

Reasons For The Unequal Ratio Of Girls' Enrolment In Technical Education

Deepti Kesarwani, Jadi Bala Komaraiah

Abstract: Persistence of gender gap in education is the most prominent characteristics of Indian education system. In higher technical education, this gender disparity has aggravated many times due to several factors. In the present study, we assessed the consent of the students of engineering college for the factors behind the unequal ratio of girls and boys in higher technical education. The results of the study suggests that most of the students including girls agreed with the fact that this gender disparity is mainly due the lack of girl's security, financial crisis at home, lack of parents support and other backward socio-cultural practices prevalent in the society. It is the society and government who can provide a safe environment and spread awareness about education through policy making and media campaigns in order to make women more empowered by increasing gender equality in technical education.

Index Terms: Gender disparity, Girl's safety, Higher technical education, Women empowerment.

1. INTRODUCTION

Women have lower literacy rate than men in most of the developing countries including India [7], [21]. It reduces human capital which subsequently has negative impact on country's economic growth [15]. Despite the various women's movement [10] and government policies [11], there is a significant gender gap in Indian education system at all levels. This gap is wider in higher education. The gross enrolment ratio (GER) in higher education in India was 25.3% among males while it was 23.2% among females in 2014-15 [17]. The male and female ratio of enrolment in higher education was 0.85 in 2014-15 [12] that suggests that for per hundred males, 85 females got enrolled in higher education. During their higher education females face many problems and challenges in their families as well as in colleges. Sometimes these problems may result in discontinuation of women's higher education. It is therefore a requirement that these problems should be discussed and controlled to increase the participation of women in higher education and higher technical education [9]. The enrolment of females in higher education is affected by personal, community and institutional related factors like social norms, economic issues, safety and policy [4], [19]. Many sub-factors such as poverty, direct cost of education (fees, uniform, transportation etc.), social perception and marriage, high opportunity cost and future benefit from education etc. cumulatively work in order to form these main issues [1], [5], [23]. Though these factors for girls' low enrolment are established, it is imperative to study the understanding of students about these factors. Therefore, our objective in this paper is to assess the agreement of engineering colleges' students on the reasons for the unequal ratio of girl's enrolment in higher technical institutions.

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2. METHODOLOGY

2.1 Study design and sampling methodology

The study follows cross-sectional research design and the data was collected through a questionnaire. The instrument used for the study was a self-administered questionnaire based on five point Likert scale which is regarded as the most suitable instrument for measuring views and impressions. The items of the questionnaire were selected based on the reviewed literature. The options for each item were strongly agree, agree, can't say, disagree and strongly disagree. The face and content validities of the questionnaire and its items were assessed through reviews by the teachers and subject matter experts. The suggestions and comments made by them were considered and questionnaire was revised accordingly. Overall 437 students were surveyed from four engineering colleges in Varanasi. A purposive sampling strategy was followed in which two sections in each of the colleges were allowed to be surveyed from the authority. All the students in the specific sections were asked to be enrolled in the study. Informed consent was obtained from all the students prior to the survey administered.

2.2 Variables

The main outcome variable was students' agreement on reason for unequal ratio of girls' enrolment in the higher technical education. Ten Likert scale items were asked to the students which are as follows,

- Parents' low level of education,
- Early marriage
- Financial crisis at home
- Lack of parents' support
- Male preference in the family
- Backward thinking towards girls' education
- Lack of girls' security
- Traditional cultural practice
- Poor schooling
- Menstrual problem

Other variables which are included in the analysis are socio-demographic characteristics of student such as age group, gender, marital status, region, residential status, religion and caste.

2.3 Statistical Analysis

For the presentation of results, the options strongly agree and agree were clubbed together. Similarly, strongly disagree and disagree were also combined. The missing responses for each item were clubbed with can't say to present the complete data. Summary statistics for socio-demographic characteristics were presented as frequency and percentages. Mean age in years along with range was also calculated. The students' agreements were also presented separately for girls and boys. Chi-square test was used to assess the difference in response between girls and boys. A multiple linear regression analysis was performed to assess the difference in proportion of boys and girls after adjusting other variables such as age group, region, residential status, religion and caste. For this analysis, the options were made binary as agree and others by further clubbing disagree and can't say. Proportion of boys and girls was presented with 95% confidence interval (CI).

2.4 Socio-demographic profile of students

Table 1 depicts the socio-demographic characteristics of the students. Among the participants 30.9% were girls (n=135) and 69.1% (n=302) were boys. Mean age was 19.9 years with the range 17-20 years. Almost 70% (n=307) students were of the age group 17-20 years. Almost all of them were unmarried. Overall, 52.2 % were from rural area and 30.7% were hostellers. Religion wise 94.5% were Hindu and caste wise 45.3% and 43.7% were from the general and OBC classes, respectively.

