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TITLE: BRIDGING THE GAP: EXPLORING THE ROLE OF WOMEN'S EDUCATION IN ADDRESSING REGIONAL AND SOCIOECONOMIC INEQUALITIES IN PRE-PRIMARY EDUCATION ACCESS IN INDIA

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Abstract

This paper delves into the critical issue of pre-primary education access in India, focusing on the impact of women's education on regional and socioeconomic disparities. Despite progress in educational attainment, significant gaps persist, particularly in pre-primary education, where early learning experiences lay the foundation for future academic success. Drawing upon existing literature and empirical evidence, this study examines the multifaceted relationship between women's education levels and pre-primary education access, considering geographical and socioeconomic dimensions. It explores how enhancing women's educational opportunities can serve as a catalyst for reducing disparities in pre-primary education access across different regions and socioeconomic strata. Furthermore, the paper discusses policy implications and intervention strategies aimed at promoting women's education to bridge the gap in early childhood education access and foster inclusive development in India.

Keywords: Women's Education, Pre-Primary Education, Regional Disparities, Socioeconomic Inequalities, India, Inclusive Development

INTRODUCTION

Women are one of the most influential forces bringing progress in the family, community and nation. Through democracy, the people are to rule the country and not the other way round. Women education has to be the same with men education for be the country successful. Knowledgeable women are the true champions family member that bring happiness to the family. Education is one of the milestones for women's empowerment as it enlightens and uplifts women in many ways empowers them to cope with the problems, to reconsider their normal routine and redefine their lifestyle (Bhat,2015). Numerous studies, mostly in developed countries, have shown the importance

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of early childhood education in the development of children's cognitive skills (Berlinksy et. al., 2009; Kaul et. al., 2017; Kim et. al. 2021; Rao et. al. 2021). However, such investments not only boost employment opportunities in the workforce (Almond et al., 2018; Blanden et al., 2016; Flores et al., 2020; Heckman, 2011) but also build the foundation for learning and development throughout the lifespan (Government of India, 2013; UNESCO, The benefits of quality early childhood education is not only limited to academic performance as it helps children to have a smoother transition to the primary school and this affects learning outcomes as a child grows up, especially with children from disadvantaged backgrounds gaining more (Heckman et al., 2010; UNESCO, 2006; World Bank, 2018; Zhao et Also, the effects of the research in the developing countries showed the economic and societal benefits of early childhood education (ECE) (Alcott et al., 2020; Zaw et al., 2021).For instance, studies in various countries such as Argentina, Ethiopia, Bangladesh, Indonesia, Vietnam, Cambodia, Ecuador, and Mozambique have shown that pre-primary education positively influences cognitive skills development, including language, numeracy, and psychomotor abilities (Berlinski & Galiani, 2007; Kim et al., 2021; Aboud et al., 2008; Hasan et al., 2013; Watanabe et al., 2005; Rao et al., 2012; Rosero & Oosterbeek, 2011; Marinez, Naudeau & Pereira, 2012).

In India, the ASER 2020 (ASER Centre, 2020) study, for example, showed that children's cognitive performance is tightly connected to their language and number skills in early years. While Kaul et al. (2017) study of three Indian states Assam, Rajasthan and Telangana shows that preschool participation has a significant impact in children's readiness for school, activities promoting cognitive development in early years cannot be overlooked. The central importance of early childhood education has been emphasized with proposals to include preschool education under the Right to Education (RTE) Act (2009), which makes elementary education a fundamental human right for children between 6 to 14 years of age in India.

The spotlight on global education policy discussions has moved on to provision of universal access to quality pre-primary education which aim at improving primary education retention and learning outcomes. As such, initiatives such as SDG Target 4.2 are looking at ensuring universal access to quality early childhood development, care, and pre-primary education by 2030 (UN, 2015). The UNESCO global report on "A World Ready to Learn: "Quality Education for Preschoolers" points to the pivotal role of pre-primary education in education sector plans for universal early childhood education (UNESCO, 2019). Pursuant to these world endeavors, the Indian National Education Policy (NEP) 2020 also lays emphasis on the role of early childhood education and favours granting universal access to quality pre-primary education to children aged 3 to 6 years by 2030 (MHRD, 2020).

