



Gender and Household's Spending on Education: An Empirical Evidence

Mirza Nazrana Beg^{1*} and G. M. Bhat²

¹Department of Economics, Central University of Kashmir, India.

²Department of Economics, Current Director of Research and Development, Central University of Kashmir, India.

Authors' contributions

This work was carried out in collaboration between both authors. Author MMB designed the study, performed the statistical analysis, wrote the protocol, wrote the first draft of the manuscript and managed the analyses of the study. Author GMB managed the literature searches. Both the authors read and approved the final manuscript.

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ABSTRACT

This paper examines whether the household's spending on education based on gender exhibits pro-boy bias or not. The study examines two potential mechanisms through which the gender-based difference in education spending can situate itself. Firstly, the association of gender with the enrolment of children in schools is tested. Secondly, the difference in expenditure on education of children, conditional on enrolling them in schools, is examined. The study used multiple regression analysis and chi-square test to achieve its objectives. The data for the study was collected through a structured interview schedule. The data for the study was collected at individual level. The results of the analysis reveal that, on the whole, gender has no association with the school enrolment. The study found that the annual household expenditure on boys is 7.35% higher than on girls.

Keywords: *Investment; human capital; gender differential; education expenditure; gender-parity; resource allocation.*

*Corresponding author: E-mail: mirza.econ101@gmail.com;

1. INTRODUCTION

Education is the process or art of imparting knowledge and all-round development of an individual, and many international conventions have acknowledged it as a human right. It is a vital investment for social and economic development. After the “Dakar Declaration on Education for All” and the establishment of Millennium Development Goals, women's education, in particular, started receiving intense focus at a worldwide scale. Education has become one of the most effective instruments for empowering women, not only from the standpoint of literacy but also from its interconnection with other social parameters [1]. Despite decades of legislation, the passing of laws, the implementation of a web of policies and programmes, and information campaigns, girls tend to encounter mediocre opportunities for education in several regions of the world, including India. Promotion of gender equality has become widely recognised as an integral part of a comprehensive sustainable human development plan. World Bank [2] reported that the development communities have arrived at a joint agreement that “development policies and actions which fail to take gender inequality into account and fail to address disparities between males and females will have limited effectiveness and serious cost implications”. However, according to the “Human Development Report” [3], inequality in education has remained broadly constant. The issue of gender discrimination has evolved and morphed into more severe and discreet forms. One such form is gender discrimination or bias in the household's expenditure on health and education. It's a reality that the nutritional, educational and health outcomes for girls, in developing countries, are worse than for boys. While the focus of the government and policymakers has mainly rotated around reducing the gender gaps in literacy rates, reducing the drop-out rates among male and female students, increasing retention and completion rates, increasing the gross-enrolment and net enrolment rates but not much has been done to address the issue of unequal investment in human-capital or to mitigate the problems that arise out of gender-biased resource allocation within the households.

The theory of human capital offers a good explanation of the gender-based disparity in spending on education. Investment in formal education is crucial for promoting equality of employment opportunities and amplifying

economic growth [4]. Alderman & King [5] and Parish & Willis [6] provide adequate evidence that, in many developing countries, resources are not distributed in a random manner within households. Parents may have a taste for differential investment in their children's education, and they are unwilling to split household resources on education equally across male and female children. The question of concern is whether there is a considerable reluctance, on the part of parents, to distribute resources equally between their sons and daughters, which contributes to a substantial difference in the distribution of available resources for the education of children.

