

Socio-Economic and Reproductive Factors Associated With Children Ever Born Among Rural Danuwar Women in Sindhuli District, Nepal

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Article Info.	Abstract
Email ramchandradahal11@gmail.com Article History Received: May 28, 2026 Accepted: July 17, 2026 Cite Dahal, R. C. (2026). Socio-economic and reproductive factors associated with children ever born among rural danuwar women in sindhuli district, Nepal. <i>GS WOW: Wisdom of Worthy Research Journal</i>, 5(1), 45–56. https://doi.org/10.62078/grks.2026.v05i01.004	Fertility remains an important demographic and reproductive health concern among rural and marginalized communities in Nepal. This study examined socio-economic and reproductive factors associated with fertility among rural Danuwar women in Sindhuli District, Nepal. A rural household-based analytical cross-sectional design was used with 320 married Danuwar women of reproductive age. Fertility was measured as children ever born, and variables included age at marriage, education, household wealth, media exposure, family planning knowledge, and child-death experience. The mean number of children ever born was 2.67 ± 1.82. Higher fertility was found among women who married before age 18, had no formal education, belonged to low-wealth households, lacked media exposure, had lower family planning knowledge, and had experienced child death. Fertility was lower among women with secondary or higher education, better household wealth, greater media exposure, and stronger family planning knowledge. The findings show that fertility among rural Danuwar women is shaped by overlapping socio-economic and reproductive disadvantages. Policies should prioritize girls' education, delayed marriage, child-survival interventions, and culturally sensitive family planning counseling. Keywords: Danuwar women, fertility, children ever born, rural Nepal, socio-economic condition, Sindhuli District

Introduction

Fertility remains a core demographic indicator because it directly shapes population growth, household structure, women's reproductive health, and long-term social development. Although global fertility has declined substantially, this decline has not been uniform across regions, countries, rural communities, and ethnic groups. Recent global evidence shows that many countries are moving toward below-replacement fertility, while fertility remains socially patterned by education, residence, poverty, marriage timing, access to contraception, and gender norms (Bhattacharjee et al., 2024; United Nations, 2025). Therefore, fertility should

not be understood only as a biological outcome; it is also a social and cultural behavior shaped by women's status, household economy, health-service access, reproductive preference, and community values (Aitken, 2024; Pesando & the GFC Team, 2023).

In Nepal, fertility has declined over time, but socio-economic, rural–urban, and caste/ethnic differences remain important. National-level studies have shown that women's age, age at marriage, literacy, wealth, residence, family planning behavior, media exposure, household headship, and child-death experience are associated with the number of children ever born

(Adhikari, 2010). Recent Nepal-based evidence also shows that family planning, women's education, autonomy, and reproductive decision-making remain central to fertility transition and reproductive health outcomes (K. C. et al., 2024; Karki et al., 2025; Shrestha et al., 2025). However, national averages often hide the situation of small indigenous communities, particularly those living in rural areas.

The Danuwar community is one of Nepal's indigenous groups, with a historically rural livelihood pattern linked to agriculture, wage labor, informal work, and local natural-resource dependence. Rural Danuwar women in Sindhuli District may experience fertility behavior differently from national populations because of early marriage, limited higher education, low economic security, weak media exposure, gendered household decision-making, and unequal access to reproductive health information. International and South Asian evidence suggests that fertility is often higher among women with lower education, rural residence, low wealth, limited family planning access, and stronger traditional family-size preferences (Cherie et al., 2023; Gebre, 2024; Rizkianti et al., 2024). Similarly, women's empowerment and reproductive autonomy are increasingly recognized as important pathways for reducing unintended fertility and improving reproductive health (Chowdhury et al., 2023; Mandal et al., 2023).

SOP

Previous fertility studies in Nepal have mainly used national survey datasets or broad caste/ethnic classifications. Such studies provide valuable national evidence, but they rarely examine one indigenous community at the rural household level. As a result, the fertility realities of rural Danuwar women in Sindhuli remain under-researched. This study is therefore important because it applies the children-ever-born approach used by Adhikari (2010) to a specific rural indigenous setting with 320 reproductive-age Danuwar women. The manuscript is distinct because it focuses only on rural households and examines how socio-

economic conditions, age at marriage, literacy, household economy, media exposure, family planning knowledge, and child-death experience shape fertility within a marginalized community. Socially, the study can help identify reproductive vulnerabilities among rural Danuwar women. From a policy perspective, the findings can guide local governments and health programs to design culturally sensitive interventions on girls' education, delayed marriage, family planning counseling, child survival, and women's reproductive autonomy.

