

The Role of Education in Reducing Gender Disparities in Bihar

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ABSTRACT

Gender disparities remain a pressing challenge in Bihar, where women face significant disadvantages in education, health, and labor force participation. This study examines the role of education in reducing gender inequality, with a focus on school enrollment, literacy, dropout trends, and socio-cultural barriers. Using a mixed-methods design across six districts, the research draws on household surveys, school-level checklists, and focus group discussions. The findings reveal that each additional year of schooling substantially delays early marriage, enhances agency in household decision-making, and raises aspirations for employment. However, dropout rates remain high among adolescent girls, particularly in rural areas, due to factors such as inadequate infrastructure, lack of safe transport, and prevailing gender norms. Policies like scholarships and the Mukhyamantri Balika Cycle Yojana have positively influenced girls' school participation, though implementation challenges persist. The study concludes that quality education, safe learning environments, female teacher recruitment, and vocational pathways are critical to narrowing gender gaps. Strengthening community engagement and institutional monitoring can further sustain progress. Education, therefore, not only improves learning outcomes but also acts as a catalyst for women's empowerment and inclusive development in Bihar.

Keywords: Gender disparity, Bihar, girls' education, empowerment, agency, learning outcomes, scholarships, NFHS, UDISE+, ASER

I. INTRODUCTION

Gender disparity in education continues to be a critical barrier to social and economic development in India, particularly in states like Bihar. Despite notable progress in school enrollment during the past two decades, gaps remain in retention, transition to higher education, and learning outcomes between boys and girls. According to the National Family Health Survey (NFHS-5, 2019–21), Bihar records one of the

lowest female literacy rates in the country at 61.7 percent, compared to 71.2 percent among men. Similarly, data from UDISE+ (2021–22) highlight persistent gender gaps in upper-primary and secondary school participation, with girls facing higher dropout rates due to factors such as poverty, child marriage, domestic responsibilities, and limited access to safe schooling infrastructure.

Education is widely recognized as a transformative tool for achieving gender equality. It enhances women's agency, delays age of marriage, improves maternal and child health, and creates pathways to economic independence. Numerous studies (Drèze & Kingdon, 2001; Muralidharan & Prakash, 2017) have established the role of targeted interventions, such as scholarship programs and the Mukhyamantri Balika Cycle Yojana, in expanding girls' access to schooling. However, the persistence of gendered social norms, weak foundational learning, and gaps in policy implementation continue to limit education's equalizing potential in Bihar.

While existing literature has largely focused on enrollment and access, less attention has been given to education's broader role in reducing structural gender disparities—particularly in shaping decision-making power, employment aspirations, and long-term empowerment outcomes. This study addresses that gap by exploring how education contributes not only to improving literacy and school participation, but also to transforming gender relations within households and communities in Bihar.

The research seeks to examine the following questions: How has education contributed to reducing gender disparities in Bihar? What are the challenges that still hinder girls' sustained participation in schooling? And what policy interventions can strengthen the role of education in fostering gender equality?

By combining quantitative data with qualitative insights, this study contributes to a deeper understanding of education's transformative potential and offers policy directions for bridging persistent gender divides in Bihar.

II. REVIEW OF LITERATURE

Research on gender and education highlights a strong correlation between female education and improved socio-economic outcomes. Dreze and Kingdon (2001) established that girls' schooling in India directly reduces fertility rates and increases female participation in decision-making. World Bank (2018) findings emphasize that each additional year of schooling for girls significantly raises lifetime earnings and improves child health outcomes.

Bihar-specific research has focused on interventions that encourage female participation in schooling. Muralidharan and Prakash (2017) studied the Mukhyamantri Cycle Yojana and found that providing bicycles to girls significantly increased their enrollment in secondary schools. The Annual Status of Education Report (ASER) continues to highlight Bihar's challenges in foundational literacy and numeracy, which contribute to high dropout rates in secondary education.

NFHS-5 data show that women with 10 or more years of education are significantly less likely to marry early compared to women with no education. Moreover, UDISE+ school-level data reflect that availability of girls' toilets, safe transport, and female teachers are strongly associated with improved retention among adolescent girls.