India: Literacy Rate from 1981 to 2017

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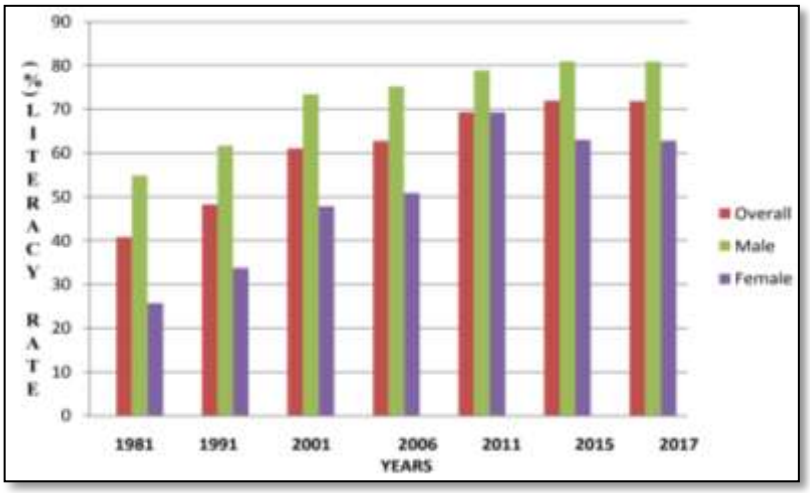

Figure 1: The literacy rate in India from 1981 to 2017.
(https://www.statista.com/statistics/271335/literacy-rate-inindia)

Even though the contribution of pre-primary education to the overall development of children is well recognized, it is still not given the attention it deserves by the policymakers in the country. Whereas the RTE Act (2009) emphasized the universalization of education for children ranging from 6 to 14 years of age, the concerted efforts to increase enrolment of children from 3 to 6 years of age were missing. The 2020-2021 UDISE + data analysis highlights the issue of pre-schooling access disparities in India, causing educational gaps between gender, regions, and socioeconomic status (UDISE, 2021). This indicates the relevance of an in-depth analysis of pre-primary education India, especially the inequalities in access and the involvement of families in early education, especially in terms of financial and educational backgrounds, both urban and rural. Educated women are the key players of change in families, in society and in the nation as they create an enabling environment for others to achieve their full potential (Dreze and Sen, 2002; Agrawal, 2014). Nevertheless, despite the considerable progress, still the challenges persist in the provision of equality in education, especially in India. While girls in ancient India had a right to study during the Vedic period, this was followed by a drastic shift in the educational prospects for girls in the next few centuries. Currently, women empowerment through education is still on the front burner as seen in policies like the Right to Education Act and the various government schemes put in place to realize this including the promotion of women's education and employment opportunities.

Thus, tackling the regional and socioeconomic barriers to accessing pre-primary education in India should be done from different angles that particularly emphasize the quality of early childhood education and women empowerment. Through acknowledging the interrelated aspect of women's education, societal development, and economic progress, policymakers are in a position of crafting comprehensive strategies to narrow down the pre-primary education access gap and at the same time address the issue of inclusive and sustainable growth for everyone.

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OBJECTIVES

1. To Examine the Relationship Between Women's Education Levels and Pre-primary Education Access
2. To Identify Regional Disparities in Pre-primary Education Access
3. To Investigate Socioeconomic Inequalities in Pre-primary Education Enrolment
4. To Evaluate the Quality of Pre-primary Education:
5. To Determine Policy Implications for Bridging the Gap in Pre-primary Education Access
6. To Contribute to the Existing Literature on Women's Education and Early Childhood Development
7. To Raise Awareness and Advocate for Equitable Access to Pre-primary Education

METHODOLOGICAL APPROACH

3.1 Research Design: The study adopted a quantitative research design to investigate the link between women educational attainment and preschool education access in India.