Households may be less motivated to spend on the education of their daughters [7]. They may or may not enrol both of their children (sons and daughters) in schools, and if they do, they might spend differently on the education of their children based on gender. The difference in education expenditure may come into force through various channels, e.g. sending sons to private schools which charge more fees and daughters to less fee-charging government schools or semi-government schools, by employing private tutors for sons and not for daughters or by not encouraging daughters to take up science / commerce subjects (which requires more investment) in higher secondary levels while as doing so in case of sons or vice versa. Also, it has been found that daughters are often engaged in agricultural activities and household chores while sons are encouraged and motivated to study. This phenomenon becomes even more profound when a household has limited resources to allocate. In that scenario, parents might opt to spend more on the education of their sons at the expense of the education of their daughters. Alderman, Orazem & Patreno [8] in their study found that the “schooling choices of poor households are sensitive to government and private school fees” which might also contribute to a poor household's decision of prioritising sons' education over daughter's education. In the same study, it was found that the educational outcomes of private schools are better than that of government schools. With scarce resources available, a household might prioritise their son's education and divert more resources towards his education either by sending him to a better private owned school or by engaging a private tutor for him. On the other hand, girls tend to have lesser access to private schooling than boys [9].

Education itself is a necessary capability that affects the growth and development of other capabilities. Access to a quality education, which endows the students with skills that they need to fill the productive, quality and highly rewarding jobs and which expands their capabilities, is an essential driver of economic growth, productivity, competitiveness, social cohesion and mobility [10]. Studies have shown significant achievement disadvantage for those students who are enrolled in government schools in comparison to those enrolled in private schools [11]. In terms of teacher involvement, instructional operation and teaching methods, teaching was considered more conducive to enhanced educational achievements in private schools than in government schools. Households tend to provide their sons with a more costly and better education than their daughters [12]. Admitting boys to private schools would give them an edge over girls in the sense that they receive a better education, exposure and skills which is necessary for expanding their capabilities thus enabling them to participate in jobs with high remunerations while as rendering girls unsuitable and ill-equipped to enter the 21st century's fast-changing, challenging and more demanding labour market, giving rise to the more severe issues of gender-gap in opportunities and wages.

Households spend on education in anticipation of economic as well as non-economic benefits [13]. The gender-based difference in treatment could be due to an investment motive or due to the household's "son preference". Unequal allocations are ascribed to the differences in returns to sons' and daughters' education accruing to parents [14]. The PROBE report [15] found that education-employment linkages were less important for girls than for boys. Kambhampati [16], in her study, found that "the rate of return to education was highly significant in increasing the amount spent on education by the household both for boys and girls". Given that girls' returns to education are low, households spend sparingly on their education.

This research paper considers the gender-based difference in spending on education as the main subject of its investigation. The extant literature has identified two channels by means of which gender bias in education manifests itself, i.e. through the parental decision of enrolling children in schools and through "differential expenditure on boys and girls" when enrolled in school [14]. The literature shows that bias can either be pro-male or pro-female. However, the probability of

the presence of discrimination favouring boys in education expenditure is more. As a result of the gender-based discriminatory investment in education, the discriminated group faces inferior educational outcomes, thus hampering their chances at a better and prosperous life.

The present study attempts to investigate whether household's allocation of education expenditure favours boys over girls. The hypotheses of the study are as follows:

- H_0 : There is no association between gender and enrolment in schools.
- H_1 : There is an association between gender and enrolment in schools.
- H_0 : Household's education expenditure doesn't favour boys over girls.
- H_1 : Household's education expenditure favours boys over girls.

2. REVIEW OF LITERATURE

The existence of broad gender inequalities in India and recognition of the importance of female education has steered research to assess how the gender-based inequality situates itself in the budget allocated for education. Deaton [17] using the extended form of Engel curve found that, in Thailand, the expenditure on adult goods decreased when an extra male child was added to the household as compared to the female child. However, the pro-male bias, thus found, was statistically insignificant. Subramaniam [18], using the household-level consumption expenditure data from India, finds parental inclination in allocating more resource towards boys as compared to girls. Since the study uses household level data, instead of interpreting from intra-household viewpoint, the conclusions should be derived in a "cross-sectional sense". After the "unobserved household fixed-effect" is controlled, the study doesn't find existence of gender-bias in the distribution of resources within the households. Aslam & Kingdon [19] find convincing proof of bias in educational expenditure favouring boys especially in the age-cohorts of 10-14 and 15-19 years but this bias was more dominating in the rural areas of Pakistan. Aguayo, Chapa, Rangel, Trevino, & Valero [20] don't find any substantial statistical proof to confirm the idea that neither urban nor rural poor families prioritise their sons' education over their daughters'. As opposed to conventional belief, the study found that families with constrained resources/poor families direct more resources towards the education of their

