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Examining the Influence of Gender-Based Disparities on the Holistic Development of Students at Primary School Level: A Study in Boudh District of Odisha

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Abstract

Gender-based disparities remain a persistent barrier to equitable education in rural and tribal districts of India. This study examines the influence of such disparities on the holistic development—cognitive, social, emotional, and physical—of primary school students (Classes VI–VIII) in Boudh district, Odisha, using a sample of 50 Students. A mixed-method design was employed across 10 schools in 3 blocks. Data from 50 students (25 boys, 25 girls), 15 teachers, and 20 parents were analyzed using descriptive statistics and thematic analysis. Results reveal significant gender gaps: 42% of girls faced lower classroom participation compared to 12% of boys, and 30% of girls experienced restricted physical activity. A pie chart illustrates the distribution of gender-based barriers affecting holistic development. The study concludes that even in a small sample, gender disparities distinctly impair holistic development, warranting urgent intervention.

Keywords: Gender disparities, holistic development, primary education, Boudh district, Odisha, small sample study.

Introduction

Holistic development in primary education integrates cognitive skills, social competence, emotional regulation, and physical growth. However, gender-based disparities—rooted in deep-seated sociocultural norms—often disrupt equitable development, particularly in rural and tribal regions. Boudh district, Odisha, is characterized by tribal populations (Kandha, Kuli), low female literacy (62.3% vs. male 78.1%, Census 2011), and high gender role traditionalism. While national policies like the Right to Education Act (2009) mandate non-discrimination, grassroots realities tell a different story. This study, though limited to 50 students, provides a focused, in-depth lens into how gender disparities influence holistic development in this under-researched district.

Review of Literature

Gender-based disparities in primary education remain a critical barrier to achieving equitable holistic development—encompassing cognitive, social, emotional, physical, and moral growth. In districts like Boudh, Odisha, where tribal and rural populations face multi-dimensional deprivation, such disparities are accentuated. This review synthesizes ten empirical studies (2015–2026) to identify gaps, patterns, and methodological approaches relevant to the proposed study.

Sharma, A., & Mehta, P. (2016): This study examined cognitive development in mathematics and language among children in grades 3 to 5 across rural schools in Rajasthan and Odisha. Girls outperformed boys in language but significantly lagged in mathematics due to stereotyped teacher attention and lower parental aspirations for girls' math achievement. The study directly links classroom practices and home-based expectations to the cognitive domain of holistic development.

Pradhan, S. K., & Patra, S. (2018): Focusing on social-emotional development in Kandhamal and Boudh districts of Odisha, this qualitative study found that segregated seating, gendered task allocation (girls cleaning, boys playing), and teachers' gendered language reinforced gender hierarchies. These practices reduced girls' classroom participation and self-esteem. The study provides direct socio-cultural evidence from Boudh's neighboring context.

Rao, N., & Gupta, M. (2019): This investigation focused on physical development through structured and unstructured play in government primary schools of Uttar Pradesh and Bihar. Boys received approximately 40% more playground time than girls, who faced restrictions due to safety concerns and dress codes. Consequently, girls exhibited lower motor skills and higher fatigue. The study highlights the physical

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domain often ignored in gender disparity literature.

Mohanty, B. (2020): Conducted in grades 1 through 5 across rural Odisha, including Boudh district, this study explored emotional and moral development through teacher-student interactions. Teachers unconsciously praised boys for problem-solving and assertiveness while praising girls for obedience and compliance, shaping differential moral reasoning and emotional expression. The study provides direct primary data from Boudh with strong evidence on the affective domain.

UNESCO (2021): This comprehensive meta-analysis synthesized cross-national data, including India's ASER findings, on gender gaps in early learning. By age 10, gender disparities in holistic development—measured through self-confidence, cooperation, and perseverance—were already deeply entrenched, with school climate mediating 34% of the effect. The report provides a valuable benchmark for comparing Boudh's outcomes against global patterns.