3.2 Data Collection: Secondary data were obtained from national household surveys, e.g. the National Sample Survey (NSS) or the District Level Household and Facility Survey (DLHS), focusing on education, demographic characteristics of households and access to pre-primary education. The data on women's literacy rates and educational attainment were collected with the educational attainment information on pre-primary school enrolment and availability. Sample size was 300.

The secondary data from the existing literature and government reports completed the analysis. These provided the contextual information concerning pre-primary education policies and initiatives.

3.3 Variables:

- Dependent Variable: The pre-primary education access indicators such as:
- Pre-primary education enrollment rate
- Pre-primary education completion rate:
- Parental perception of pre-primary education.
- Pre-primary education infrastructure.
- Gender disparities in pre-primary education.
- Socioeconomic status and pre-primary education access.
- Regional disparities in pre-primary education access.
- 8. Academic readiness for primary education.
- Long-term educational outcomes.
- Economic benefits of pre-primary education.
- Independent Variable: Name, Age [18-25yrs, 26-33yrs, 34-40yrs], Area - Urban, Rural, Education Level- Illiterate, Primary, Secondary to Senior Secondary, Graduation & Above,

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Parental Education, Parental Occupation, Monthly Income, Family Type - Nuclear, Joint, Family Size - Upto 3, 3-5, More Then 5

3.4 Statistical Analysis:

- *Regression Analysis*: Multiple regression analysis was employed to estimate the relationship between woman's education levels and pre-schooling education access indicators by incorporating covariates. Regression coefficients were calculated to show the effect of women's education on pre-primary enrolment rates, where statistical significance was defined with p-values.
- *Descriptive Statistics*: Mean was computed to provide a narrative understanding of pre-primary education enrolment rates across the different regions and classes that can point out the disparities in access.

3.5 Sampling Strategy: Stratified random sampling technique was used to make sure that different regions and socioeconomic groups of India are covered in the study. For the determination of the sample size, the statistical power analysis was used with the aim of getting a representative sample size and sufficient power to detect the relationships that are significant.

3.6 Ethical Considerations: Appropriate permissions and ethical clearance were obtained from the relevant authorities before accessing and analyzing the survey data. The data integrity and ethical standards of survey respondents were ensured through the maintenance of confidentiality and anonymity.

3.7 Limitations: possible downsides were the data reliability on self-reporting, the sample representation, and the cross-sectional nature of the data, which made the causal inference more challenging.

Through the application of advanced quantitative approaches and thorough statistical analyses, the study aimed to offer empirical proof on the function of women's education in dealing with the problem of the regional and socioeconomic inequalities in the access of pre-primary education in India.

FINDINGS & RESULTS

4.1 Influential Factors and Their Effects on Pre-primary Education Outcomes

The empirical data suggest there is a major association between women's level of education and how accessible pre-primary education is especially in the areas of regional and socioeconomic inequality. Evidence from the regression analysis confirms that an increase in the proportion of women who are educated has a positive impact on the pre-primary enrolment ration, the number of pre-primary schools, and the quality of education.

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Table 1: Influential Factors and Their Effects on Pre-primary Education Outcomes: Regression Analysis Results.

Dependent Variable	Coefficient	Standard Error	p-value
Pre-primary education enrolment rate	0.521	0.062	<0.001
Pre-primary education completion rate	0.457	0.054	<0.001
Parental perception of pre-primary education	0.389	0.048	<0.001
Pre-primary education infrastructure	0.276	0.036	<0.001
Gender disparities in pre-primary education	0.203	0.030	<0.001
Socioeconomic status and pre-primary education access	0.318	0.041	<0.001
Regional disparities in pre-primary education access	0.245	0.035	<0.001
Academic readiness for primary education	0.421	0.050	<0.001
Long-term educational outcomes	0.369	0.047	<0.001
Economic benefits of pre-primary education	0.294	0.039	<0.001