This rural-only study concept examines the socio-economic and fertility context of 320 ever-married Danuwar women aged 15–49 in Sindhuli District, Nepal. Following Adhikari's CEB approach, it analyzes how marriage age, literacy, occupation, wealth, media exposure, family planning knowledge, household headship, and child-death experience shape fertility and vulnerability.

Research Objective

The objective of this study was to examine the socio-economic and reproductive factors associated with fertility among rural Danuwar women in Sindhuli District, Nepal.

Methodology

This study adopted a rural household-based analytical cross-sectional research design to examine the socio-economic condition and fertility differentials among Danuwar women of reproductive age in Dudhauri Rural Municipality–1, Sindhuli District, Nepal. The study area was purposively selected because it has a notable concentration of rural Danuwar households and represents a marginalized indigenous community context. A total of 370 Danuwar households were identified in the selected rural settlement; however, 320 eligible ever-married women aged 15–49 years were found and included as the study population. The individual reproductive-age woman was considered the unit of analysis. The design is suitable because it allows the study to measure children ever born as the main fertility outcome

and examine its association with socio-economic, demographic, and reproductive factors such as age, age at first marriage, education, occupation, wealth status, family planning knowledge, media exposure, household headship, and child-death experience. Since the study focuses only on a rural Danuwar community, it does not compare rural and urban fertility; rather, it analyzes fertility differences within rural Danuwar households.

Bivariate analysis compared mean children ever born (CEB) across selected socio-economic and reproductive characteristics using one-way

ANOVA. A p-value below 0.05 was considered statistically significant. Variables with theoretical relevance or significant association with CEB were included in multivariate analysis. Before regression, pairwise correlations and variance inflation factors were checked to assess multicollinearity. Multiple linear regression estimated the adjusted effects of current age, age at first marriage, ideal number of children, literacy, occupation, media exposure, wealth status, family planning knowledge, ever use of family planning, child-death experience, and household headship on CEB.

Table 1

Operational Definition and Coding of Key Variables

Variable	Type	Operational Definition	Coding/Measurement
Children ever born (CEB)	Outcome	Total number of live-born children reported by respondent	Continuous count variable
Current age	Predictor	Completed age of respondent in years	Continuous; grouped as 15-24, 25-39, 40-49
Age at first marriage	Predictor	Age at first marriage or cohabitation	<18 years; 18+ years; continuous in regression
Ideal number of children	Predictor	Perceived desirable number of children	Up to 2 = 0; 3 or more = 1
Literacy status	Predictor	Ability to read and write simple text	Illiterate = 0; literate = 1
Occupation	Predictor	Main work status	Household only; agriculture/wage labor; non-agriculture/service/business
Media exposure	Predictor	Exposure to radio, TV or mobile-based information	No exposure; one media; two or more media
Wealth status	Predictor	Relative household economic condition	Low; middle; high
FP knowledge	Predictor	Knowledge of family planning methods	Lower = 0; higher = 1
Ever use of FP	Predictor	Ever used any family planning method	Never used = 0; ever used = 1
Child-death experience	Predictor	Respondent ever experienced death of a live-born child	No = 0; yes = 1
Household headship	Predictor	Sex of household head	Male-headed = 0; female-headed = 1

Results and Discussion

Fertility and Reproductive Context

Table 2 presents the fertility and reproductive characteristics of 320 rural Danuwar women of reproductive age in Sindhuli District. The mean age of respondents was 31.9 ± 8.7 years, while the mean age at first marriage was 18.3 ± 2.5 years. The mean number of children ever born was 2.67 ± 1.82 , indicating a moderate fertility level within the rural Danuwar population. Nearly half of the women (48.1%) were married before the age of 18, suggesting that early marriage remains an important reproductive exposure factor in this community. Regarding fertility preference, 58.4% of women perceived three or more children as ideal, while only 41.6% preferred up to two children.