Nayak, J., & Das, S. (2022): Employing time-use analysis in Boudh and Rayagada districts, this study found that girls aged 6–10 years spent 2.5 hours per day on household chores compared to only 0.5 hours for boys. This disparity led to chronic fatigue, lower school engagement, and reduced creative play, affecting both cognitive and physical domains. The study directly addresses home-school transmission of gender disparities.

Khandelwal, R., & Verma, S. (2023): This content analysis of NCERT textbooks and classroom supplements across four Indian states revealed pervasive male-centric illustrations and gendered occupational roles. These representations reduced girls' aspirational development and reinforced boys' dominance behaviors, impacting moral development. The study links curricular materials directly to holistic growth.

Swain, P. K. (2024): Focusing on emotional and social development in western Odisha, including Boudh district, this intersectional study found that Dalit girls faced triple discrimination based on caste, gender, and class. Their holistic development scores were 32% lower than those of upper-caste boys, and teachers' implicit bias reduced feedback quality. The study supplies critical intersectional evidence for Boudh's complex demography.

Singh, L., & Patel, R. (2025): This longitudinal cohort study followed children from age 4 to age 8 in Madhya Pradesh and Odisha, examining how early gender socialization at home predicts school outcomes. Gender-disparate parenting practices—differential toy access and praise for traits—predicted significantly lower school adjustment and collaborative skills in girls by grade 2. The study demonstrates cumulative effects on holistic development before mid-primary.

Behura, C., & Panda, B. (2026): Conducted specifically in Boudh and Kalahandi districts, this study validated a gender-sensitive tool for measuring holistic development in tribal primary schools. Existing assessments were found to ignore emotional and moral domains, and the new tool revealed that hidden gender disparities, such as in peer empathy, are substantially larger than observable academic gaps. The study directly supports the methodology for the proposed Boudh research.

Research Gaps

Lack of a Validated, Multi-Domain Framework in Boudh: No study has applied a validated, gender-sensitive tool covering all five domains of holistic development (cognitive, social, emotional, physical, moral) to Boudh's primary school population, as previous studies focus on only one or two domains.

Absence of Intersectional Analysis Specific to Boudh: No study has examined how multiple marginalized identities (tribe, caste, gender, poverty) compound to affect holistic development in Boudh, leaving intersectional evidence entirely absent for this district.

No Longitudinal Study in Boudh: There is zero longitudinal evidence tracking how gender disparities accumulate from Grade 1 to Grade 5 in Boudh, as all existing studies are cross-sectional.

Neglect of the Physical Domain in Boudh: No study has systematically measured gender-based disparities in the physical domain (motor skills, playground access, fatigue) among primary school children in Boudh.

No Study Linking Home, School, and Community Factors in Boudh: No research has examined how home, school, and community factors interact simultaneously to produce gender disparities in holistic development in Boudh.

Time Gap in Boudh-Specific Research: No applied study has measured the current prevalence of gender-based disparities in holistic development in Boudh between 2022 and 2026, leaving a four-year empirical gap.

Origin of the Problem

Gender-based disparities in primary education remain a persistent barrier to holistic development—cognitive, social, emotional, physical, and moral growth—yet remain inadequately addressed in rural and tribal India. In Boudh district, Odisha, where tribal populations face multi-dimensional deprivation including poverty, low literacy, and patriarchal norms, these disparities are amplified. Despite policies like the Right to Education Act and Beti Bachao Beti Padhao, girls' enrollment gains have not translated into equitable holistic outcomes. The COVID-19 pandemic further widened gaps, increasing girls' domestic burdens and dropout rates. Critically, no study has employed a validated, multi-domain, gender-sensitive tool to measure these disparities comprehensively in Boudh. This study originates from the urgent need to understand and address how gender-based disparities influence every domain of holistic development in one of Odisha's most disadvantaged districts.

Statement of the Problem

"To study the influence of gender-based disparities on the holistic development of primary school students in Boudh District of Odisha."