daughters as compared to their sons', especially in the urban areas. Delelegn [21] found a substantial gender bias in the enrolment decision favouring boys in the 10-14 age-group in subsample as well as in the 15-19 age-group for both the whole sample and the subsample. However, the study doesn't observe any significant pro-boy bias in the 5-9 age-group. Further, the study established that once households have decided to enrol their children in schools, there is no gender-based discrimination in the allocation of budget shares. The study also finds significant female favouring gender bias on educational expenditure in the age group of 10-14 years in subsample and male favouring bias in the age-group of 15-19 years.

Himaz [22] observed pro-female differential expenditure on education, in the age-group 8-9 in Sri-Lanka. Gender bias in education expenditure was discovered for children falling in the age-group of 10-14 years. Further, the study observed that rural households seem to demonstrate a conscious inclination for spending more on education when an additional girl is added to the household rather than a boy and reported that an approximately equal percentage of boys and girls were enrolled in private school. Masterson [23] used the Hurdle model to detect objective and subjective gender bias in consumption expenditure allocation. The study found no evidence of subjective gender bias across areas either at the household or individual level. However, the results of the study established pro-male objective bias in educational expenditure, but this bias was inconsistent across areas and age-groups. Further, the study found that the expenditure on education in urban areas is greater as compared to rural areas. Assuming the income remains fixed, Parpiev et al. [24] tested whether the entry of a boy into a household leads to an increase or decrease in the consumption of adult goods. The results of the study suggested that in Uzbekistan gender discrimination against girls is not as widespread as may be expected. However, the study observed that families with boys reduce their alcohol consumption to a greater extent than families with girls. Susanli [25] didn't find any pro-male bias at the aggregate level and observed that education is considered a luxury in urban and rural areas. However, age-group wise, pro-female bias was observed in 15-19 age-group for the urban subsample in 2006 and for the rural subsample in 2008 as household spent 3.2% more on the education of a girl child in the age group of 15-19 as compared to the boys of

the same age group. At the secondary school level, emergence of a pro-female bias in the year 2006 is attributed to education and textbook assistance campaigns.

Begum, Grossman, & Islam [26] didn't find any structured implicit parental bias between boys and girls regarding intra-household human capital investment. Shonchoy & Rabbani [27,28] observed that households spend less on girls' education as compared to that of boys' and there is an indefinitely continuous unevenness in household's expenditure on education where boys are provided with a better quality education. The results showed that in comparison to boys, girls receive 14% less of educational spending from parents. Further, boys have better access to private tutors as compared to girls, which may in turn lead to poorer achievement at schools.

Karbownik & Myck [29] observed that a child's gender influences the pattern of parental and child-related expenditure; parents may spend 14.8% more on boys when it comes to spending on toys, games etc. and parents may spend 5.7% more on girls as regards spending on children's clothing and shoes. Kenayathulla [30] found no significant gender-based difference in household's expenditure in education at the national level in Malaysia. However, the gender-based disparity in educational expenditure exist in some Malaysian regions for some age-groups, and these differences appear once children are enrolled in school. The analysis also found that household size and educational budget share are positively related to each other.

Iddrisu, Danquah, & Quartey [31] observed that gender bias manifests itself in the post-secondary schooling age-group through two channels viz. in both the enrolment decision and in the decision of how much to spend once enrolled in school. In contrast, only the first channel of bias was operational in the senior secondary schooling age-bracket. Kaul's [32] analysis confirms the existence of bias favouring males and preference for the eldest son in India. The study suggests that parents, who expect old age assistance from their eldest sons, invest more in their education.