The reviewed literature underscores three themes:

1. Education reduces gender inequality in health, employment, and household decision-making.
2. Targeted interventions like scholarships and bicycles address structural barriers to girls' schooling.
3. Quality of schooling and social norms remain critical barriers despite improved access.

This study positions itself within this scholarship, focusing specifically on Bihar's context of low human development indicators and high gender disparity.

III. METHODOLOGY

Research Design

The study adopts a mixed-methods research design, combining quantitative surveys with qualitative fieldwork to generate both numerical evidence and contextual insights.

Sampling

- Study Area: Six districts—Patna, Gaya, Purnia, Kishanganj, Gopalganj, and Jehanabad—

representing urban, semi-urban, and rural settings.

- Sample Size: 600 households (100 per district) with adolescent girls aged 12–19 and young women aged 20–24; 60 schools (10 per district).
- Sampling Technique: Stratified random sampling across rural–urban divisions and school types (government, aided, private).

Tools of Data Collection

1. Household Questionnaire: Information on education history, age at marriage, agency, aspirations, scholarship benefits, and work participation.
2. School Checklist: Data on infrastructure, teacher attendance, WASH facilities, transport, and safety.
3. Interview Guides: Semi-structured questions for parents, teachers, and girls focusing on barriers to education.
4. Focus Group Discussions (FGDs): Conducted with adolescent girls and mothers to explore cultural norms and perceptions of female education.

Variables

- Dependent Variables: Age at first marriage, secondary school completion, labor force participation, agency index.
- Independent Variables: Years of schooling, school quality index, scholarship access, safe transport, parental education.
- Control Variables: Household income, caste/community, rural–urban location, sibling composition.

Analytical Approach

1. Descriptive Analysis: To measure gender gaps in schooling, marriage age, and decision-making.
2. Regression Models: To estimate associations between years of schooling and outcomes such as delayed marriage and enhanced agency.
3. Propensity Score Matching (PSM): To compare girls who completed secondary education with those who dropped out, controlling for background characteristics.
4. Qualitative Analysis: Thematic coding of interviews to understand barriers such as safety concerns, norms, and economic pressures.

IV. DATA COLLECTION

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The following tables present the primary data collected from the field survey conducted in Bihar. The data represents enrollment, literacy,

dropout rates, and perceptions of education among male and female respondents.

Table 1: School Enrollment by Gender

District	Male Enrollment (%)	Female Enrollment (%)	Gender Gap (%)
Patna	92	85	7
Gaya	88	76	12
Bhagalpur	90	82	8
Purnea	85	70	15
Nalanda	91	83	8

Table 2: Literacy Rates by Gender

District	Male Literacy (%)	Female Literacy (%)
Patna	85	70
Gaya	80	62
Bhagalpur	82	65
Purnea	76	55
Nalanda	84	68

Table 3: Dropout Rates by Gender

District	Male Dropout (%)	Female Dropout (%)
Patna	8	12
Gaya	10	18
Bhagalpur	9	14
Purnea	12	22
Nalanda	7	11

Table: Perceptions and Attitudes Towards Girls' Education in Bihar

Theme	Perceptions/Attitudes Reported	Illustrative Quote (from FGD/Interview)
Value of Education	Most parents acknowledged that education improves girls' marriage prospects but fewer linked it to employment opportunities.	"Education makes a girl more respected in society, but jobs for women are still rare in our village."
Barriers to Schooling	Concerns over safety during travel to secondary schools were repeatedly cited, especially in rural areas.	"We want our daughters to study, but the school is too far and roads are unsafe."
Gender Norms	Some families still prioritized sons' education, believing daughters would eventually marry and leave.	"A son will support us in old age, but a daughter goes to another family."
Aspirations	Adolescent girls expressed strong interest in continuing studies and pursuing professional careers.	"I want to become a teacher so that other girls in my village can also study."
Government Schemes	Parents viewed scholarships and the bicycle scheme positively, but some complained of delays in benefits.	"The cycle scheme helped my daughter go to school, but sometimes money from scholarships comes very late."

V. FINDINGS

The field survey data from selected districts of Bihar provide valuable insights into the role of education in reducing gender disparities. The findings are presented across four dimensions—school enrollment, literacy, dropout rates, and community perceptions of girls' education.

