

A Comparative Study of Academic Performance between Male and Female Students at University Level in Bangladesh

Mst. Bithi Akter , Md. Torikul Islam, Anis Mahmud

Department of Statistics, Jahangirnagar University, Savar, Dhaka, Bangladesh

Abstract

For more than a decade, we have seen that at the university level in Bangladesh, girls have achieved better academic results than boys. Academics have blamed boys for their outward attitude and misuse of mobile phones and the internet.

The study is conducted to investigate the important factors that affect the academic performance of university level students in Bangladesh. And it has also been determined how much higher the risk is due to the low academic performance of males than females. A cross sectional study is conducted among 960 students of 12 top public universities in different locations in Bangladesh. For each university, we have selected an equal number of male and female graduate and postgraduate students only who have passed within recent three years. Here we consider the merit position in graduate and post-graduate label (1-10th place) as a dependent variable and the marital status, parent's educational level, guardian's occupation, households income status (BDT), family status, residential area, background educational result, girlfriend/boyfriend relationship status, career goal, smoking status, involvement of student politics, tuition trend, internet using time, a library using status, residential place in the study period, class attendance as the independent variable. Binary logistic regression model, chi-square test and simple descriptive analysis are used for data analysis. The binary logistics model is used to find out the factors for better academic results among male and female students.

Keywords: Academic performance, Factors, Cross sectional study, Public University, Bangladesh.

1. Introduction

For an educational institution in a country, students are one of the most significant assets. And the academic performance of the students is directly linked to the social and economic development of the country. A quality full graduates will become a good wealth for a country thus is the one kind of responsible for the country's economic and social development as well as its can be make a great leader of the country. The student's academic achievement plays an important role in producing the best quality graduates [1].

Many researchers conducted detailed studies about the factors associated the student performance at different study levels. Educational success of the student is heavily reliant on the social status of the student's guardians in society [2]. The different study result provides the information is that the significant different parent's income and social status has significantly affected the academic result of the students [3], as well as the students higher levels of educational performance (university) is highly associated with the higher secondary educational performance [4]. So, student's educational background is one of the most important factors for student's farther academic achievement and it indicates the future academic performance of the student's [5]. Several types of study conducted for finding and analyzing the associated factors for the academic performance of the students at different educational levels. Their finding identifies some specific factors likes, student's educational background, household income, gradient educational level, learning methods, socio-economic status of the students, and also the residential area of the students. Gradients socio-economic status like parents' academic qualifications, occupations, and income status are also factors for academic achievement. The results of the different study conclude that the academic performance of the students is mostly dependent upon the parent's socio-economical condition. So, the students belonging to

lower social-economical families will not perform better than the students belonging to higher social economical families, and also the socioeconomic status of the student is generally determined by combining parents' occupation, income levels, and social status [6].

In another study educational backgrounds pointed out that students who come from lower educational background levels performed relatively so good than the students who come from higher educational background levels [7]. They give these phenomena named is educational elasticity and household total income, expenditure, the annual rate of deposit also put a large effect on the academic achievement and educational successes. Residential stratification could be another risk factor for academic performance, the low-income backgrounds students usually attend schools with lower funding levels and this condition decrease the educational achievement of the students and also their future life effort [8]. Educational environment of the educational institution is one of the significant parameters of students which means educational environment and teaching methods of the intuitions are strongly associated on student performance [9]. Most of the teacher in lower categories educational institution have run lower categories facilities and their expectations is also lower performance from their students. Students also know that their teachers have very few performance expectations from them and its leads to lower performance by their students. So, student performance is also influenced by the institution in which they studied, number of facilities and also the quality of the institution which affects the performance of its students [10]. Almost all the researcher and educationists are strongly agreed with the principle that schools have a strong effect on academic and educational achievement of the students.

In Pakistan, Punjab government provides the laptop to all students in government schools, colleges and universities students in Punjab, the student can connect with the whole world and can be known about the latest news, development and the present situation in the current world. And it's concluded that the types of institutions in which students are studies so much affected their academic achievement of the students [11]. But regarding Bangladesh, girls have done better academic results with respect to the boys at the university level in Bangladesh for more than one decade. Students' academic achievements are affected by different types of factors, some main factors are gender, guardian social economic status, tuition trend, study hours, residence of the students during their study period and the study environment.

So, the aim of this research is to explore the factors which are associated with academic performance of university level students in Bangladesh. And also determine, how many times high risk the factors for the better academic performance of the female rather than the male. This study let the research scholars hypothesize that the background of the students positively correlates with the academic attainment of graduate students. H_0 : on average the academic performance of graduate students with respect to their background characteristics (i.e., marital status, father education level, mother education level, father's/ guardian's occupation, and household's income). And another H_0 : on average the academic performance of graduate students with respect to their study period characteristics (i.e., have any girlfriend/boyfriend, career goal, smoking status, involvement in student politics, tuition trend) and also H_0 : on average the academic performance of male and female student is equal.

Therefore, the main objective of this research is to investigate the factors which are associated with academic performance of university level students in Bangladesh by using multivariate logistic regression analysis. A detailed materials and methods including data source and study variables are discussed in Section 2. Study area and data analysis are presented in Section 3 and Section 4. The concluding remarks with result and discussion are described in the final Section 5.

2. Materials and Methods

2.1 Data Source

A cross sectional study is conducted among 960 students of 12 leading public universities at different locations in Bangladesh. In each university 80 samples have been selected where 40 male and 40 female graduate and post-graduate label students only who have passed the graduate and post-graduate within recent three years. The university is selected purposively and simple random sampling technique is used for selecting the sample from each university. The survey is conducted from **February 2021 to April 2021**, where a self-constructed questionnaire is used to collect primary data considering the objective of the study. A structured questionnaire with 52 items is used to collect data and we have clearly summarized about the questionnaire; respondents took about 15 minutes to fill this questionnaire and each respondent completed five sections of a questionnaire. Firstly, the questionnaire is prepared for Jahangirnagar University and the original questionnaire for conducting a pilot survey among 45 students in the Department of Statistics is revised. Simple statistical techniques such as frequency distribution and percentage of the frequency are used to analyze the collected data. Also, it is ensured that each answer is correctly

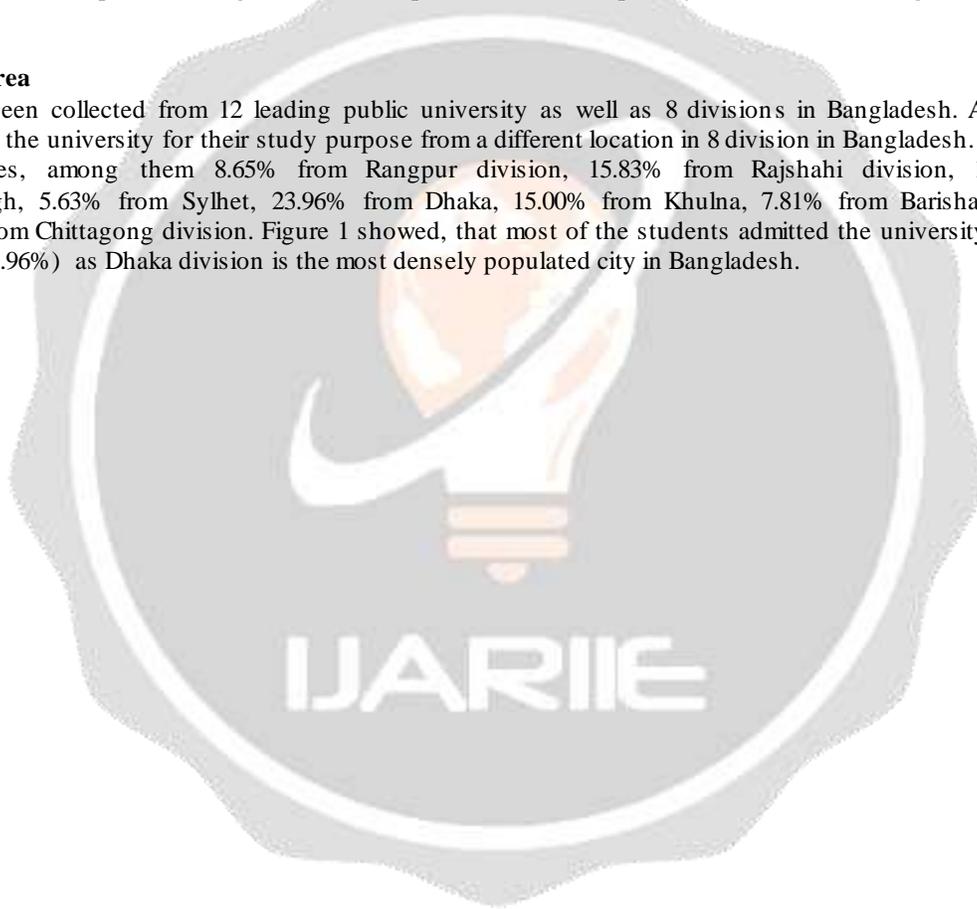
recorded and it is clean and verified. Data from the questionnaires has been compiled, sorted, edited, classified and coded into the coding sheet of Stata version 14.2 SE and Microsoft Excel 2016.