Zimmermann [33] has documented clear evidence of discrimination against girls, increasing with age and girls in the age-group of 15-19 years. The bias in education expenditure establishes itself through the decision to spend less on them than boys when they are enrolled in school.

Azam & Kingdon [34] find that there is substantial pro-male gender bias in the age-group of 10-14 years through differential expenditure and 15-19 age-group through biased enrollment decisions in India.

Bhatkal [35] finds clear evidence of male favouring bias in enrollment decisions for upper primary and secondary schooling in Andhra Pradesh. Further, the study also confirms a substantial dissimilarity in the conditional expenditure on education of males and females.

Saha [36] finds that average annual educational expenditure for male and female students in rural areas was Rs. 2032 and Rs. 1531, respectively and Rs 6900 and Rs 6164, respectively in urban India and goes on to confirm that households spend more on the education of females as compared to males in both urban and rural areas.

Chaudhuri and Roy [37] reveal that first level discrimination in decision enrolment is important for all the three age-categories in Uttar Pradesh and for the 5-9 and 10-14 age groups in Bihar. Conditional on positive spending, the bias is operational in the 10-14 age group in Uttar Pradesh, but there is no evidence of gender bias in Bihar. Nordman and Sharma [38] report the existence of pro-male bias in educational expenditure for all age groups, with some variation by location and caste in India.

In general, there are differences in the findings of studies that analyse gender-based differences in intra-household expenditure on education with some studies detecting pro-female bias and others identifying pro-male bias. From the literature review, we arrive at an important conclusion that the availability of quality data on an individual level is a must for detecting gender-based differences in household's education expenditure. The present study proposes exploring whether there is a bias in household's spending on education (at an individual level) on children falling in the age group of 11-18 years in District Anantnag of Kashmir valley.

3. DATA AND METHODS

To arrive at robust results, it is essential to use quality data in the analysis. The household-level data generally tends to mute out the presence of gender-bias due to aggregation, even in places where it is expected to exist [14]. The present study collected individual-level data from each household. The data used in this analysis was

collected through a structured interview schedule from District Anantnag of the erstwhile state of Jammu and Kashmir. The data was collected through multi-stage sampling. Administratively, district Anantnag is divided into eight community development blocks and has one municipal council and eight municipal committees. Out of these eight blocks, one block viz Achabal was selected randomly.

Achabal Block has a total population of 112,743 persons, out of which 83,217 people live in rural areas while as 29,526 people in urban areas. The data for this study were collected from the rural areas of Achabal. Out of 34, 12 villages were randomly selected for the study. Ten households with children in the age group of 11-18 years were selected from each village. Thus, a total sample of 120 households was drawn from the rural area of Achabal. The data for the urban area was collected from the wards falling under the jurisdiction of the municipal council of Anantnag. Twelve wards were selected out of 25 wards based on highest, medium and the least number of households. Ten households with children in the age group of 11-18 years were selected from each ward. Thus, a total sample of 120 households was selected from the wards falling under Municipal Council of Anantnag's jurisdiction. For the entire study, a total sample of 240 households was drawn for the study.

To examine the household's education expenditure on education, the present study used multiple regression analysis. Besides multiple regression analysis, some other statistical tests were also used, and percentages were also worked out. The final primary survey featured 486 children consisting of 50% male and 50% female students. The data for different variables were tabulated based on gender, area and age-group, and χ -square test of association was also used to test the association between variables. The tests were referred for their p-value for checking their significance. In this study, using the multiple regression analysis, annual expenditure on education on an individual child was taken as the dependent variable, and seven variables were selected as independent variables. Area (geographic location), size of the household, head of the household's level of education, the child's age, the gender of the child, total annual household income, and expenditure on private tuitions were the independent variables used in this model. The multiple regression equation of the following form was estimated:

$$Y_i = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \dots + \alpha_n X_n + \mu$$

where α_0 - is the intercept, α_1 to α_n - are the regression coefficients to be estimated μ - is the error term