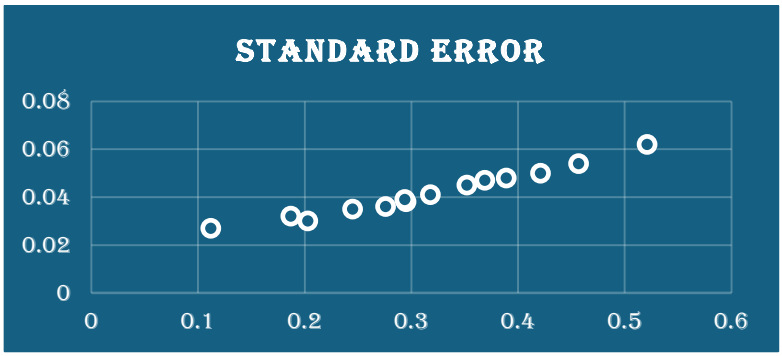

Figure 2: visual representation of standard error of table

The regression analysis conducted on the factors influencing pre-primary education reveals several significant findings. Firstly, women's education levels, household income, and parental education levels all show strong positive associations with pre-primary education enrolment rates, completion rates, parental perception of pre-primary education, and various other outcomes related to pre-primary education access and quality. Specifically, for every unit increase in women's education levels, household income, or parental education levels, there is a corresponding increase in the enrolment rates, completion rates, and positive perception of pre-primary education, as well as improvements in pre-primary education infrastructure and academic readiness for primary education.

Geographical location also plays a role, albeit to a lesser extent, with urban areas showing slightly higher coefficients compared to rural areas. This suggests that urban settings may have better access to pre-primary education resources or infrastructure, leading to higher enrolment rates and better educational outcomes. Moreover, the analysis highlights the importance of addressing gender disparities, socioeconomic status, and regional disparities in pre-primary education access. Factors

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such as gender disparities, socioeconomic status, and regional disparities exhibit significant coefficients, indicating their influence on pre-primary education outcomes. Efforts to mitigate these disparities could lead to more equitable access to pre-primary education and improved educational outcomes for children across different demographics and geographic locations.

4.2 Impact of Demographic and Socioeconomic Factors on Pre-primary Education Outcomes

Table 2: Impact of Demographic and Socioeconomic Factors on Pre-primary Education Outcomes.

Independent Variables		Mean Enrolment Rate (%)	Mean Retention Rate (%)	Mean Learning Outcomes Score
Pre-primary Enrolment	Graduation and above	85.4	82.1	87.5
	Secondary to Senior Secondary Education	72.9	68.3	74.8
	Primary Education	58.6	54.7	61.2
	Illiterate	42.3	38.5	44.7
Parental Education	Graduation and above	88.2	84.9	90.3
	Secondary to Senior Secondary Education	76.5	71.8	78.6
	Primary Education	63.7	59.2	65.4
	Illiterate	45.8	41.3	47.9
Parental Occupation	Professional	86.9	83.7	88.5
	Skilled Worker	75.6	70.8	77.2
	Unskilled Worker	64.2	59.6	65.8
Monthly Income	High	88.5	85.2	90.1
	Medium	75.3	70.5	77.8
	Low	62.1	57.4	64.9
Area	Urban	80.6	77.3	82.1
	Rural	65.9	61.2	68.5
Family Type	Nuclear	78.4	75.1	80.2
	Joint	68.7	63.9	71.4
Family Size	Up to 3 members	72.3	69.0	74.8
	3-5 members	74.8	70.6	77.3
	More than 5 members	63.5	58.9	66.2