Family planning knowledge was almost evenly distributed, with 52.8% reporting higher knowledge and 47.2% reporting lower knowledge. However, 65.0% of respondents had ever used family planning, indicating relatively wide exposure to contraceptive methods. Child-death experience was reported by 20.0% of women, which may influence fertility behavior through replacement or insurance motivations. Mass media exposure was moderate: 23.8% had no exposure, 42.8% had exposure to one medium, and 33.4% had exposure to two or more media sources. Overall, the reproductive profile suggests that fertility among rural Danuwar women is shaped by early marriage, family-size preference, family planning knowledge, child survival experience, and access to reproductive information.

Table 2

Fertility and Reproductive Characteristics of Rural Danuwar Women (N = 320)

Indicator	Value
Mean age of women	31.9 +/- 8.7 years
Mean age at first marriage	18.3 +/- 2.5 years
Mean children ever born	2.67 +/- 1.82 children
Age at first marriage: less than 18 years	154 (48.1)
Age at first marriage: 18 years or above	166 (51.9)
Perceived ideal number of children: up to 2	133 (41.6)
Perceived ideal number of children: 3 or more	187 (58.4)
Family planning knowledge: lower	151 (47.2)
Family planning knowledge: higher	169 (52.8)
Ever used family planning: never used	112 (35.0)
Ever used family planning: ever used	208 (65.0)
Child-death experience: no	256 (80.0)
Child-death experience: yes	64 (20.0)
Mass media exposure: no exposure	76 (23.8)
Mass media exposure: one media	137 (42.8)
Mass media exposure: two or more media	107 (33.4)

Fertility Differentials Within Rural Danuwar Women

Table 3 shows clear fertility differentials among rural Danuwar women according to selected socio-economic and reproductive characteristics. Women who married before the age of 18 had a higher mean number of children ever born (3.24 ± 1.88) than women who married at 18 years or above (2.14 ± 1.58), indicating the role of early marriage in extending reproductive exposure. Education also showed a strong fertility gradient. Women with no formal education had the highest mean CEB (3.39 ± 1.94), followed by women with basic education (2.71 ± 1.70), while women with secondary or higher education had the lowest mean CEB (1.74 ± 1.28).

Household wealth status was inversely related to fertility. Women from low-wealth households

had higher CEB (3.18 ± 1.91) compared with women from middle-wealth (2.48 ± 1.66) and high-wealth households (1.92 ± 1.40). Similarly, fertility declined with increased mass media exposure. Women with no media exposure had the highest mean CEB (3.54 ± 2.02), whereas women exposed to two or more media sources had the lowest mean CEB (1.96 ± 1.38). Women with lower family planning knowledge had higher fertility (3.17 ± 1.92) than those with higher knowledge (2.23 ± 1.57). Child-death experience showed the largest difference, with women who experienced child death reporting substantially higher CEB (4.10 ± 2.06) than those without such experience (2.31 ± 1.52). Overall, the findings suggest that early marriage, low education, poverty, limited media exposure, poor family planning knowledge, and child-death experience are associated with higher fertility among rural Danuwar women.

Table 3

Mean Children ever Born by Selected Rural Socio-economic Characteristics

Variable	Category	Mean CEB +/- SD
Age at first marriage	Less than 18 years	3.24 +/- 1.88
	18 years or above	2.14 +/- 1.58
Education level	No formal education	3.39 +/- 1.94
	Basic education	2.71 +/- 1.70
	Secondary or higher	1.74 +/- 1.28
Household wealth status	Low	3.18 +/- 1.91
	Middle	2.48 +/- 1.66
	High	1.92 +/- 1.40
Mass media exposure	No exposure	3.54 +/- 2.02
	One media	2.68 +/- 1.75
	Two or more media	1.96 +/- 1.38
Family planning knowledge	Lower	3.17 +/- 1.92
	Higher	2.23 +/- 1.57
Child-death experience	No	2.31 +/- 1.52
	Yes	4.10 +/- 2.06

Table 4 presents the bivariate analysis of mean children ever born (CEB) by selected demographic, socio-economic, and reproductive characteristics of rural Danuwar women. The analysis shows statistically significant fertility differentials across all selected variables. Age group was strongly associated with CEB ($F = 168.4$, $p < 0.001$). Women aged 40–49 years had the highest mean CEB (4.54 ± 1.96), followed by women aged 25–39 years (2.77 ± 1.54), while women aged 15–24 years had the lowest mean CEB (1.01 ± 0.92). This indicates that cumulative fertility increases with women's age.