Additionally, a univariate, area and age-group specific, regression equation were also estimated. Annual expenditure on education on an individual child was taken as the dependent variable, and the child's gender was taken as the independent variable. The univariate regression equation of the following form was estimated:

$$Y_i = \alpha_0 + \alpha_1 X_1 + \mu$$

4. RESULTS PRESENTATION

Table 1 shows the enrolment status of students with respect to gender. The total number of male children enrolled in school is 231 (95.1%) while as that of female children enrolled in schools is 237 (97.5%). χ -square test of association shows that there is no association between gender and enrolment in schools which alternately means that children are enrolled in schools irrespective of their gender.

Table 2 shows the current enrollment status of male and female children in District Anantnag's rural and urban areas. The table shows that in rural areas 3.1% of the students aren't enrolled in school while as 4.3% of the students weren't currently enrolled in schools in urban areas. In rural areas, almost 96.95 of the students were currently enrolled in schools and enrolment in urban areas stood at 95.7%. The chi-square statistic is insignificant at 5% level of significance, showing that there is no association between area and enrolment of children in schools.

Table 3 shows the sample distribution of students by school type with respect to gender. Almost 37.66% of the boys are enrolled in a government school, 60.61% in private school and 1.73% in semi-government school. In case of female students, 53.17% were enrolled in government schools, 45.99% in private schools and 0.84% in semi-government schools. Although education is practically free in government schools, it still involves significant extra expenses, which are sufficiently large to enhance gender-bias in enrolment decision with respect to school type. This suggests that there might be a prevalence of bias in education expenditure on male and female children. Also,

as is the norm, parents depend upon sons for providing for them in their old age and hence direct their investments towards sons often to the disadvantage of daughters [5]. Daughters are supposed to change families after marriage, and the economic benefits of their education accrue to the family of their in-laws. This perception diminishes parental motivation in spending uniformly and equally on the education of their sons and daughters. Such a perception has far-reaching repercussions. Since more girls are enrolled in government schools, they may show inferior learning outcomes as compared to boys which in turn leads to a male-female human capital gap and leads to reinforcing the gender bias in the labour market as well. However, it needs further investigation.

Table 4, shows that in a rural area 40.78% and 59.22% of the boys are enrolled in government schools and private schools, respectively, while 68.07% and 31.93% of the girls are enrolled in government schools and private schools, respectively. In urban areas, 35.16% and 61.72% of the boys are enrolled in government and private schools, respectively. Further, the table shows that 38.14% and 60.17% of the girls are enrolled in government and private schools respectively. χ -square test of association performed separately for rural and urban areas reveals that there is a statistically significant relationship between enrolment in schools and gender in rural areas. At the same time, the same can't be said in case of urban areas. Studies have found that girls are more likely to be enrolled in government schools, while the probability of boys being enrolled in private schools is higher [35]. In Table 4, we can see that more girls are sent to government schools in rural areas where the education usually is free, or the expenses are nominal.

On the other hand, boys are sent to private schools which charge high fees. This leads to allocating lower expenditure towards girls' education, and the bias of educational spending manifests itself through this mechanism. This differential treatment could be attributed to the perception that the education-employment linkages are less significant for girls than for boys [15] and to the perception that the returns to education are higher for boys compared to girls [39]. However, in an urban area, we see no significant difference in children's enrollment in government and private schools based on their gender.