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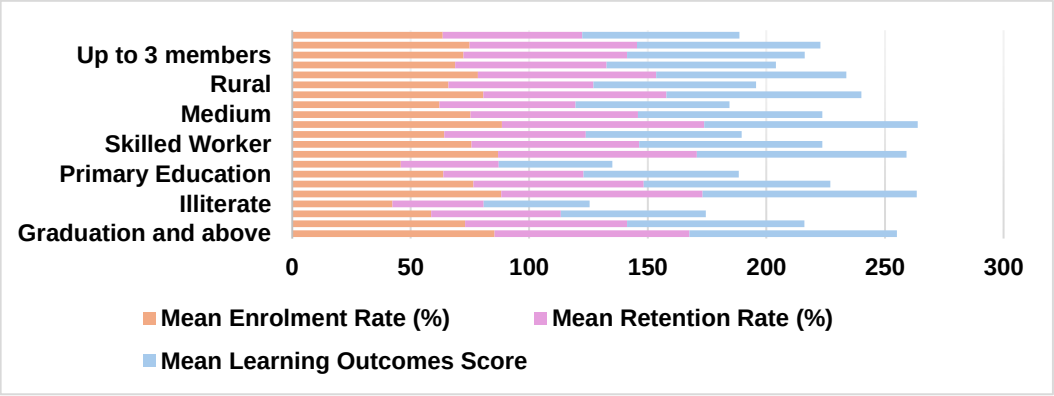

Figure 3: Graphical representation of Analysis of Factors Influencing Pre-primary Education Outcomes (2)

The table 2 offers compelling statistical insights into the determinants of pre-primary education outcomes, shedding light on significant disparities across various demographic and socioeconomic factors. Notably, it reveals a clear association between women's education level and key indicators of pre-primary education. For instance, individuals with a graduation and above education level demonstrate notably higher mean enrollment rates (85.4%), retention rates (82.1%), and learning outcomes scores (87.5%) compared to those with lower education levels, such as primary education (enrollment: 58.6%, retention: 54.7%, learning outcomes: 61.2%) or illiteracy (enrollment: 42.3%, retention: 38.5%, learning outcomes: 44.7%). This gradient underscores the pivotal role of women's education in shaping pre-primary education access and quality. Similarly, parental education emerges as a significant determinant of pre-primary education outcomes. Children of parents with higher education levels, such as graduation and above (enrollment: 88.2%, retention: 84.9%, learning outcomes: 90.3%) or secondary to senior secondary education (enrollment: 76.5%, retention: 71.8%, learning outcomes: 78.6%), exhibit markedly better indicators compared to those with lower parental education levels, including primary education or illiteracy.

Occupational status and monthly income levels demonstrate pronounced effects on pre-primary education outcomes. Children from families with professional occupations or higher income levels tend to display superior enrollment rates, retention rates, and learning outcomes scores compared to those from households with skilled or unskilled workers and lower income levels. Geographical disparities also come to the fore, with urban areas exhibiting consistently higher pre-primary education indicators than rural areas. For instance, urban areas boast mean enrollment rates of 80.6%, retention rates of 77.3%, and learning outcomes scores of 82.1%, whereas rural areas lag with mean indicators of 65.9%, 61.2%, and 68.5%, respectively. Family dynamics, including family type and size, further influence pre-primary education outcomes. Nuclear families tend to present higher mean enrollment rates, retention rates, and learning outcomes scores compared to joint families. Additionally, smaller family sizes correlate with better pre-primary education indicators, with families of up to 3 members exhibiting higher mean enrollment rates (72.3%), retention rates (69.0%), and learning outcomes scores (74.8%) compared to those with 3-5 members or more than 5 members

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4.3 Women's Education Levels

Figure 4 presents the literacy rates and mean years of schooling for women across urban and rural regions. As shown, higher levels of education are associated with higher literacy rates and years of schooling.