2.2 Variables of the Study

Twelve public universities include: Jahangirnagar University, Islamic University, University of Dhaka, University of Rajshahi, Bangladesh Agricultural University, Mawlana Bhashani Science and Technology University, Noakhali Science and Technology University, Jagannath University, Comilla University, University of Barisal, Shahjalal University of Science and Technology and Khulna University. A set of factors that influence the academic performances of the students have been selected from each respondent respectively for the study purpose. These included sex, completed education labels, father's/ guardian's occupation, households income status, family status, marital status, spending times for academic purposes, girlfriend/boyfriend status, all academic results, monthly expenditure, source of earning money, number of involving of extra curriculum activities, location of residence, division, residential place, food quality of the hall, class attendance, library using status, smoking behavior, involving in student politics, using internet, time spend for recreation per day, and student career goal.

3. Study Area

Data has been collected from 12 leading public university as well as 8 divisions in Bangladesh. And students admitted to the university for their study purpose from a different location in 8 division in Bangladesh. We collected 960 samples, among them 8.65% from Rangpur division, 15.83% from Rajshahi division, 13.23% from Mymensingh, 5.63% from Sylhet, 23.96% from Dhaka, 15.00% from Khulna, 7.81% from Barishal and 9.90% students from Chittagong division. Figure 1 showed, that most of the students admitted the university from Dhaka division (23.96%) as Dhaka division is the most densely populated city in Bangladesh.



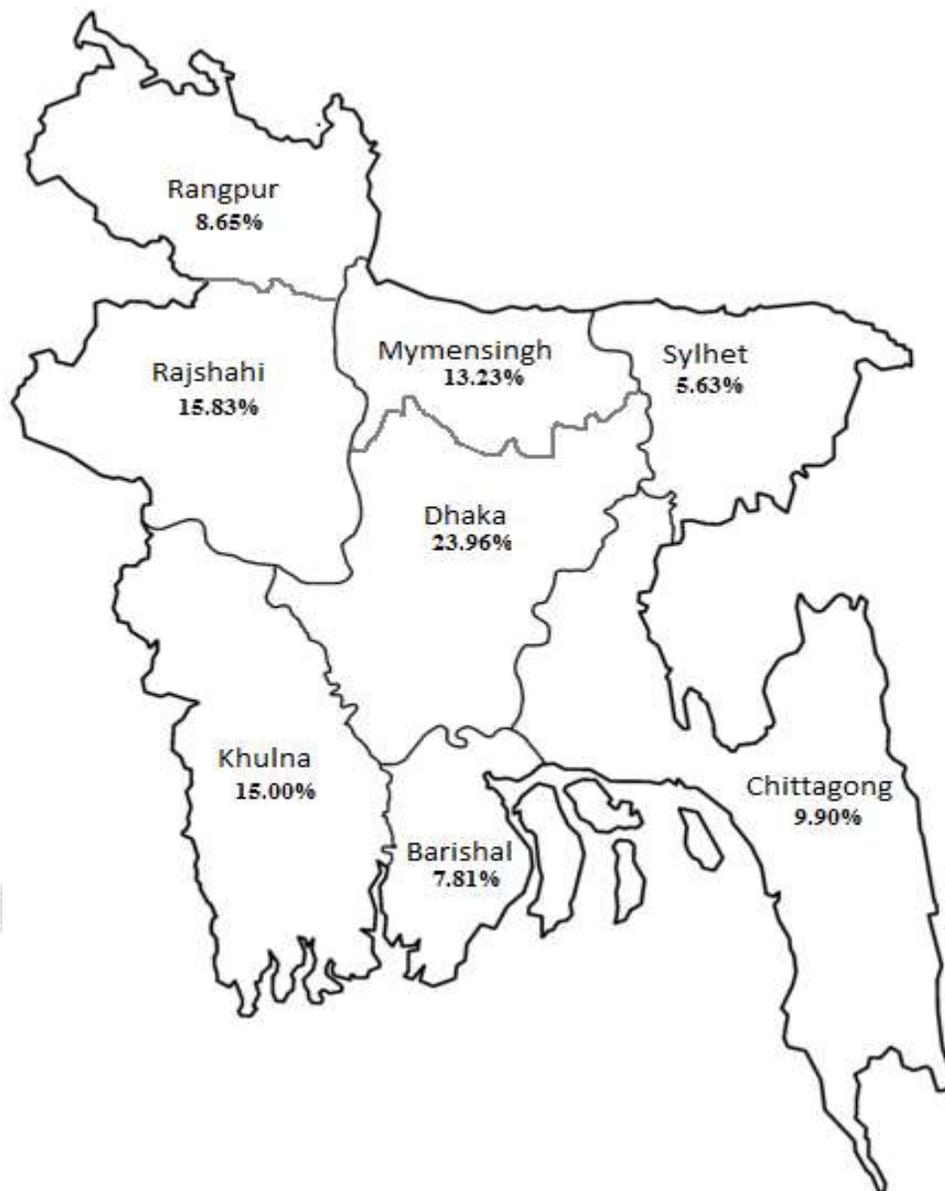


Figure.1: Division wise respondents' proportion

4. Data Analysis

Stata version 14.2 SE (Stata Corp (2015). Statistical Software: Release 14. College Station, TX: Stata Corp LP.) used for data analysis and also excel (2016) used for different types of graphs of the analysis. Respondent's household's income, spending times for an academic purpose, monthly expenditure, internet using time, and students' results were converted as continuous to categorical variables. Descriptive statistics are applied to examine the frequency and percentage of socio-economic and background characteristics of the respondents, academic results of male and female respondents and time spent on academic and other purposes. Descriptive statistics of frequencies and proportions are used for categorical variables, and mean and standard deviations are calculated for continuous. Chi-square test is applied to examine the different factors associated with the academic performance of the student. Multivariate binary logistic regression odds ratios (ORs) have been applied to determine factors for lower academic performances of the male students than female students with a 95% confidence interval (CI) and also examined the factor for lower academic of the male student result like father's/guardian's occupation, households income status, family status, marital status, spending times for academic purpose, girlfriend/boyfriend status, all academic results, monthly expenditure, source of earning money, number of involving of extra curriculum activities, location of

residence, division, residential place, food quality of the hall, class attendance, library using status, smoking behavior, involved in student politics, internet-using spend for recreation per day etc. Here we consider the merit position in graduate and post-graduate labels (1-10th place) as a dependent variable and other variables considered as independent variables. In this paper, we controlled the effect of all confounders while they are associated with the primary exposure variable and outcome of interest by multiple logistic regression models. If a covariate is significantly associated with the exposure variable and binary logistics regression interest results, it is considered as a confounder. And also, odds ratio (OR) with 95% CI and P-value (significant at $P < 0.05$) are used for interpretation.