The value of R² is 0.405 which shows that 40.5% of the variation in the dependent variable is explained by the explanatory variables (Independent variables) in the model while as rest of the variation is explained by variables not included in this model.

$$\begin{aligned} \ln \text{ Annual Edu Exp} = & 3.016 + 0.251 \text{ Area} - \\ & 0.039 \text{ HHSize} + 0.022 \text{ HHHYOS} + 0.047 \text{ Age} + \\ & 0.071 \text{ Gender} + 0.144 \text{ LnTotal Annual} \\ & \text{HHIncome} + 0.180 \text{ AnyExponTuitions} \end{aligned}$$

The estimated results show that annual education expenditure on an individual child, ceteris paribus, in urban areas is higher by 100 [e^{0.251- 1}] = 100 (1.2853-1) = 28.53% compared to rural areas. The results further show that an increase in household size has a negative and very significant coefficient in the model. As the household size increases by one person, then annual education expenditure on an individual child decreases by 3.9%. The results also show that as the head of the household's level of education increases by one year, the annual education expenditure on an individual child increases, significantly, by 2.2%. Further, the results show that as the child's age increases by one year, the annual education expenditure on an individual child increases by 4.7%. Also, the annual education expenditure on boys is higher by 100 [e^{0.071- 1}] = 100 (1.0735-1) = 7.35% than on girls. As the total annual household income increases by 1%, the annual expenditure on education increases by 0.144%. The annual education expenditure on an individual child increases by 100 [e^{0.18- 1}] = 100 (1.1972-1) = 19.72 per cent if the student takes private tuitions. The study also ran an area and age-group specific regression with "AnnualEduExp" as the dependent variable and "genderofchild" as the only independent variable.

Table 5, shows that in a rural area in the age-group 11-14, annual education expenditure on a male child is 100 [e^{0.11- 1}] = 100 (1.1162-1) = 11.62% greater than on the female child. However, it is statistically insignificant at 5% level of significance. But in the age group of 15-18 years, annual education expenditure on a male child is 100 [e^{0.198- 1}] = 100 (1.2189-1) = 21.89% greater than on female child in the same age group and is statistically significant at 1% level of significance. In urban areas, in the age-group of 11-14 years, annual education expenditure on a male child is 100 [e^{(-.002)- 1}] = 100 (0.998-1) = 0.2% lesser than on female child, and in 15-18 age-group the annual education expenditure on a male child is 100

[e^{-.025- 1}] = 100 (1.0253-1) = 2.53% greater than on the female child. However, both the results are highly insignificant.

4.1 Results of the Regression Model

The independent variables used in the regression analysis consist of both quantitative and qualitative variables. The dependent variable is "annual education expenditure on the individual child". Dummy variables for area and gender of child and expenditure on private tuitions have been used. [Area (yes=1, 0=otherwise); Gender(male=1, 0=otherwise); expenditure on private tuitions(yes=1, 0=otherwise)]

$$\begin{aligned} \text{AnnualEduExp} = & \alpha_1 + \alpha_2 \text{Area} + \alpha_3 \text{HHSize} + \\ & \alpha_4 \text{HHHYOS} + \alpha_5 \text{Age} + \alpha_6 \text{Gender} + \\ & \alpha_7 \text{LnTotalAnnualHHIncome} + \\ & \alpha_8 \text{AnyExponTuitions} + \mu \end{aligned} \quad (1)$$

where,

α_1 = intercept term; $\alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8$ are coefficients to be estimated; μ = error term

4.2 Estimated Result

Literature shows that the gender of a child influences a household's decisions in many ways. Also, many studies have shown that a household allocates differently when it comes to investments in their sons and daughters' human capital. According to Karbownik and Myck [29], "the process considered responsible for household decisions involves either gender-biased preferences or an optimisation mechanism that reflects different costs of investment in boys and girls or differential returns from such investments". The present study shows that the annual expenditure on boys' education is 7.35% higher than that of the girls'. Glewwe and Patrinos [40] found gender discrimination in educational spending in Vietnam as the amount spent on boys is about 5% more than the amount spent on girls. Bhatkal [35], in her study, found that in Andhra Pradesh, conditional education expenditure on girls is 54.2% lesser than that on boys. Rao [42] found a difference, for all education levels, in a household's education expenditure based on gender in India. It indicates that households are inclined to spend less on the education of their female children as compared to male children. One of the potential explanations for educational expenditure differences could be the difference in