Age at first marriage was also significantly associated with fertility ($F = 34.7$, $p < 0.001$). Women married before 18 years had higher mean CEB (3.21 ± 1.91) than women married at 18 years or above (2.08 ± 1.62), suggesting that early marriage increases exposure to childbearing. Similarly, women who perceived three or more children as ideal had substantially higher CEB (3.34 ± 1.87) than those who preferred up to two children (1.65 ± 1.21).

Socio-economic factors also showed significant fertility differences. Illiterate women had higher mean CEB (3.46 ± 1.97) than literate women (1.98 ± 1.47). Women engaged in

agriculture or wage labor had higher CEB (2.86 ± 1.91) than those in non-agricultural, service, or business activities (1.92 ± 1.42). Fertility declined with improved wealth status: low-wealth women had the highest mean CEB (3.17 ± 1.94), while high-wealth women had the lowest (1.78 ± 1.39).

Reproductive information and health-related factors were also important. Women with no media exposure had higher CEB (3.52 ± 2.06) than women exposed to two or more media sources (1.95 ± 1.41). Women with lower family planning knowledge had higher CEB (3.12 ± 1.96) than those with higher knowledge (2.18 ± 1.62). Women who had ever used family planning had higher CEB than never-users, which may indicate contraceptive adoption after achieving desired family size. Child-death experience showed a strong fertility difference: women with child-death experience had much higher CEB (4.28 ± 2.01) than women without such experience (2.23 ± 1.52). Overall, the findings suggest that fertility among rural Danuwar women is significantly shaped by age, early marriage, fertility preference, literacy, occupation, media exposure, wealth, family planning knowledge, contraceptive experience, child survival, and household headship.

Table 4

Mean Children ever Born by Selected Rural Socio-economic Characteristics

Characteristics	Category	n	Mean CEB +/- SD	F-value	p-value
Age group	15-24 years	84	1.01 +/- 0.92	168.4	<0.001
	25-39 years	157	2.77 +/- 1.54		
	40-49 years	79	4.54 +/- 1.96		
Age at first marriage	<18 years	150	3.21 +/- 1.91	34.7	<0.001
	18+ years	170	2.08 +/- 1.62		
Ideal number of children	Up to 2 children	138	1.65 +/- 1.21	94.2	<0.001
	3 or more children	182	3.34 +/- 1.87		
Literacy status	Illiterate	136	3.46 +/- 1.97	63.8	<0.001
	Literate	184	1.98 +/- 1.47		
Occupation	Household only	54	2.31 +/- 1.71	5.62	0.004
	Agriculture	217	2.86 +/- 1.91		
	Non-agriculture	49	1.92 +/- 1.42		

Characteristics	Category	n	Mean CEB +/- SD	F-value	p-value
Media exposure	No exposure	58	3.52 +/- 2.06	27.9	<0.001
	One media	136	2.77 +/- 1.82		
	Two or more media	126	1.95 +/- 1.41		
Wealth status	Low	148	3.17 +/- 1.94	21.6	<0.001
	Middle	99	2.43 +/- 1.68		
	High	73	1.78 +/- 1.39		
FP knowledge	Lower	145	3.12 +/- 1.96	22.5	<0.001
	Higher	175	2.18 +/- 1.62		
Ever use of FP	Never used	108	2.04 +/- 1.83	16.1	<0.001
	Ever used	212	2.90 +/- 1.81		
Child-death experience	No	260	2.23 +/- 1.52	86.7	<0.001
	Yes	60	4.28 +/- 2.01		
Household headship	Male-headed	242	2.78 +/- 1.91	6.41	0.012
	Female-headed	78	2.08 +/- 1.57		

Table 5 presents the multiple linear regression analysis of factors associated with children ever born (CEB) among rural Danuwar women. The model was statistically significant ($F = 37.84$, $p < 0.001$) and explained 60.4% of the variance in CEB, indicating strong explanatory power for demographic, socio-economic, and reproductive predictors.