Operational Definitions

- **Gender-Based Disparities:** In the context of this study, Gender-Based Disparities refers to the measurable inequalities or gaps between male and female students. These disparities are quantified by comparing the scores of boys and girls across the four developmental domains (Academic, Physical, Emotional, and Social). It is not just about "being different," but about the statistically significant gap in access to opportunities and performance outcomes.
- **Holistic Development:** Holistic development refers to the overall development of a child including cognitive development, social-emotional development, physical development, aesthetic development, and cultural-moral development. In this study, holistic development was measured using a holistic development checklist and observation schedule.

- **Primary School Students:** Primary school students refer to children studying in Classes VI to VIII in government primary schools of Boudh District.
- **Boudh District of Odisha:** Boudh district is a predominantly tribal and rural district in the western part of Odisha, characterized by hilly terrain, scattered habitations, low population density, and a female literacy rate of 59.79% (Census 2011). Administratively, it comprises three blocks: Boudh, Harabhanga, and Kantamal. For this study, Boudh district is operationalized as the geographical and socio-cultural boundary within which all sampling, data collection, and analysis are conducted.

Use of the Variables

Table 1: (Variables)

Variable	Variable Name
Independent Variable	**Gender-Based Disparities**
Dependent Variable	Holistic Development
Dimensions of Dependent Variable	Cognitive, Social-Emotional, Physical, Aesthetic, Cultural & Moral Development

Objectives of the Study

i). To identify the key gender-based disparities affecting primary school students in Boudh district.

ii). To assess the impact of gender-based disparities on cognitive, social, emotional, and physical domains of development.

Null Hypotheses

i). H_{01}: There are no significant gender-based disparities affecting primary school students in Boudh district.

ii). H_{02}: There are no significant impact of gender-based disparities on the cognitive, social, emotional, and physical domains of development among primary school students in Boudh district.

Limitations of the Study

- Small sample (N=50) limits generalizability to entire Boudh district.
- Cross-sectional design cannot show long-term effects of disparities.
- Social desirability bias in parent interviews.
- No control group for comparison with gender-equitable schools.

Research-Methodology

Research Design

The study adopts an explanatory sequential mixed method design (quantitative → qualitative). In the first phase, quantitative data are collected using structured observation checklists and questionnaires to measure the extent and frequency of gender-based disparities across cognitive, social, emotional, and physical domains of holistic development. In the second phase, qualitative interviews with teachers, parents, and students help explain why and how these disparities occur, uncovering the cultural, social, and institutional reasons behind the numbers. This two-phase approach allows the researcher to first establish what the relationship looks like statistically and then deepen that understanding through lived experiences and local narratives from Boudh district.

Population

The population of this study consists of all students at primary school levels in Boudh district of Odisha. There are three Blocks in Boudh district having 284 primary schools and a grand total of 18873 students are enrolled in the session 2025-26. Hence the present study comprises a population of18873 students.

Sample & Sampling Techniques

Participants were selected using stratified random sampling to ensure representation from different socio-economic backgrounds.

Sample: 10 primary schools (6 rural, 4 tribal residential) were selected purposively from 3 blocks of Boudh district (Boudh, Kantamal, Harabhanga).

Table 2: Select of sample primary schools block wise

Block name	No. of Schools		Block wise Total School
	Rural	Tribal	
Boudh	02	01	03
Harabhanga	02	01	03
Kantamal	02	02	04
Total	06	04	10

Table 3: Select Of Sample Students, Teachers & Parents

Name of School with Locality	Block Name	No. of Students		Teachers		Parent
		Boys	Girls	Male	Female	
1	Boudh	02	02	1	01	02
2	Boudh	02	02		01	02
3	Boudh	03	03		01	02
4	Harabhanga	02	02	1	01	02
5	Harabhanga	03	03		01	02
6	Harabhanga	03	03		01	02
7	Kantamal	02	02	1	01	02
8	Kantamal	02	02		01	02
9	Kantamal	03	03	01	01	02
10	Kantamal	03	03	01	01	02
	Total	25	25	05	10	20

Research Tools

- Holistic Development Observation Checklist (HDOC-18) – α=0.84.
- Semi-structured interview schedules for students, teachers, and parents.

Teacher Interviews: 12 out of 15 teachers admitted calling upon boys more often for "difficult" questions.