5. Results and Discussion

5.1: Characteristics of study participants

Table 1 represents the distribution of the socio-demographic and also socio-economic status of the students which includes marital status, father's level of education, mother's level of education, household income status, division, result and other status. The study found that only 6% of the students are married, most of the students are single or unmarried (94%). In case of father level of education, we found that majority (45%) of the student's fathers' level of education are completed higher secondary and above (>class 10), 33% of student's father are completed primary level (class 1-5) and 15% student's father are completed secondary level (class 6-10) whereas a few numbers of fathers are illiterate (7%). We also found that the majority (34%) of the student's mother level of education are completed secondary level and the same number of student's mother are completed primary level and higher secondary and above about 27% whereas 11% of mothers are uneducated. However, 48% of them do private jobs. About 27% are associated with farming and very few of them got govt. job (11%) and business (14%). Table 1 shows that the income of most guardians is middle range (26,000-35,000). We found that 24% income is lower middle (15,000-25,000), 21% income is upper middle (36,000-50,000), 15% income is lowest (<15,000), but only 10% of guardian's income more than 50,000 BDT. From table 1, the variable family status also showed that 44% of students belong to middle class, 21% belongs to upper middle class, 17% belongs to lower middle class, 9% belongs to poor family, 6% belongs to rich family and 3% belongs to very poor family. So, most of the student belongs to middle class family and few numbers of students come from high class family. Among the students surveyed, we found that most of the students about 67% came from rural areas and 33% of them came from urban area.

Among the administrative divisions, the highest and lowest proportions of students are from Dhaka (24%) and Sylhet (6%).

Table 1: Background characteristics of the students

Characteristics	Frequency (N)	Percentage (%)	Mean \pm SD
Marital Status			
Married	61	6.35	
Single	899	93.65	
Father's Level of Education			
Illiterate (class 0)	63	6.56	
Primary level (class 1-5)	321	33.44	
Secondary level (class 6-10)	148	15.42	
Higher secondary and above (>Class 10)	428	44.58	
Mother's Level of Education			
Illiterate (class 0)	107	11.15	
Primary level (class 1-5)	261	27.19	
Secondary level (class 6-10)	330	34.38	
Higher secondary and above (>Class 10)	262	27.29	
Father's/ Guardian's occupation			

Characteristics	Frequency (N)	Percentage (%)	Mean \pm SD
Agriculture	256	26.67	
Private job	463	48.23	
Govt. job	106	11.04	
Business	135	14.06	
Households income status (BDT)			
Lowest (<15,000)	145	15.10	
Lower middle (15,000-25,000)	229	23.85	
Middle (26,000-35,000)	287	29.90	
Upper middle (36,000-50,000)	204	21.25	
Highest (>50,000)	95	9.90	
Family status			
Very Poor	25	2.60	
Poor	89	9.27	
Lower Middle Class	163	16.98	
Middle	422	43.96	
Upper Middle class	205	21.35	
Rich	56	5.83	
Residential Area			
Rural	646	67.29	
Urban	314	32.71	
Division of the Students			
Barisal Division	75	7.81	
Chittagong Division	95	9.90	
Dhaka Division	230	23.96	
Khulna Division	144	15.00	
Mymensingh Division	127	13.23	
Rajshahi Division	152	15.83	
Rangpur Division	83	8.65	
Sylhet Division	54	5.63	
S.S.C result (GPA out of 5.00)			
4.50>	203	21.15	4.82 \pm 0.30
4.50 \leq & <5.00	166	17.29	
5.00	591	61.56	
HS.C result (GPA out of 5.00)			
4.50>	238	24.79	4.77 \pm 0.29
4.50 \leq & <5.00	250	26.04	
5.00	472	49.17	
Status of heard his/her subject before being admitted to the university			
Yes	736	76.67	
No	224	23.33	

The percentage distribution of Characteristics of the students in the study period shows in Table 2. The study found that 36% of students completed their Graduate (B.Sc.) and 64% of students completed their Postgraduate (M.S). Here 20% of students have merit positions in graduate and post graduate labels. But most of the students, 80% have

no merit position in graduate and post graduate label in between 1st to 10th places. Out of all the students, 7% are male who has merit position between male and female and 13% are female who has merit position among them and also presented in Figure 2. We graphically represented the merit position in graduate and post graduate labels (1st-10th places) in Figure 3. We found in this survey that all students completed their graduate (B.Sc.) and postgraduate (M.S) with a scale of 4.00. If we consider this as a percentage, where 14% of students graduate with a CGPA less than 3.00, 66% of students achieve their CGPA not more than 3.5 but greater than or equal to 3.00, 16% of students achieve their CGPA with less than 3.80 but greater than or equal to 3.50, and 5% of all students received a CGPA above 3.80. We also found in this study that 17% of students' post-graduate with a CGPA less than 3.00, 58% of students achieve their CGPA not more than 3.5 but greater than or equal to 3.00, 15% of students achieve their CGPA with less than 3.80 but greater than or equal to 3.50, and 10% of all students received a CGPA above 3.80. Only 35% have a girlfriend or boyfriend status whereas 65% have no girlfriend or boyfriend. This study also talks about their opinion of the relationship and whether it is harmful or not. Here 7% of students give a positive answer about having relationships whereas 61% of students give negative expressions because they think it is obviously harmful and 32% of students said that it may be harmful or harmful not for the study. 56% of students start their relationship in 1st year (B.Sc.), 27% of students start their relationship in 2nd year (B.Sc.), 8% of students start their relationship in 3rd year (B.Sc.), 4% of students start their relationship in 4th year (B.Sc.) and 5% student start their relationship in Masters (M.S). If we want to know their career goals then the results show that 26% of students like the academic profession, 53% of students like the non-academic profession and 21% of students have to prefer any kind of career goal. The results also show that 27% of students smoke cigarettes whereas 73% of students don't smoke cigarettes and so on.

Table 2: Characteristics of the students in study period.

Characteristics	Frequency (N)	Percentage (%)	Mean ± SD
Completed Level of Study			
Graduate (B.Sc.)	346	36.04	
Postgraduate (M.S)	614	63.96	
Have any merit position in graduate and post-graduate label (1st-10th places).			
Yes	193	20.10	
No	767	79.90	
Merit position among male and female			
Male	70	7.29	
Female	123	12.81	
Graduate (B.Sc.) Result (CGPA out of 4.00)			
3.00>	130	13.54	3.36±0.25
3.00≤ & <3.50	630	65.63	
3.50≤ & <3.80	152	15.83	
3.80≤	48	5.00	
Postgraduate (M.S.) Result (CGPA out of 4.00)			
3.00>	107	17.43	3.39±0.24
3.00≤ & <3.50	354	57.65	
3.50≤ & <3.80	94	15.31	
3.80≤	59	9.61	
Having girlfriend/boyfriend Status			
Yes	335	34.90	
No	625	65.10	
Opinion of relationship harmful for study			
Yes	24	7.14	
No	206	61.31	
May be	106	31.55	