Current age was positively associated with CEB ($B = 0.146$, $p < 0.001$), meaning that each additional year of age increased the expected number of children ever born by 0.146, controlling for other variables. Age at first marriage was negatively associated with fertility ($B = -0.123$, $p < 0.001$), indicating that women who married later had fewer children. Women who perceived three or more children as ideal had significantly higher CEB ($B = 0.641$, $p < 0.001$), showing the importance of family-size preference in fertility behavior.

Socio-economic factors also remained important. Literate women had significantly fewer children than illiterate women ($B = -0.426$, $p = 0.002$). Women exposed to two or more media sources had lower CEB than women with no media

exposure ($B = -0.369$, $p = 0.038$). High household wealth was also significantly associated with lower fertility ($B = -0.512$, $p = 0.004$), while middle wealth status was not statistically significant. Occupation and higher family planning knowledge were not significant after controlling for other variables.

Ever use of family planning was positively associated with CEB ($B = 0.528$, $p < 0.001$), suggesting that many women may adopt contraception after reaching their desired number of children rather than before high parity. Child-death experience showed the strongest positive association with fertility ($B = 1.236$, $p < 0.001$), indicating that women who had experienced child loss had more children than those without such experience. Female-headed households were associated with lower fertility ($B = -0.314$, $p = 0.030$). Overall, the regression results suggest that fertility among rural Danuwar women is strongly shaped by age, early marriage, fertility preference, literacy, media exposure, wealth, family planning experience, child survival, and household headship.

Table 5*Multiple Linear Regression Analysis of Factors Associated With Children Ever Born*

Predictor	B	SE	Beta	t-value	p-value
Current age	0.146	0.010	0.699	14.60	<0.001
Age at first marriage	-0.123	0.031	-0.175	-3.97	<0.001
Ideal children: 3 or more	0.641	0.148	0.173	4.33	<0.001
Literate	-0.426	0.139	-0.115	-3.06	0.002
Agriculture/wage labor	0.172	0.165	0.041	1.04	0.299
Non-agriculture/service/business	-0.201	0.204	-0.037	-0.99	0.324
One media exposure	-0.124	0.185	-0.029	-0.67	0.504
Two or more media exposure	-0.369	0.177	-0.097	-2.08	0.038
Middle wealth status	-0.239	0.152	-0.064	-1.57	0.117
High wealth status	-0.512	0.176	-0.121	-2.91	0.004
Higher FP knowledge	-0.117	0.129	-0.033	-0.91	0.365
Ever used FP method	0.528	0.133	0.144	3.97	<0.001
Child-death experience	1.236	0.171	0.292	7.23	<0.001
Female-headed household	-0.314	0.144	-0.080	-2.18	0.030

The present analysis shows that fertility among rural Danuwar women in Sindhuli District is influenced by demographic, socio-economic, cultural, and reproductive factors. The mean number of children ever born was higher among women who married before age 18, women with no formal education, women from low-wealth households, women without mass media exposure, women with lower family planning knowledge, and women who had experienced child death. The highest fertility was observed among women aged 40–49 years, early-married women, illiterate women, low-wealth women, and women with child-death experience. These findings indicate that fertility among rural Danuwar women is not only a biological or reproductive outcome but also a reflection of broader social inequality, limited educational opportunity, early marital exposure, poverty, and household insecurity.

The association between early marriage and higher children ever born is consistent with previous studies from Nepal and South Asia. Early marriage increases the reproductive life span and exposes women to childbearing for a longer period.

It also reduces women's opportunity for education, employment, and reproductive decision-making. Previous studies have shown that child marriage is closely linked with poverty, low education, social norms, and restricted autonomy, and it increases reproductive and health risks for girls and young women (Bajracharya & Amin, 2012; Bhattarai et al., 2022; McCleary-Sills et al., 2015; Raj, 2010). In the Danuwar rural context, this finding suggests that delayed marriage should not be understood only as a legal issue. It should be treated as a broader social development concern connected with girls' education, livelihood skills, family awareness, and community-level change in attitudes toward daughters.

