly lower odds of progressing to a third birth, whereas increasing present age was associated with higher odds, reflecting the cumulative effect of reproductive exposure. Women's education showed a protective effect in the stepwise analysis, although its independent influence diminished after controlling for age and marriage timing. Most importantly, the sex of the second child emerged as a significant determinant: women whose second child was male had substantially lower odds of proceeding to a third birth than

those whose second child was female. This indicates that the absence of a son among the first two children may encourage continued childbearing, demonstrating that son preference remains relevant even within an emerging small-family norm. Conversely, husband's education, household income, family type and stated desire for sons did not show statistically significant independent effects in the full model.

These findings have important implications for fertility-transition and reproductive-health policy in tribal areas of Manipur. Efforts to strengthen population stabilisation should extend beyond the provision of contraceptive services and address the underlying socio-cultural and demographic determinants of higher-order fertility. Promoting girls' education, encouraging delayed marriage and supporting informed reproductive decision-making can reduce prolonged reproductive exposure and facilitate adoption of smaller family norms. At the same time, family-planning programmes should recognise that couples without a son may be particularly likely to continue childbearing. Consequently, culturally sensitive interventions addressing son preference, gender-equitable norms and the social value attached to sons are essential. Counselling and reproductive-health services should emphasise informed and voluntary fertility choices without coercion or gender discrimination. Given the considerable diversity among tribal communities, interventions should be locally designed and community-based rather than relying solely on broad Scheduled Tribe-level strategies. The study therefore provides community-specific evidence that the fertility transition among Kuki women is progressing, but remains conditioned by gender preference and reproductive exposure. Integrating female education, delayed marriage, accessible contraception, gender-equity programmes and culturally appropriate counselling could help consolidate the transition towards smaller families while improving reproductive autonomy and supporting the broader objectives of population stabilisation in Manipur.

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