Characteristics	Frequency (N)	Percentage (%)	Mean \pm SD
Their relationship starting year			
1 st year (BSc.)	190	56.55	
2 nd year (BSc.)	90	26.79	
3 rd year (BSc.)	26	7.74	
4 th year (BSc.)	12	3.57	
Masters (M.Sc.)	18	5.36	
Career Goal			
Academic Profession	250	26.04	
Non-academic Profession	504	52.50	
Any one	206	21.46	
Smoking status			
Yes	262	27.29	
No	698	72.71	
Involvement of student politics			
Yes	253	26.35	
No	707	73.65	
Earn money			
Yes	451	46.98	
No	509	53.02	
Source of earning money			
Tuition	330	70.51	
Part time job	105	22.44	
Tuition and Part time job both	33	7.05	
Maximum number of tuition in his/her study period			
≤ 2	200	56.18	
$2 <$	156	43.82	
Involvement of extracurricular activities			
Yes	352	38.18	
No	570	61.82	
Maximum Number of Involvement of extracurricular activities			
≤ 1	171	43.07	
$1 <$	226	56.93	
Starting year of extracurricular activities			
1 st year (BSc.)	170	45.09	
2 nd year (BSc.)	114	30.24	
3 rd year (BSc.)	64	16.98	
4 th year (BSc.)	19	5.04	
Masters (M.Sc.)	10	2.65	
They had faced any harassment (physical or mental) in their study life by senior			
Yes	228	41.23	
No	325	58.77	
No. of facing harassment (physically or mentally) in their study life by senior			
1-5	160	68.09	
5-10	25	10.64	

Characteristics	Frequency (N)	Percentage (%)	Mean \pm SD
10<	50	21.28	
Internet using status (less than 5 hours/day)			
Yes	856	89.17	
No	104	10.83	
Library using status			
Yes	367	38.23	
No	593	61.77	
Reason for not using the library			
Lack of space in Library	211	32.07	
Room environment is enough for study	127	19.30	
Others	320	48.63	
Library using time (Hour/day)			
≤ 3	179	42.12	3.67 \pm 2.19
3<	246	57.88	
Methods of teaching quality			
Pleased	562	58.54	
Not pleased	291	30.31	
Highly pleased	53	5.52	
Annoyed	54	5.63	
Residential place in study period			
Campus Hall	552	57.50	
Own House	154	16.04	
Rental House	92	9.58	
Relative House	162	16.88	
Month of late for gotten seat at hall			
<1	54	9.76	9.09 \pm 6.42
2-6	148	26.76	
6<	351	63.47	
Food quality at Hall			
Highly pleased	18	3.25	
Pleased	294	53.16	
Not pleased	241	43.58	
Status of cooking food them self			
Yes	303	31.56	
No	657	68.44	
Had enough study environment at hall or not			
Yes	337	60.94	
No	216	39.06	
Class Attendance			
Regular	626	65.21	
Average regular	239	24.90	

Characteristics	Frequency (N)	Percentage (%)	Mean \pm SD
Irregular	95	9.90	

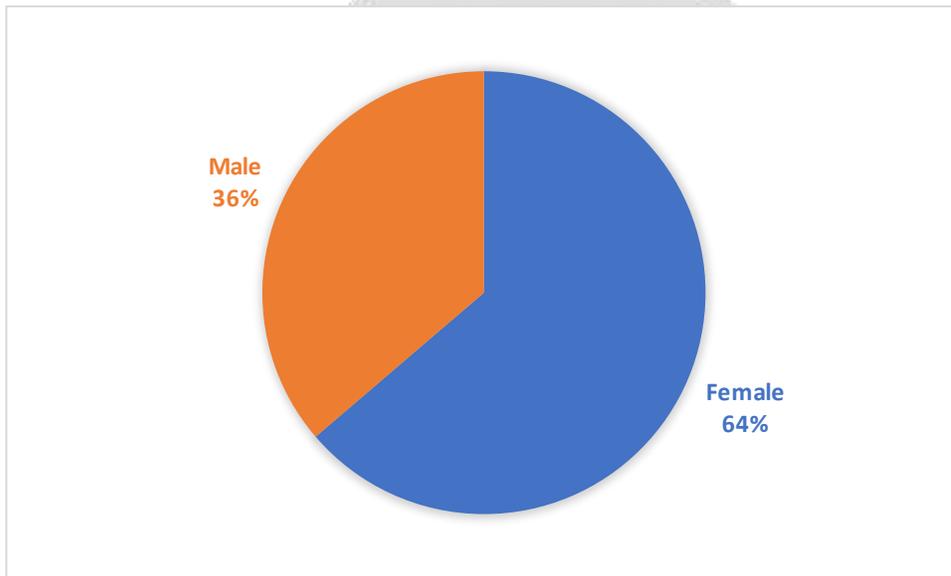


Figure.2: Merit position (1st -10th places) among male and female students

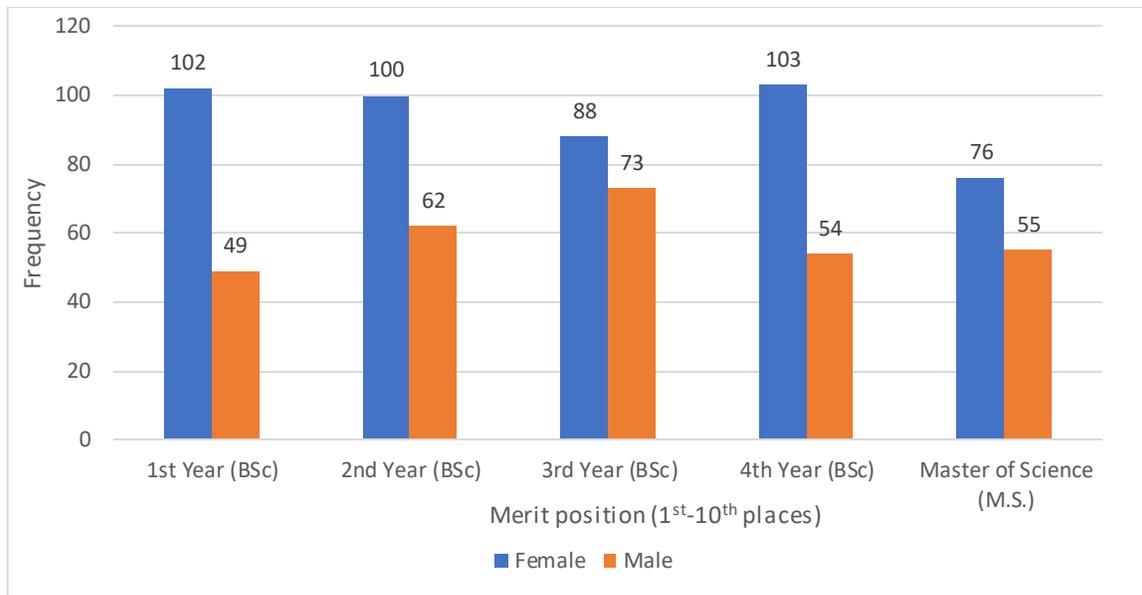


Figure.3: Male female merit position (1st-10th places) in BSc. and MS. Label

5.2: Association of respondent's characteristics with their merit position (1st-10th places).

Sex and marital status, parents' educational level, household income status, family status, secondary and higher secondary results, having girlfriend boyfriend, relationship starting year, career goal, involvement of students' politics, source of earning money, internet using status, and library using status ($P=0.000$) are the most significant characteristics which are associated with the getting merit position (1st-10th places) of the graduate and post graduate label student.

Students who are involved in more than one extracurricular activity or who are not involved in extracurricular activity more than one are most important factors for getting a merit position in their academic life. Students who have faced of physical and mental harassment in their student life ($p=0.000$) is also affected by getting merit position in their academic life. The respondent who thinks that teaching quality is pleased, not pleased, highly pleased and annoyed is highly associated with the getting merit position (1st-10th places) in their academic life at the university level. Student residential place in their study period ($p=0.000$) is the most important factor to getting merit position in their study period and also who get early and late gotten seat at the hall in their study period ($p=0.000$). The student who regularly attend their class and who are not regularly attend their class has significance differences in getting merit position in their academic period so, class attendance is another factor in getting merit position for the students. See the detailed results in Table-3.