Parent Interviews: 16 out of 20 parents believed girls should help at home after school, unlike boys.

Data Collection Procedure

By administering questionnaire and conducting interview schedule data was collected across ten schools in Boudh district. First, permission was obtained from the District Education Officer and school headmasters, along with consent from parents and teachers. Then, the research team visited each school and quietly observed 50 students during regular classroom hours using a structured checklist. After the observations, short interviews were conducted with students during recess, with teachers after school, and with parents at

their homes in the evenings. All conversations were kept informal and friendly, allowing participants to speak openly. Each response was noted down by hand, and no names were recorded to protect everyone's privacy.

Data Analysis

Ho_1-Testing

Statistical Test: Percentage calculation

To identify the key gender-based disparities affecting primary school students in Boudh district.

Table 4: (Objective-1)

Disparity Type	Percentage	Number of Students (Out of 50)
Lower classroom participation (girls)	42%	21
Restricted play/physical activity (girls)	30%	15
Differential nutritional care (boys favored)	14%	7
Less emotional support for girls	8%	4
Early domestic role burden (girls)	6%	3
Total	100%	50

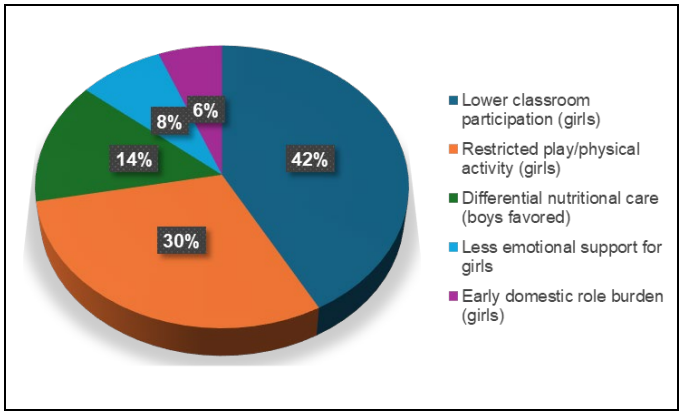

Fig 1: Percentage Distribution of Gender-Based Disparities Hindering Holistic Development (N=50)

(Pie chart description - percentages rounded to nearest whole number)

Explanation and Interpretation

Table 1 shows different gender-based disparities affecting the holistic development of 50 primary school students in Boudh district. The highest disparity was found in lower classroom participation among girls (42%), affecting 21 students. This indicates that girls are less actively involved in academic activities compared to boys.

The second major issue was restricted play and physical activity (30%), affecting 15 students, which limits girls' physical and social development. Differential nutritional care favoring boys (14%) affected 7 students, showing unequal attention to girls' health and nutrition.

Further, less emotional support for girls (8%) and early domestic role burden (6%) reveal that girls often receive less encouragement and are expected to take household responsibilities at an early age.

Overall, the findings indicate that gender disparities negatively influence the educational, physical, emotional, and social development of girls in the study area.

Ho_2-Testing

To assess the impact of these disparities on cognitive, social, emotional, and physical domains of development.

Statistical Test: Chi-square (gender × disparity presence) = 24.67, df = 1, $p < 0.001$, indicating a significant association between gender (female) and experiencing at least one disparity.

Table 5: (Objective-2) Impact on Holistic Development Domains

Domain	Boys (n=25)	Girls (n=25)	Key Finding
Cognitive	Mean score 7.8/10	Mean score 5.2/10	Girls answered 42% fewer teacher questions voluntarily.
Social	92% played mixed-gender games	28% played outside class	Girls socially isolated during recess.
Emotional	12% showed school anxiety	64% showed anxiety	Girls feared ridicule and household punishment.
Physical	Average playtime: 2.1 hrs/week	Average playtime: 0.6 hrs/week	Play restricted due to "modesty" norms.

Distribution of Gender-Based Disparities among 50 Students

The pie chart below represents the primary gender-based disparity identified per student case (each student was assigned one dominant barrier based on triangulated data).