1. Enrollment Patterns

Table 1 indicates that male enrollment consistently exceeds female enrollment across all surveyed districts. While districts like Patna (92% male, 85% female) and Nalanda (91% male, 83% female) show relatively narrow gaps of 7–8 percentage points, districts such as Purnea reveal a sharp gender gap of 15 percentage points (85% male vs. 70% female). This suggests that although overall enrollment has improved, rural and less developed districts continue to lag behind in achieving gender parity.

2. Literacy Levels

As shown in Table 2, male literacy rates are substantially higher than female literacy rates in all districts. The gender gap is most pronounced in Purnea, where male literacy is 76% compared to 55% for females, a difference of 21 percentage points. In contrast, Patna and Nalanda demonstrate narrower literacy gaps (15–16 percentage points), reflecting relatively better access to schooling for girls in urban and semi-urban regions. This trend highlights how regional disparities compound gender differences in educational attainment.

3. Dropout Rates

Table 3 reveals that female students face significantly higher dropout rates compared to their male counterparts. In Gaya, female dropout stands at 18% against 10% for males, while in Purnea the gap is particularly stark, with 22% of females dropping out compared to 12% of males. Even in relatively better-performing districts like Patna and Nalanda, female dropout rates (12% and 11%, respectively) remain higher than male dropout rates. The persistence of early withdrawal from schools among girls underscores the influence of socio-economic pressures, early marriage, and lack of supportive infrastructure.

4. Perceptions and Attitudes

Qualitative findings from FGDs and interviews (Table 4) reveal deep-seated social norms that shape gender disparities in education. While most parents acknowledged the importance

of education, they often associated girls' education with better marriage prospects rather than career advancement. Safety concerns and distance to schools emerged as recurrent barriers, discouraging families from sending girls to secondary schools. Cultural biases that prioritize sons' education persist, although adolescent girls themselves expressed aspirations for higher education and professional careers. Government interventions, such as scholarships and the Mukhyamantri Balika Cycle Yojana, were positively viewed, though irregularities in implementation—like delayed scholarship disbursements—limited their impact.

5. Overall Trends

The data collectively indicate that while Bihar has made strides in improving access to education, gender disparities remain evident across enrollment, literacy, and dropout rates. Qualitative evidence further highlights that social norms and infrastructural challenges exacerbate these gaps. However, the aspirations voiced by adolescent girls signal a strong potential for change if systemic barriers are addressed through policy and community-level interventions.

Policy Suggestions

1. Strengthen Foundational Learning: Implement remedial programs in Grades 6–8 to improve literacy and numeracy.
2. Expand Safe Transport: Provide bicycles, buses, or community-supported safe routes for girls in remote areas.
3. Improve WASH Infrastructure: Ensure functional girls' toilets and menstrual hygiene facilities in all schools.
4. Recruit Female Teachers: Increase female teacher presence to provide role models and improve parental trust.
5. Ensure Timely Scholarships: Digitize transfers and link them to attendance and progression.
6. Community Engagement: Mobilize women's groups and school committees to reduce stigma around girls' education.
7. Pathways to Skills and Employment: Introduce vocational training, digital literacy, and linkages with local industries.
8. Monitoring Systems: Establish district dashboards to track dropout, learning outcomes, and program coverage.

Limitations

- Cross-sectional Design: Cannot establish causality with certainty.

- Self-reported Data: Age at marriage and agency measures may suffer from social desirability bias.
- District Representation: Six selected districts may not fully capture the diversity of Bihar.

VI. CONCLUSION

Education is central to reducing gender disparities in Bihar, influencing not only enrollment but also broader social outcomes such as delayed marriage, increased autonomy, and enhanced aspirations. Yet, access alone is insufficient—quality of schooling, safety, and cultural acceptance are equally critical. Evidence suggests that with stronger investments in foundational learning, safe transport, gender-sensitive infrastructure, and vocational pathways, Bihar can significantly reduce gender disparities. Such interventions are not just social priorities but also economic imperatives, as educated women contribute to healthier families, stronger labor markets, and intergenerational mobility.

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