Table 3: Association of respondent's characteristics with merit position (1st-10th places).

Characteristics	Yes	No	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
Sex				
Male	70(7.29)	410(42.71)	18.22	0.000***

Characteristics	Yes	No	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
Female	123(12.81)	357(37.19)		
Marital Status				
Married	24(2.50)	37(3.85)	15.01	0.000***
Single	169(17.60)	730(76.04)		
Father's Level of Education				
Illiterate (class 0)	8(0.83)	55(5.73)	8.39	0.038*
Primary level (class 1-5)	52(5.42)	269(28.02)		
Secondary level (class 6-10)	34(3.54)	114(11.88)		
Higher secondary and above (>Class 10)	99(10.31)	329(34.27)		
Mother's Level of Education				
Illiterate (class 0)	24(2.50)	83(8.65)	8.13	0.043*
Primary level (class 1-5)	37(3.85)	224(23.33)		
Secondary level (class 6-10)	71(7.40)	259(26.98)		
Higher secondary and above (>Class 10)	61(6.35)	201(20.94)		
Father's/ Guardian's occupation				
Agriculture	37(3.85)	219(22.81)	7.25	0.064 ^{ns}
Private job	100(10.42)	363(37.81)		
Govt. job	24(2.50)	82(8.54)		
Business	32(3.33)	103(10.73)		
Households income status (BDT)				
Lowest (<15,000)	24(2.50)	121(12.60)	12.59	0.013*
Lower middle (15,000-25,000)	35(3.65)	194(20.21)		
Middle (26,000-35,000)	61(6.35)	226(23.54)		
Upper middle (36,000-50,000)	43(4.48)	161(16.77)		
Highest (>50,000)	30(3.13)	65(6.77)		
Family status				
Very Poor	6(0.63)	19(1.98)	29.67	0.000***
Poor	6(0.63)	83(8.65)		
Lower Middle Class	18(1.88)	145(15.10)		
Middle	90(9.38)	332(34.58)		
Upper Middle class	55(5.73)	150(15.63)		
Rich	18(1.88)	38(3.96)		
Residential Area				
Rural	120(12.50)	526(54.79)	2.87	0.090 ^{ns}
Urban	73(7.60)	241(25.10)		
Division of the Students				
Barisal Division	23(2.40)	52(5.42)	25.15	0.001**
Chittagong Division	13(1.35)	82(8.54)		
Dhaka Division	54(5.63)	176(18.33)		
Khulna Division	38(3.96)	106(11.04)		
Mymensingh Division	14(1.46)	113(11.77)		
Rajshahi Division	31(3.23)	121(12.60)		
Rangpur Division	8(0.83)	75(7.81)		
Sylhet Division	12(1.25)	42(4.38)		

Characteristics	Yes	No	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
S.S.C result (GPA out of 5.00)				
4.50>	6(0.63)	197(20.52)	52.95	0.000***
4.50 ≤ & < 5.00	30(3.13)	136(14.17)		
5.00	157(16.35)	434(45.21)		
HS.C result (GPA out of 5.00)				
4.50>	24(2.50)	214(22.29)	23.23	0.000***
4.50 ≤ & < 5.00	49(5.10)	201(20.94)		
5.00	120(12.50)	352(36.67)		
Status of heard his/her subject before being admitted to the university				
Yes	53(5.52)	171(17.81)	2.30	0.129 ^{ns}
No	140(14.58)	596(62.08)		
Have any girlfriend/boyfriend of you				
Yes	113(11.77)	512(53.33)	4.56	0.033*
No	80(8.33)	255(26.56)		
Opinion of relationship harmful for study				
Yes	37(11.01)	69(20.54)	11.09	0.004**
No	37(11.01)	169(50.30)		
May be	6(1.79)	18(5.36)		
Their relationship starting year				
1 st year (BSc.)	36(10.71)	154(45.83)	53.79	0.000***
2 nd year (BSc.)	12(3.57)	78(23.21)		
3 rd year (BSc.)	20(5.95)	6(1.79)		
4 th year (BSc.)	6(1.79)	6(1.79)		
Masters (M.S.)	6(1.79)	12(3.57)		
Career Goal				
Academic Profession	121(12.60)	129(13.44)	178.22	0.000***
Non-academic Profession	36(3.75)	468(48.75)		
Anyone	36(3.75)	170(17.71)		
Smoking status				
Yes	145(15.10)	553(57.60)	0.71	0.398 ^{ns}
No	48(5.00)	214(22.29)		
Involvement of Student politics				
Yes	163(16.98)	544(56.67)	14.54	0.000***
No	30(3.13)	223(23.23)		
Earn money				
Yes	77(8.02)	374(38.96)	4.86	0.027*
No	116(12.08)	393(40.94)		
Source of earning money				
Tuition	56(11.97)	274(58.55)	49.02	0.000***
Part time job	3(0.64)	102(21.79)		
Tuition and Part time job both	18(3.85)	15(3.21)		
Maximum number of tuition in his/her study period				
≤ 2	31(8.71)	169(47.47)	0.86	0.354 ^{ns}
2 <	30(8.43)	126(35.39)		

Characteristics	Yes	No	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
Involvement of extracurricular activities				
Yes	47(5.10)	305(33.08)	5.15	0.023*
No	109(11.82)	461(50.00)		
Maximum Number of Involvement of extracurricular activities				
≤ 1	10(2.52)	161(40.55)	26.04	0.000***
$1 <$	57(14.36)	169(42.57)		
Starting year of extracurricular activities				
1 st year (BSc.)	39(10.34)	131(34.75)	22.24	0.000***
2 nd year (BSc.)	6(1.59)	108(28.65)		
3 rd year (BSc.)	16(4.24)	48(12.73)		
4 th year (BSc.)	6(1.59)	13(3.45)		
Masters (M.Sc.)	0(0.00)	10(2.65)		
They had faced any harassment (physical or mental) in their study life by senior				
Yes	121(13.02)	611(63.65)	24.52	0.000***
No	72(7.50)	156(16.25)		
No. of facing harassment (physically or mentally) in their study life by senior				
1-5	36(15.32)	124(52.77)	15.62	0.000***
5-10	12(5.11)	13(5.53)		
$10 <$	24(10.21)	26(11.06)		
Internet using status (5 < hours/day)				
Yes	160(16.67)	696(72.50)	9.81	0.002**
No	33(3.44)	71(7.40)		
Library using status				
Yes	121(12.60)	246(25.62)	61.22	0.000***
No	72(7.50)	521(54.27)		
Library using time (Hour/day)				
≤ 3	50(11.76)	129(30.35)	0.04	0.834 ^{ns}
$3 <$	71(16.71)	175(41.18)		
Methods of teaching quality				
Pleased	102(10.63)	460(47.92)	47.37	0.000***
Not pleased	49(5.10)	242(25.21)		
Highly pleased	30(3.13)	23(2.40)		
Annoyed	12(1.25)	42(4.38)		
Residential place in study period				
Campus Hall	145(15.10)	407(42.40)	36.12	0.000***
Own House	18(1.88)	136(14.17)		
Rental House	12(1.25)	150(7.71)		
Relative House	18(1.88)	74(15.63)		
Month of late for gotten seat at hall				
< 01	6(1.08)	48(8.68)	130.07	0.000***
02-06	91(16.46)	57(10.31)		

Characteristics	Yes	No	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
06<	48(8.68)	303(54.79)		
Food quality of Hall				
Highly pleased	12(2.17)	6(1.08)	3.92	0.141 ^{ns}
Pleased	227(41.05)	67(12.12)		
Not pleased	169(30.56)	72(13.02)		
Status of cooking food them self				
Yes	73(7.60)	230(23.96)	4.38	0.036*
No	120(12.50)	537(55.94)		
Had enough study environment at hall or not				
Yes	92(16.64)	245(44.30)	0.52	0.471 ^{ns}
No	53(9.58)	163(29.48)		
Class Attendance				
Regular	169(17.60)	457(47.60)	53.28	0.000***
Average regular	18(1.88)	221(23.02)		
Irregular	6(0.63)	89(9.27)		

NOTE Level of significance: *** for $P < 0.001$, ** for $P < 0.01$, * for $P < 0.05$, ns for not significant.