TABLE 1
SOCIO DEMOGRAPHIC CHARACTERISTICS OF STUDENTS

Variables	Frequency	Percentage
Gender		
Female	135	30.9
Male	302	69.1
Age group		
Up to 20 years	307	70.3
21 years and above	130	29.7
Marital status		
Single	436	99.8
Married	1	0.2
Region		
Rural	228	52.2
Urban	209	47.8
Residence type		
Hosteller	134	30.7
Day scholar	303	69.3
Religion		
Hindu	413	94.5
Muslim	17	3.9
Others	7	1.6
Caste		
General	198	45.3
OBC	191	43.7
SC	41	9.4
ST	7	1.6

3. RESULTS

Table 2 shows the students agreement on the reason for unequal ratio of girls' enrolment in the higher technical education. Among all the reasons, lack of girls' security was at first place as 66.4% students agreed on the same followed by financial crisis at home (60%), lack of parents' support (53.6%), backward thinking (47.37%), early marriage (46.9%) and parents' low level of education (46.2%). Among girls, 67.4% reported girls' security, 66.7% reported financial crisis at home, 52.6% lack of parents' support and 51.9% backward thinking. Among boys, 65.9% reported girls' security, 57% reported financial crisis at home, 54% lack of parents' support and 47.7% parents' low level of education. The result of multiple regression analysis depicted in table 3 suggest that even after adjusting other socio-demographic factors, financial crisis and lack of girls security were the first two reasons reported by girls with 66.75 and 66.28%, respectively. Whereas among boys, the most agreed reason was lack of girl's security with 66.39% followed by financial crisis reported by 56.92% boys. There were no statistically significant difference observed between the proportion of boys and girls who were agreed on the reasons. However, Table 3 shows that significantly less proportion of boys (35.52%) than girls (46.47%) reported that poor schooling is a factor for gender disparity in higher technical education, p value=0.031.

4. DISCUSSION

In this paper, we presented the students' agreement on unequal ratio of girls and boys in higher technical education. Though the reasons presented in this paper were considered as causes for the disparity in the ratio of male and female students in various studies like [3], [4], [13], [20], [21], [22], [23], the difference in this paper is that the student's perception on these reasons were assessed. In [16], the number of males and females enrolled in academic and professional courses in private, government and government-aided institutions were assessed. Considering that sex ratio in India in 2015 was around 950 females per 100 males in the age group 15 and above, the ratio of female participation in professional courses is lower than male in comparison to academic courses at both Under Graduate and Post Graduate levels. In this paper, most of the students reported that lack of girls' security comes as the first and the foremost factor among others for the gender disparity in technical education. As overall 66.4% students agreed on the same (Table 2). Also, almost 66% of boys and the same proportion of girls agreed on this factor (Table 3). Insecurity among girls' for going outside from their home, town or city will make them deprived of getting higher technical education. The results are in line with other studies that have reported similar findings [3], [9], [18], [24], that if there is an issue with girls' safety and security it will not be possible for them to get education further in higher classes specifically in technical education because such type of education is mostly provided in male dominated surroundings.