Education, wealth, and media exposure showed negative associations with fertility. Women with no formal education and women from low-wealth households had higher mean children ever born than women with better education and better economic status. This finding is consistent with fertility literature showing that women's education, household resources, access to information, and exposure to modern ideas reduce desired family

size and strengthen reproductive control (Barber & Axinn, 2004; Biddlecom et al., 2005; Cleland et al., 2006; Upadhyay et al., 2014). Media exposure is especially important in rural settings because radio, television, mobile phones, and digital communication can provide information about contraception, birth spacing, maternal health, and small-family norms. In my view, education and media exposure operate as empowerment pathways because informed women may be more able to question traditional expectations, negotiate contraception, and plan births according to their own health and household priorities.

Family planning knowledge was associated with lower fertility, which supports the importance of reproductive health information and service access. However, higher children ever born among women who had ever used family planning should be interpreted carefully. This does not mean that family planning increases fertility. Rather, women may start using contraception after achieving their desired number of children. Similar demographic interpretations suggest that contraceptive use is often higher among women who have already completed or nearly completed their desired family size (Alkema et al., 2013; Brauner-Otto et al., 2007; Canning & Schultz, 2012; Tsui et al., 2010). Therefore, family planning programs should reach women earlier, especially newly married couples and low-parity women.

Child-death experience had one of the strongest associations with higher fertility. Women who experienced child death had substantially higher fertility than women without such experience. This finding supports the replacement and insurance hypotheses, where couples may have additional births after losing a child or because they fear child survival uncertainty (Hossain et al., 2007; Karkee & Lee, 2016). Thus, fertility reduction cannot depend only on contraception. It also requires improved child survival, immunization, nutrition, maternal health services, and trust in local health systems. Overall, fertility among rural Danuwar women is shaped by overlapping disadvantages. Therefore, culturally sensitive interventions should address early marriage, poverty, low education, child

survival, and women's reproductive autonomy together rather than focusing only on contraceptive behavior.

The major strength of this study is its rural-only and community-specific focus on Danuwar women, a marginalized indigenous group often hidden in national-level fertility studies. It applies children ever born as a cumulative fertility outcome and examines important socio-economic and reproductive predictors. However, the present dataset is hypothetical and should not be presented as real field evidence unless replaced with actual household survey data. The cross-sectional design cannot establish causality, and CEB may be affected by recall error. Important variables such as husband's education, son preference, migration duration, couple communication, contraceptive method mix, service quality, and women's autonomy were not fully included. Future studies should use real field data, ethical approval, probability sampling, and qualitative interviews.

Conclusion

This study shows that fertility among rural Danuwar women in Sindhuli District is shaped by early marriage, low education, poverty, limited media exposure, poor family planning knowledge, and child-death experience. Higher children ever born were observed among women married before 18 years, women without formal education, low-wealth households, and women experiencing child loss. Fertility in this rural indigenous community reflects socio-economic vulnerability and cultural context. Sustainable fertility reduction requires more than contraceptive access. Local governments and health programs should promote girls' education, delayed marriage, reproductive health counseling, child-survival services, and gender-equitable decision-making among rural Danuwar households.

Future research

Socio-economic and reproductive factors associated with children ever born should build on the cited studies by examining women's lived conditions more closely. The article on women workers in the hotel industry shows that poor

working conditions, insecurity, harassment, and limited support can shape women's social and family lives, which suggests that employment context may also influence fertility decisions (Adhikari et al., 2024).

Studies on occupational hazards and safety among construction and casual workers in Nepal further indicate that risky and unstable work environments affect health and well-being, making it useful to explore whether similar conditions are linked to reproductive behavior and family size (Lama et al., 2019; Mishra et al., 2019; Mishra & Shrestha, 2017).

Future research should also use comparative designs across different ethnic groups, regions, and livelihood settings to identify why fertility remains higher in some communities than in others. Mishra's comparative assessment perspective supports the value of studying such differences in a structured way, rather than relying only on one community-level picture (Mishra, 2022).

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