5.3: Factor for getting merit position (1st-10th places) among the university level students.

To identify the factors that affected the merit position among the university level students in Bangladesh, a binomial logistic regression used, where the dependent variable is having merit position or not in their academic life and independent variable including sex, marital status, father and mother education level, father's/ guardian's occupation, households income status (BDT), family status, residential area, previous result, having girlfriend/boyfriend or not, career goal, involvement of student politics, earn money or not, involvedness of extracurricular activities or not, maximum number of involvedness of extracurricular activities, internet using status (< 5 hours/day), library using status, methods of teaching quality, residential place in study period, status of cooking food them-self or not, they had faced any harassment (physical or mental) in their study life by senior or not, and the class attendance status of the students.

Table 4 showed that female students (OR=2.02, $p < 0.001$) are 2.02 times higher likelihood of having merit position than the male students. And married students (OR=2.80, $p < 0.001$) have higher likelihood of having merit positions than unmarried students. Students who got a GPA of 5.00 in secondary school certificate (S.S.C) (OR=11.87, $p < 0.05$) have more chance to be a getting merit position with respect to the student who got GPA of less than 4.5. Student who chose their career goal in his/her academic sector (OR=4.42, $p < 0.001$) have more the 4 times higher chance of having merit positions. Students who are not involved in more than one extracurricular activity (OR=2.22, $p < 0.001$) have more chance to be a getting merit position with respect to the students who are involved in more than one extracurricular activity. The results also show that library using students (OR=3.55, $p < 0.001$) have 3.55 times higher likelihood of having merit position than the students who do not use library. And also, the student who believes that their teaching quality is highly pleased (OR=4.56, $p < 0.001$) have more chance of getting merit position than the students who believe that their teaching quality annoyed. Students who used campus hall as the residential place in study period (OR=2.69, $p < 0.001$) who have 2.69 times higher likelihood of having merit position than other residential place students. Students who do not face any harassment (physical or mental) in their study life by senior (OR=2.33, $p < 0.001$) have 2.33 times higher likelihood of having merit position than who do not faces any harassment (physical or mental) in their study. And the student who regularly attend their (OR=4.54, $p < 0.001$) have 4.54 times more chance of getting merit position than the students are average regular.

Table 4: Factors for getting merit position (1st-10th places)

Characteristics	Crude OR	CI (95%)		P value	Adjusted OR	CI (95%)		P value
		Lower	Upper			Lower	Upper	
Sex								
Male	1				1			
Female	2.02	1.45	2.79	0.000	2.16	1.34	3.47	0.001**
Marital Status								
Married	2.80	1.63	4.80	0.000	2.78	1.57	4.94	0.000***
Single	1				1			
Father Level of Education								
Illiterate (class 0)	1				1			
Primary level (class 1-5)	1.32	0.59	2.95	0.485	1.30	0.59	2.95	0.525 ^{ns}
Secondary level (class 6-10)	2.05	0.88	4.72	0.092	2.35	0.88	4.72	0.055*
Higher secondary and above (>Class 10)	2.06	0.95	4.49	0.066	1.75	0.95	4.49	0.189 ^{ns}
Father's/ Guardian's occupation								
Agriculture	1				1			
Private job	1.63	1.07	2.46	0.020	1.15	0.66	1.98	0.607 ^{ns}
Govt. job	1.73	0.97	3.07	0.060	1.13	0.58	2.20	0.706 ^{ns}
Business	1.83	1.08	3.11	0.024	1.54	0.82	2.87	0.171 ^{ns}
Households income status (BDT)								
Lowest (<15,000)	1				1			
Lower middle (15,000-25,000)	0.90	0.51	1.60	0.743	0.79	.043	1.44	0.450 ^{ns}
Middle (26,000-35,000)	1.36	0.80	2.29	0.247	1.06	0.59	1.89	0.838 ^{ns}
Upper middle (36,000-50,000)	1.34	0.77	2.33	0.291	1.28	0.66	2.47	0.458 ^{ns}
Highest (>50,000)	2.32	1.25	4.30	0.007	1.47	0.71	3.06	0.297 ^{ns}
Family status								
Rich	6.55	2.40	17.82	0.000	5.66	2.03	15.71	0.001**
Upper Middle class	5.07	2.09	12.28	0.000	5.89	2.38	14.53	0.000***
Middle	3.74	1.58	8.86	0.003	3.88	1.62	9.27	0.002**
Lower Middle Class	1.72	0.65	4.49	0.271	2.01	0.75	5.37	0.160 ^{ns}
Poor	1				1			
Very Poor	4.36	1.26	15.04	0.019	3.78	1.08	13.22	0.037*
Residential Area								
Rural	1				1			
Urban	1.32	0.95	1.84	0.091	1.08	0.76	1.53	0.633 ^{ns}
S.S.C result (GPA out of 5.00)								
4.50>	1				1			
4.50 ≤ & <5.00	7.24	2.93	17.87	0.000	1.91	0.65	5.60	0.233 ^{ns}
5.00	11.87	5.16	27.30	0.000	5.48	1.92	15.63	0.001**
HS.C result (GPA out of 5.00)								
4.50>	1				1			
4.50 ≤ & <5.00	2.17	1.28	3.67	0.004	1.70	0.87	4.26	0.102 ^{ns}
5.00	3.03	1.89	4.86	0.000	1.13	0.64	3.16	0.373 ^{ns}
Have any girlfriend / boyfriend of you								
Yes	1.42	1.02	1.96	0.033	1.50	1.07	2.09	0.016*
No	1				1			

Characteristics	Crude OR	CI (95%)		P value	Adjusted OR	CI (95%)		P value
		Lower	Upper			Lower	Upper	
Relationship harm your study								
Yes	1.60	0.58	4.40	0.355	2.33	0.76	7.09	0.136 ^{ns}
No	0.65	0.244	1.76	0.405	0.73	0.25	2.12	0.567 ^{ns}
May be	1				1			
Career Goal								
Academic Profession	4.42	2.86	6.85	0.000	4.37	2.81	6.79	0.000***
Non-academic Profession	0.36	0.22	0.59	0.000	0.36	0.22	0.60	0.000***
Any one	1				1			
Involvement of Student Politics								
Yes	1				1			
No	2.22	1.46	3.38	0.000	1.50	0.92	2.44	0.098*
Earn money								
Yes	1				1			
No	1.43	1.03	1.97	0.028	1.14	0.77	1.69	0.493 ^{ns}
Involvement of extracurricular activities								
Yes	1				1			
No	1.53	1.05	2.22	0.024	1.51	1.04	2.20	0.028*
Maximum Number of Involvement of extracurricular activities								
≤1	5.43	2.68	10.99	0.000	6.18	2.89	13.18	0.000***
1<	1				1			
Internet using status (5< hours/day)								
Yes	1				1			
No	2.02	1.29	3.16	0.002	2.16	1.33	3.48	0.002**
Library using status								
Yes	3.55	2.56	4.94	0.000	4.87	3.27	7.24	0.000***
No	1				1			
Methods of teaching quality								
Pleased	0.77	0.39	1.52	0.463	0.93	0.37	2.29	0.879 ^{ns}
Not pleased	0.70	0.34	1.44	0.343	0.72	0.28	1.79	0.480 ^{ns}
Highly pleased	4.56	1.96	10.58	0.000	6.04	2.10	17.34	0.001***
Annoyed	1				1			
Residential place in study period								
Campus Hall	2.69	1.58	4.55	0.000	2.92	1.64	5.20	0.000***
Own House	1				1			
Rental House	0.60	0.28	1.30	0.198	0.69	0.31	1.55	0.376 ^{ns}
Relative House	1.83	0.90	3.74	0.094	1.74	0.81	3.74	0.155 ^{ns}
Status of cooking food them self								
Yes	1.42	1.02	1.97	0.037	1.52	1.06	2.19	0.021*
No	1				1			
They had faced any harassment (physical or mental) in their study life by senior								
Yes	1				1			