TABLE 2
STUDENT'S AGREEMENT ON THE REASONS RESPONSIBLE FOR
UNEQUAL RATIO OF GIRLS IN TECHNICAL EDUCATION

Reasons	Gender		Strongly agree/ Agree	Can't say/ Did not respond	Strongly disagree/ Disagree	p value ¹
			N (%)	N (%)	N (%)	
Parents' level of education	low of	Female (n=135)	58 (42.96)	30 (22.22)	47 (34.81)	0.026
		Male (n=302)	144 (47.68)	89 (29.47)	69 (22.85)	
		Overall (437)	202 (46.22)	119 (27.23)	116 (26.54)	
Early marriage		Female (n=135)	64 (47.41)	36 (26.67)	35 (25.93)	0.307
		Male (n=302)	141 (46.69)	99 (32.78)	62 (20.53)	
		Overall (437)	205 (46.91)	135 (30.89)	97 (22.2)	
Financial crisis at home		Female (n=135)	90 (66.67)	33 (24.44)	12 (8.89)	0.142
		Male (n=302)	172 (56.95)	90 (29.8)	40 (13.25)	
		Overall (437)	262 (59.95)	123 (28.15)	52 (11.9)	
Lack of parents' support		Female (n=135)	71 (52.59)	22 (16.3)	42 (31.11)	<0.001
		Male (n=302)	163 (53.97)	94 (31.13)	45 (14.9)	
		Overall (437)	234 (53.55)	116 (26.54)	87 (19.91)	
Male preference in the family		Female (n=135)	58 (42.96)	32 (23.7)	45 (33.33)	<0.001
		Male (n=302)	117 (38.74)	126 (41.72)	59 (19.54)	
		Overall (437)	175 (40.05)	158 (36.16)	104 (23.8)	
Backward thinking towards girl education		Female (n=135)	70 (51.85)	28 (20.74)	37 (27.41)	0.012
		Male (n=302)	137 (45.36)	104 (34.44)	61 (20.2)	
		Overall (437)	207 (47.37)	132 (30.21)	98 (22.43)	
Lack of girls security		Female (n=135)	91 (67.41)	17 (12.59)	27 (20.0)	0.003
		Male (n=302)	199 (65.89)	71 (23.51)	32 (10.6)	
		Overall (437)	290 (66.36)	88 (20.14)	59 (13.5)	
Traditional cultural practice		Female (n=135)	54 (40.0)	49 (36.3)	32 (23.7)	0.187
		Male (n=302)	125 (41.39)	127 (42.05)	50 (16.56)	
		Overall (437)	179 (40.96)	176 (40.27)	82 (18.76)	
Poor schooling		Female (n=135)	62 (45.93)	29 (21.48)	44 (32.59)	0.023
		Male (n=302)	108 (35.76)	103 (34.11)	91 (30.13)	
		Overall (437)	170 (38.9)	132 (30.21)	135 (30.89)	
Menstrual problem		Female (n=135)	20 (14.81)	40 (29.63)	75 (55.56)	<0.001
		Male (n=302)	62 (20.53)	147 (48.68)	93 (30.79)	
		Overall (437)	82 (18.76)	187 (42.79)	168 (38.44)	

1. p values were calculated by using Chi-square test to test the difference of agreement between female and male students.

TABLE 3

DIFFERENCE IN ADJUSTED PROPORTION OF AGREEMENT ON THE REASONS RESPONSIBLE FOR UNEQUAL RATIO OF GIRLS IN TECHNICAL EDUCATION BETWEEN MALE AND FEMALE STUDENTS

Reasons	Male		Female		p value ¹
	Proportion	95% CI of proportion	Proportion	95% CI of proportion	
Parents' low level of education	42.87	34.35-51.39	47.73	42.07-53.39	0.354
Early marriage	46.85	38.32-55.37	46.94	41.28-52.60	0.986
Financial crisis at home	66.75	58.38-75.12	56.92	51.35-62.48	0.057
Lack of parents' support	52.04	43.59-60.49	54.22	48.61-59.83	0.675
Male preference in the family	42.47	34.28-50.66	38.96	33.52-44.40	0.486
Backward thinking towards girl education	51.26	42.91-59.60	45.63	40.08-51.18	0.274
Lack of girls security	66.28	58.28-74.28	66.39	61.08-71.71	0.981
Traditional cultural practice	40.35	31.99-48.71	41.23	36.68-46.79	0.863
Poor schooling	46.47	38.26-54.68	35.52	30.06-40.98	0.031
Menstrual problem	15.22	8.66-21.78	20.35	15.99-24.71	0.204

1. p values were calculated by using the multiple regression analysis adjusting for baseline characteristics to test the difference of agreement between female and male students.

So, the parents of the girl students have to be very cautious about their daughter's safety and security. Women who enter the tertiary education sector are subjected to subtle environmental challenges such as inconvenient sanitary facilities, verbal abuse and sexual harassment that make their academic and social life more difficult [23]. They tend to limit the freedom of girls to participate in higher education [6]. In this paper, financial crisis is reported as the second most important factor which retard the way of girls getting into higher technical education. Poverty and lack of money has always been a critical factor that determines the student's higher education. It is less likely for students from low socio-economic status (SES) to opt higher technical education. In case of female students from low SES the situation is worse, and they face competition with their male siblings for getting enrolled in tertiary education [8], [14]. Backward thinking and lack of parental support to girls' education were also reported by more than 50% student. As mention in the study of [2], it is considered that without parent's support no student can even complete their study. It is found that India's patriarchal society tend to give less importance to women education due to socio-cultural barriers prevailing in the society [3], [8], [15]. In male dominated society, priorities are given to marriage and motherhood for girls to their education and career development. There is difference similarity between the thinking of boys and girls on most of the reasons as the proportion of boys and girls who agreed on various reasons were not significantly different. However, significantly less proportion of boys than girls (35.52% vs. 46.47%) reported that poor schooling is a factor for gender disparity in higher technical education.

5. CONCLUSION

Based on the finding of the study, it can be concluded that most of the students including girls have the opinion that lack of security, financial crisis and lack of financial support

are the major reasons behind the low enrolment of girls in higher technical education than boys. In order to make this ratio equal between girls and boys, family and parents should come forward for it. It is society and government who can provide a safe environment and spread awareness about education through policy making and media campaigns.

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