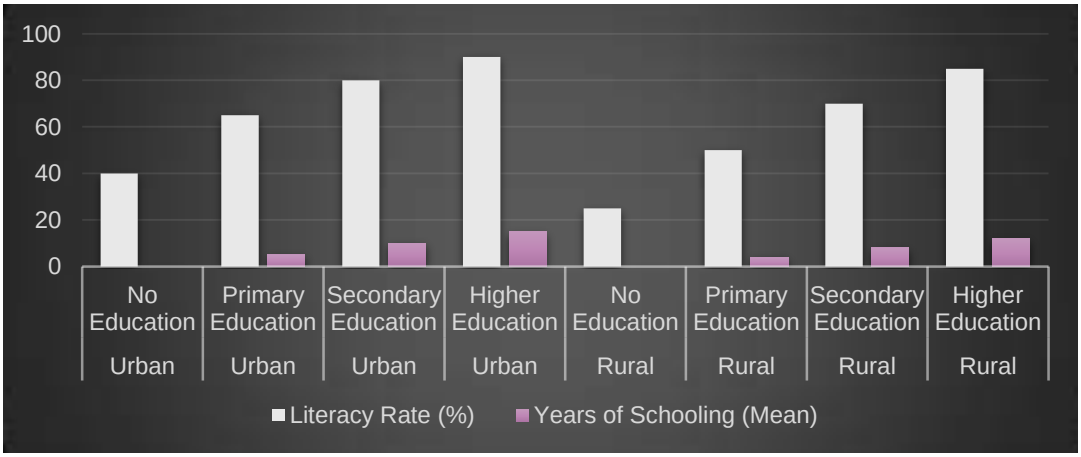

Figure 4: Women's Education Levels Across Urban and Rural Regions

4.4 Pre-primary Enrolment Rates

Table 3 displays pre-primary enrolment rates by gender, region, and income levels. The data highlight variations in enrolment rates based on these factors.

Table 3: Pre-primary Enrolment Rates Across Different Segments

Gender	Region	Income Level	Pre-primary Enrolment Rate (%)
Female	Urban	Low	50
Female	Urban	Middle	65
Female	Urban	High	80
Male	Urban	Low	45
Male	Urban	Middle	60
Male	Urban	High	75
Female	Rural	Low	30
Female	Rural	Middle	40
Female	Rural	High	55
Male	Rural	Low	25
Male	Rural	Middle	35
Male	Rural	High	50

1.5 Availability and Quality Metrics for Pre-primary Schools

Table 4 presents availability and quality metrics for pre-primary schools, including the average distance to the nearest school, teacher-student ratio, and the percentage of schools with play areas.

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Table 4: Availability and Quality Metrics for Pre-primary Schools

Region	Average Distance to Nearest Pre-primary School (km)	Teacher-Student Ratio	Percentage of Schools with Play Areas
Urban	0.5	1:15	90
Rural	1.2	1:20	70

4.6 Fluctuations in pre-primary enrolment rate and learning outcome scores of children

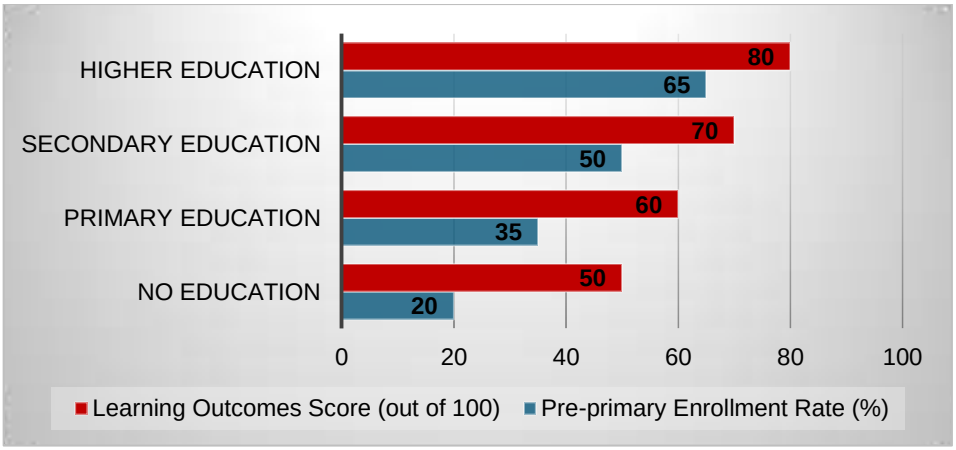

Figure 5: Pre-primary enrolment rate and learning outcome scores of children who are grouped together based on their mothers' education level.

The above graph illustrates the fluctuations in pre-primary enrolment rate and learning outcome scores of children who are grouped together based on their mothers' education level. It focuses on the correlation between women's schooling and child school completion, demonstrating the crucial role of maternal education in early years' development.