Characteristics	Crude OR	CI (95%)		P value	Adjusted OR	CI (95%)		P value
		Lower	Upper			Lower	Upper	
No	2.33	1.65	3.27	0.000	2.80	1.93	4.07	0.000***
Class Attendance								
Regular	4.54	2.72	7.57	0.000	4.52	2.61	7.84	0.000***
Average regular	1				1			
Irregular	0.82	0.32	2.15	0.698	0.42	0.31	2.27	0.744 ^{ns}

NOTE. Level of significance: * for P < 0.001, ** for P < 0.01, * for P < 0.05, ns for not significant.**

5.4: Exploring the factors that have a significant difference between male and female or not.

From Table 5, the result shows that marital status, mother educational level, opinion of relationships harmful for study, internet using status, and library using status are not significantly different among the male and female students. On the other hand, father's educational level, parents' occupation, household income and family status, residential area, residential place in study period, secondary (S.S.C) and higher secondary (H.S.C) results, having any girlfriend and boyfriend, career goal, involvement in student politics, source of earning money, and involvement in extracurricular activities has a significant difference among the male and female students.

And also, students who have faced physical and mental harassment, a respondent who think that teaching quality is pleased, not pleased, highly pleased and annoyed, and students who regularly attend class and who do not, have significant differences to getting merit positions in their academic period.

Table 5: Exploring the factors that have a significant difference between male and female or not.

Characteristics	Male	Female	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
Marital Status				
Married	34(3.54)	27(2.81)	0.85	0.354 ^{ns}
Single	453(47.19)	446(46.46)		
Father's Level of Education				
Illiterate (class 0)	29(3.02)	34(3.54)	13.30	0.004*
Primary level (class 1-5)	157(16.35)	91(9.48)		
Secondary level (class 6-10)	57(5.94)	164(17.08)		
Higher secondary and above (>Class 10)	237(24.69)	191(19.90)		
Mother's Level of Education				
Illiterate (class 0)	55(5.73)	52(5.42)	4.06	0.254 ^{ns}
Primary level (class 1-5)	120(12.50)	141(14.69)		
Secondary level (class 6-10)	178(18.54)	152(15.83)		
Higher secondary and above (>Class 10)	127(13.23)	135(14.06)		
Father's/ Guardian's occupation				
Agriculture	158(16.46)	98(10.21)	29.44	0.000***
Private job	218(22.71)	245(25.52)		
Govt. job	34(3.54)	72(7.50)		
Business	70(7.29)	65(6.77)		
Households income status (BDT)				
Lowest (<15,000)	69(7.19)	76(7.92)	37.41	0.000***
Lower middle (15,000-25,000)	142(14.79)	87(9.06)		
Middle (26,000-35,000)	128(13.33)	159(16.56)		

Characteristics	Male	Female	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
Upper middle (36,000-50,000)	114(11.88)	90(9.38)		
Highest (>50,000)	27(2.81)	68(7.08)		
Family status				
Very Poor	12(1.25)	13(1.35)	17.99	0.003**
Poor	52(5.42)	37(3.85)		
Lower Middle Class	88(9.17)	75(7.81)		
Middle	215(22.40)	207(21.56)		
Upper Middle class	99(10.31)	106(11.04)		
Rich	14(1.46)	42(4.38)		
Residential Area				
Rural	357(37.19)	289(30.10)	21.88	0.000***
Urban	123(12.81)	191(19.90)		
Division of the Students				
Barisal Division	27(2.81)	48(5.00)	22.56	0.002**
Chittagong Division	56(5.83)	39(4.06)		
Dhaka Division	104(10.83)	126(13.13)		
Khulna Division	61(6.35)	83(8.65)		
Mymensingh Division	64(6.67)	63(6.56)		
Rajshahi Division	86(8.96)	66(6.88)		
Rangpur Division	51(5.31)	32(3.33)		
Sylhet Division	31(3.23)	23(2.40)		
S.S.C result (GPA out of 5.00)				
4.50>	127(13.23)	76(7.92)	64.62	0.000***
4.50 ≤ & <5.00	117(12.19)	49(5.10)		
5.00	236(24.58)	355(36.98)		
H.S.C result (GPA out of 5.00)				
4.50>	147(15.31)	91(9.48)	29.03	0.000***
4.50 ≤ & <5.00	137(14.27)	113(11.77)		
5.00	196(20.42)	276(28.75)		
Have any girlfriend/boyfriend of you				
Yes	185(19.27)	150 (15.63)	5.61	0.018*
No	295(30.73)	330(34.38)		
Opinion of relationship harmful for study				
Yes	63(18.75)	43(12.80)	2.55	0.279 ^{ns}
No	113(33.63)	93(27.68)		
May be	10(2.98)	14(4.17)		
Career Goal				
Academic Profession	107(11.15)	143(14.90)	8.06	0.018*
Non-academic Profession	271(28.23)	233(24.27)		
Any one	102(24.27)	104(10.83)		
Involvement of Student politics				
Yes	210(21.88)	43(4.48)	149.68	0.000***
No	270(28.13)	437(45.52)		
Earn money				
Yes	308(32.08)	143(14.90)		

Characteristics	Male	Female	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
No	172(17.92)	337(35.10)	113.85	0.000***
Source of earning money				
Tuition	191(40.81)	139(29.70)	31.47	0.000***
Part time job	90(19.23)	15(3.21)		
Tuition and Part time job both	27(5.77)	6(1.28)		
Involvement of extracurricular activities				
Yes	98(10.63)	254(27.55)	102.23	0.000***
No	354(38.39)	216(23.43)		
Maximum Number of Involvement of extracurricular activities				
≤1	170(42.82)	110(27.71)	5.55	0.018*
1<	56(14.11)	61(15.37)		
Starting year of extracurricular activities				
1 st year (BSc.)	129(34.22)	41(10.88)	24.46	0.000***
2 nd year (BSc.)	86(22.81)	28(7.43)		
3 rd year (BSc.)	37(9.81)	27(7.16)		
4 th year (BSc.)	6(1.59)	13(3.45)		
Masters (M.Sc.)	9(2.39)	1(0.27)		
They had faced any harassment (physical or mental) in their study life by senior				
Yes	440(45.83)	292(30.42)	125.99	0.000***
No	40(4.17)	188(19.58)		
No. of facing harassment (physically or mentally) in their study life by senior				
1-5	201(25.54)	169(21.47)	1.75	0.417 ^{ns}
5-10	122(15.50)	84(10.67)		
10<	124(15.76)	87(11.05)		
Internet using status (5< hours/day)				
Yes	427(44.48)	429(44.69)	0.04	0.835 ^{ns}
No	53(5.52)	51(5.31)		
Library using status				
Yes	176(18.33)	191(19.90)	0.99	0.319 ^{ns}
No	304(31.67)	289(30.10)		
Methods of teaching quality				
Pleased	291(30.31)	271(28.23)	23.97	0.000***
Not pleased	159(16.56)	132(13.75)		
Highly pleased	14(1.46)	39(4.06)		
Annoyed	16(1.67)	38(3.96)		
Residential place in study period				
Campus Hall	327(34.06)	225(23.44)	46.88	0.000***
Own House	50(5.21)	104(10.83)		
Rental House	65(6.77)	97(10.10)		
Relative House	38(3.96)	54(5.63)		
Month of late for gotten seat at hall				

Characteristics	Male	Female	Chi-Square (χ^2) Statistics	P-value
	N(%)	N(%)		
<01	12(2.17)	42(7.59)	123.14	0.000***
02-06	46(8.32)	102(18.44)		
06<	269(48.64)	82(14.83)		
Status of cooking food them self				
Yes	132(13.75)	171(17.81)	7.33	0.007**
No	348(36.25)	309(32.19)		
Class Attendance				
Regular	274(28.54)	352(36.67)	29.17	0.000***
Average regular	152(15.83)	87(9.06)		
Irregular	54(5.63)	41(4.27)		

NOTE. Level of significance: *** for $P < 0.001$, ** for $P < 0.01$, * for $P < 0.05$, ns for not significant.