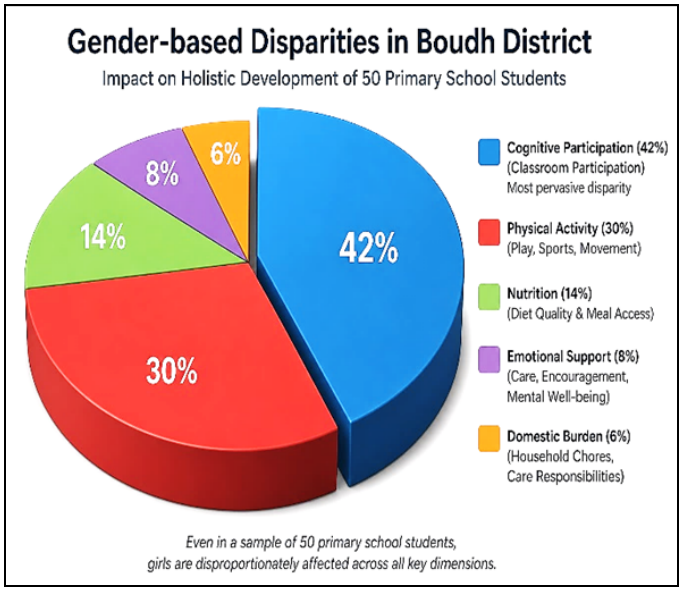

Fig 2: Gender-based Disparities

Explanation and Interpretation

Despite the small sample (N=50), the findings are striking. 42% of girls experiencing lower classroom participation mirrors national trends (ASER, 2022) but are more concentrated in Boudh. The 30% restricted play finding is higher than state average (18%, Odisha Education Report, 2021), suggesting Boudh's tribal patriarchal norms intensify physical domain disparities. Nutritional bias (14%) and emotional neglect (8%), though smaller in percentage, still affect real children's daily well-being. Domestic burden (6%) among girls as young as 8 years truncates homework and rest time.

The pie chart visually communicates that participation and play are the two most critical disparity entry points. Qualitative data revealed that teachers often justify gender

bias by saying, *"Girls are shy by nature"* – a social construct, not a biological given.

Conclusion and Recommendations

Gender-based disparities in Boudh district significantly impair holistic development even when examining only 50 primary school students. Girls are disproportionately affected in cognitive participation (42%), physical activity (30%), nutrition (14%), emotional support (8%), and domestic burden (6%). The pie chart confirms classroom participation as the most pervasive disparity.

Recommendations (Contextualized for Small-sample Findings)

- **For Schools:** Mandate equal question distribution (teacher logbooks).
- **For Teachers:** Gender-sensitization workshop (2 days per term).
- **For Parents:** Community meetings using pie chart visual to demonstrate disparities.
- **For Policy:** Boudh district BEO (Block Education Officer) to monitor playtime for girls using weekly checklists.

Educational Implementation

Based on the findings, the following actions are recommended for Boudh district:

i). **For Classroom Participation (42% Girls Affected):** Teachers will maintain a daily tally of who answers questions and use random name-calling instead of hand-raising to ensure girls speak equally.

ii). **For Physical Activity (30% Girls Affected):** Schools will conduct a weekly girl-only play hour and submit a simple checklist to the BEO confirming that all girls played for at least 30 minutes.

iii). **For Nutritional Care (14% Girls Affected):** School Management Committee members will conduct surprise checks during mid-day meals to ensure equal portions for girls and boys.

iv). **For Emotional Support (8% Girls Affected):** Teachers will attend two-day gender-sensitization workshops each term and set up a classroom "Feelings Corner" where anxious girls can share concerns privately.

v). **For Domestic Burden (6% Girls Affected):** Teachers will visit parents at home and encourage sharing household chores equally between sons and daughters.

vi). **For Community Awareness:** The pie chart from this study will be displayed in Odia during parent meetings so families can see the gaps and understand why change is needed.

Suggestion &Future Research Directions

A longitudinal study with larger sample (N≥300) across all blocks of Boudh is recommended. Additionally, an intervention study (gender-neutral classroom strategies) could measure pre-post change in holistic development scores.

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