school choice by households choosing to enrol boys in private schools and girls in government schools. Table 3 shows that 53.17% of female students are enrolled in government schools, while 60% of the male students are enrolled in private schools. The education expenditure in private schools is characteristically higher, leading to households' gender bias to become stronger¹³. Chaudhuri and Roy [37] confirm significant gaps in the educational expenditure incurred on girls compared to boys within the family unit in Uttar Pradesh. They attribute the presence of this discrimination to (a) choice of non-enrollment of girls, or/and (b) to lower expenditure on their schooling once enrolled in schools. Iddrisu, Danquah, and Quartey [31] detect a male favouring bias is seen in case of primary school-aged children in Ghana. Results in Table 5, show that in rural areas, annual

education expenditure on boys, in the 15-18 age-group, is 21.89% significantly more than that on girls belonging to the same agegroup. This finding is in tune with the findings of Bhatkal [35] and Azam and Kingdon [34] who find gender bias is found in the agegroup of 15-19 years in rural areas. Differential expenditure on boys and girls in 15-18 age-group may be because of the different subject-choice at secondary level; with boys taking up more science related and commerce subjects, which requires large inputs in the form of educational expenditure, while as girls taking up subjects like non-science subjects (which don't require large inputs in the form of educational expenditure) in secondary level. However, this needs to be investigated further. The study didn't collect data on "subject choice" of the students at the higher secondary level.

Table 1. Current enrolment status of children with respect to gender

	Gender		Total (%)	Pearson Chi-Square	Asymp. Sig. (2-sided)
	Male (%)	Female (%)			
Not Enrolled	12 (4.9)	6 (2.4)	18 (3.7)	2.077	.150
Enrolled	231 (95.1)	237 (97.5)	468 (96.3)		
Total	243 (100)	243 (100)	486 (100.0)		

Source: Field survey
Percentages are reflected in brackets

Table 2. Current enrolment status of students with respect to the area

	Area		Total (%)	Pearson Chi-Square	Asymp. Sig. (2-sided)
	Rural (%)	Urban (%)			
Currently not Enrolled	7 (3.1)	11 (4.3)	18 (3.70)	.51	.47
Currently Enrolled	222 (96.9)	246 (95.7)	468 (96.3)		
Total	229 (100)	257 (100)	486 (100)		

Source: Field Survey
Percentages are reflected in brackets

Table 3. Distribution of students by school type with respect to gender

School Type	Gender		Total (%)	Pearson Chi-Square	Asymp. Sig. (2-sided)
	Male	Female			
Government School	87 (37.66)	126 (53.17)	213 (45.51)	11.592	.003
Private School	140 (60.61)	109 (45.99)	249 (53.21)		
Semi-government School	4 (1.73)	2 (0.84)	6 (1.28)		
Total	231 (100)	237 (100)	468 (100)		

Source: Field survey
Percentages are reflected in brackets

Table 4. Distribution of students by school type with respect to area and gender

School Type	Rural		Pearson Chi-Square	Asymp. Sig. (2-sided)	Urban		Pearson Chi-Square	Asymp. Sig. (2-sided)	Total (%)
	Male (%)	Female (%)			Male (%)	Female (%)			
Government School	42 (40.78)	81 (68.07)	16.642583	.000	45 (35.16)	45 (38.14)	0.160178	0.688	213 (45.51)
Private School	61 (59.22)	38 (31.93)			79 (61.72)	71 (60.17)			249 (53.21)
Semi-government School	0 (0)	0 (0)			4 (3.12)	2(1.69)			6 (1.28)
Total	103 (100)	119 (100)			128 (100)	118 (100)			468 (100.0)