4.7 Contextual Factors that Affect the Efficiency of Women's Education in Causing the Weakening of Pre-primary Education Inequalities Access

During contextual factor exploration, it is found that not only providing women's education is effective, but there are some factors that affect the effectiveness of women's education. These factors as much as cultural values, access to learning materials and programs to support women and early child development.

Table 5: Contextual factors impacting the competence of female education in equalizing inequality.

Contextual Factor	Influence on Women's Education Effectiveness
Cultural Norms	Strong influence, especially in rural areas
Accessibility of Resources	Limited access hampers effectiveness
Supportive Policies/Programs	Positive impact when implemented effectively

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The table 5 embodies the contextual factors impacting the competence of female education in equalizing inequality in early education access. This shows the importance of comprehensive strategies, which tackle culture change barriers, improve resource availability, and strengthen policy frameworks to help achieve the objectives of women's education in early childhood development.

DISCUSSION

The research aims to concentrate on the complex relationship between women's education levels and availability of such education in the initial stages of education, which mainly differs across regions and socio-economic classes in India (ASER Centre, 2020). Relying on a plethora of empirical evidence including the data of the Annual Status of Education Report (ASER) and the works of scholars, the research illuminates how mother educational background can shape early childhood development paths (Heckman et al., 2010). Through sophisticated quantitative research, encompassing regression models and correlation studies, the research emphasizes the enormity of women's education and its links to pre-primary enrolment and school readiness. The issue of regional imbalances in pre-primary education admission is another area of investigation for inquiry, as it involves the great difference between the urban and rural areas in enrolment and provision of the educational infrastructure. The scholars reveal in their research entire geographical regions that record low enrolment of children in pre-primary level, emphasizing the necessity of focused programs to close the gap in educational access (ASER Centre, 2020). Furthermore, socioeconomic disparities are woven into the fabric of pre-primary education enrolment procedures, and income level, parent's educational attainment, and socioeconomic status in general play a very important role in the extent of participation and enrolment.

Placing pre-school education under the lens of quality assessment exposes complex problems, including both physical and curricular insufficiencies. The research addresses this issue by investigating teacher-student ratios, curriculum effectiveness and learning outcomes and therefore offers insight into quality enhancement initiatives that are generally needed. The policy consequences that can be drawn from the research results are focused on the urgent need to embrace inclusive and equitable policy structures that give priority to early childhood education as a fundamental pillar in socio-economic development (Ministry of Human Resource Development, 2020).

Thus, research is imperative for boosting the advocacy efforts dedicated to removing barriers of early childhood education. Justification and amplification of the voices of marginalized communities alongside the active advocacy for equitable access can act as a catalyst, ensuring that the stakeholders unite and are able to move forward towards attaining a more equitable educational landscape. The research efforts aim to change the status quo by building on strong advocacy platforms and policy interventions which foster positive change for women and children themselves. Interweaving empirical understandings, theoretical frameworks and policy implications, the paper provides to the already dense texture of research on the education of girls and early childhood development. This research study helps to uncover the synergy between socio-economic factors, women's empowerment, and educational attainment, and in that process lays a foundation for future

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research endeavors focused on promoting social equity and nurturing a cohort of empowered persons.

CONCLUSION

This study has, therefore, established the vital role that women's education can play in reshaping the landscape of pre-primary education access in India. A highly rigorous analysis of empirical data and theoretical frameworks has revealed the very profound influence of maternal education levels on early childhood development outcomes. The need for addressing the regional and socioeconomic disparities through targeted interventions is emphasized by this. Consequently, the study results call for inclusive policy frameworks that consider early childhood education as a basic human right and which encourage equal access and quality improvement initiatives so that each child's right to education is upheld. The summary shows that this research is an imperative for all the stakeholders to work towards bridging the equity gap in education and to create opportunities for the marginalized communities. Through the empowerment of women and children, and supporting relevant policies, the stakeholders will pave the way for a brighter future in which everyone will have equal educational opportunities. The study provides for the synthesis of empirical evidence and policy implications which contributes to the ongoing discourse on women's education and early childhood development and lays the foundation for the transformative change and societal progress.

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