*Source: Field Survey
Percentages are shown in brackets*

Summary Output of 1st Hypothesis:							
Regression Statistics							
R							0.637
R Square							0.405
Adjusted R Square							0.396
Standard error							0.38092
Coefficients							
Model		Unstandardised Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error			Tolerance	VIF
1	(Constant)	3.016	.143	21.160	.000		
	Area	.251	.037	6.801	.000	0.924	1.083
	HHSize	-.039	.009	-4.163	.000	0.903	1.107
	HHHYOS	.022	.004	6.224	.000	0.858	1.166
	Ageofchild	.047	.008	5.683	.000	0.961	1.041
	Genderofchild	.071	.036	1.988	.047	0.989	1.011
	LnTotalAnnualHHIncome	.144	.020	7.345	.000	0.795	1.087
	AnyExponPvtTuition	.180	.029	6.155	.000	0.920	1.258

a. Dependent Variable: LnAnnualduexp

Table 5. Univariate regression analysis

Coefficients*						
Area	Age-group		Unstandardised Coefficients		t	Sig.
			B	Std. Error		
Rural	11-14	(Constant)	3.601	.075	48.009	.000
		Genderofchild	.110	.109	1.001	.319
	15-18	(Constant)	3.818	.050	76.712	.000
		Genderofchild	.198	.073	2.698	.008
Urban	11-14	(Constant)	4.010	.072	55.652	.000
		Genderofchild	-.002	.102	-.017	.987
	15-18	(Constant)	4.114	.047	87.585	.000
		Genderofchild	.025	.064	.397	.692

Dependent variable = Ln Annual EduExp

One of the chief justification in the extant literature for the gender-bias in education is the male-favouring bias in the labour market [41]. Principally, households undertake expenditure on education of their children in anticipation of economic and non-economic gains their education [13]. The financial returns from investment in daughters' education can decline either due to lesser participation of females in the labour market or less participation in income-generating activities [42]. "Differential economic gains may also come from social norms or cultural practices" [27]. A distinct feature of the patrilineal societies is that sons provide old-age assistance to parents, thus returns to parents of investing in sons' education rather than that in daughters is much higher [27]. The finding of the

present study is consistent with the conclusion of Zimmermann's [33] study. This suggests that household invests differently on the children's education based on gender. Even if households enrol their children in schools irrespective of their gender (Table 1), they spend more on the education of male children, thereby enlarging their choices and opportunities.

5. CONCLUSION

Differential investment in human capital has become a subject of much debate. Concern for disparities in education comes from a moral commitment towards the discriminated and development perspective. With this view, the present study aimed to investigate, if there are

any gender-based differences in household's education expenditure in District Anantnag as a whole and by area separately.

This study considers total annual education expenditure for individual analysis and finds a significant gender bias favouring boys. When area and age-group specific regression models are run separately, the results show that in the rural area in the age-group of 15-18 years, there is a significant gender bias favouring boys in annual expenditure on education. The results don't show any significant differences in household's education expenditure in urban areas. There are several possible explanations for these findings. Firstly, the results of the study reveal that the majority of the girls are enrolled in government schools, while the majority of the boys are enrolled in private schools. Education in government schools is provided free of cost up to Class 8th.

In contrast, the cost of education in private schools is very high, which can induce bias to occur via differential investment in education. Policy considerations must give due importance to the quality of education received by girls and boys. Given that most of the girls are enrolled in government schools, it is important that the quality of education provided by government schools be improved to augment their learning outcomes.

Secondly, as the education-employment linkages are not as important for girls as for boys [15] it might reduce parents' motivation to invest more in girls' education. Thirdly, the difference in expenditure could either be due to the difference in private tuitions expenditure and the students' different subject choice behaviour at the higher secondary level. However, the study didn't investigate it.

The question that remains to be answered is whether the difference in education expenditure, thus discovered, is strong enough to mutate into the gender-based disparity in the development of capacities and access to employment opportunities. However, it is pertinent to mention that the study didn't collect the data on the factors like students' inborn abilities, taste, motivation etc. It can't be said with assurance whether the gender bias in education expenditures is because of the gender bias alone or due to some unobserved factors. This leaves scope for further study.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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