5.5 Factors for getting significant results between male and female students

A binomial logistic regression is used to identify the factors that get significant results between male and female students. Table 6 shows that parents who do govt. jobs (OR= 0.29, $P < 0.001$) have more than 0.29 times higher chance of having better academic results among male and female students. Students who live in rural areas (OR= 1.91, $P < 0.001$) have 1.91 times higher likelihood of having better academic results than urban areas students. Students who got GPA 5.00 in secondary school certificate (S.S.C) (OR=0.39, $p < 0.001$) have more chance to be a getting significant results with respect to the student who got GPA less than 4.5.

Students who are not involved in politics (OR = 0.12, $p < 0.001$) are 0.12 times more likely to get good results than those who are involved in politics. Students who are not involved in more than one extracurricular activity (OR=1.68, $p < 0.001$) have more chance to be a getting merit position with respect to the students who involved in more than one extracurricular activity. Students who used campus hall as the residential place in the study period (OR=3.02, $p < 0.001$) have 3.02 times higher chance of having significant results than other residential places.

Table 6: Factors for better academic results between male and female students.

Characteristics	Crude OR	CI (95%)		P value	Adjusted OR	CI (95%)		P value
		Lower	Upper			Lower	Upper	
Father Level of Education								
Illiterate (class 0)	1				1			
Primary level (class 1-5)	0.89	0.51	1.53	0.676	0.55	0.23	1.29	1.29
Secondary level (class 6-10)	1.36	0.75	2.47	0.310	1.76	0.74	4.14	0.194
Higher secondary and above (>Class 10)	0.68	0.40	1.16	0.166	1.10	0.44	2.76	0.825
Father's/ Guardian's occupation								
Agriculture	1				1			
Private job	0.55	0.40	0.75	0.000	0.93	0.49	1.75	0.833
Govt. job	0.29	0.18	0.47	0.000	0.24	0.11	0.54	0.001***
Business	0.66	0.43	1.01	0.060	0.92	0.45	1.86	0.828
Households income status (BDT)								
Lowest (<15,000)	1				1			
Lower middle (15,000-25,000)	1.79	1.17	2.73	0.006	1.39	0.751	2.58	0.293

Characteristics	Crude OR	CI (95%)		P value	Adjusted OR	CI (95%)		P value
		Lower	Upper			Lower	Upper	
Middle (26,000-35,000)	0.88	0.59	1.32	0.556	1.60	0.126	0.876	2.921
Upper middle (36,000-50,000)	1.39	0.91	2.13	0.127	2.16	1.036	4.512	0.040*
Highest (>50,000)	0.43	.25	.75	0.003	0.69	0.29	1.67	0.422
Family status								
Rich	1				1			
Upper Middle class	2.80	1.44	5.44	0.002	2.13	1.23	4.87	0.005**
Middle	3.11	1.65	5.87	0.000	2.78	1.32	3.34	0.004*
Lower Middle Class	3.52	1.78	6.93	0.000	3.08	1.62	5.72	0.000***
Poor	4.21	2.01	8.81	0.000	3.82	1.78	6.23	0.000***
Very Poor	2.76	1.02	7.45	0.044	2.62	1.01	6.23	0.052
Residential Area								
Rural	1.91	1.45	2.52	0.000	1.93	1.46	2.55	0.000***
Urban	1				1			
S.S.C result (GPA out of 5.00)								
4.50>	1				1			
4.50 ≤ & <5.00	1.42	0.92	2.21	0.110	1.26	0.79	2.01	0.319
5.00	0.39	.28	0.55	0.000	0.30	0.20	0.44	0.000***
HS.C result (GPA out of 5.00)								
4.50>	1				1			
4.50 ≤ & <5.00	0.75	0.52	1.07	0.119	1.06	0.70	1.61	0.760
5.00	0.43	0.31	0.60	0.000	0.72	0.48	1.09	0.130
Have any girlfriend / boyfriend of you								
Yes	1.37	1.05	1.80	0.018	2.17	1.58	2.98	0.000***
No	1				1			
Career Goal								
Academic Profession	0.76	0.52	1.10	0.152	0.84	0.55	1.30	0.459
Non-academic Profession	1.18	0.85	1.64	0.303	1.11	0.77	1.60	0.567
Any one	1				1			
Involvement of Student Politics								
Yes	1				1			
No	0.12	0.08	0.18	0.000	0.10	0.06	0.15	0.000***
Earn money								
Yes	1				1			
No	0.23	0.18	0.31	0.000	0.21	0.15	0.30	0.000***
Involvement of extracurricular activities								
Yes	1				1			
No	0.23	0.17	0.31	0.000	0.28	0.098	0.817	0.020**
Maximum Number of Involvement of extracurricular activities								
≤1	1.68	1.08	2.60	0.019	2.25	1.25	4.05	0.007**
1<	1				1			
Methods of teaching quality								
Pleased	0.39	0.21	0.71	0.003	0.43	0.75	5.92	0.153
Not pleased	0.34	0.18	0.65	0.001	0.25	0.12	0.54	0.000***
Highly pleased	1.17	0.50	2.73	0.711	2.11	0.75	5.92	0.153

Characteristics	Crude OR	CI (95%)		P value	Adjusted OR	CI (95%)		P value
		Lower	Upper			Lower	Upper	
Annoyed	1				1			
Residential place in study period								
Campus Hall	3.02	2.07	4.40	0.000	2.10	1.33	3.32	0.001**
Own House	1				1			
Rental House	1.39	0.87	2.20	0.163	1.73	1.02	2.95	0.041*
Relative House	1.46	0.85	2.49	0.158	1.18	0.60	2.33	0.623
Status of cooking food them self								
Yes	0.68	0.52	0.90	0.007	0.41	0.28	0.61	0.000***
No	1				1			
They had faced any harassment (physical or mental) in their study life by senior								
Yes	7.08	4.88	10.27	0.000	7.91	4.71	13.29	0.000***
No	1				1			
Class Attendance								
Regular	0.59	0.38	0.91	0.018	0.92	0.50	1.71	0.808
Average regular	1.32	0.81	2.15	0.253	1.74	0.92	3.30	0.087
Irregular	1				1			

6. Conclusions

In this study, we randomly selected 12 public universities in Bangladesh. At each university, we selected 80 samples where 40 male and 40 female undergraduate and postgraduate students. We use the binary logistics regression model to investigate the improved academic performance of male and female students. The results showed that 8.29% male and 12.61% female merit students were found among all the students.

Meritorious students do not use the internet for more than 5 hours daily, use the library for study, stay in campus hall, stay in class regularly, are not harassed by seniors, and do not get involved in politics.

In this study, we find that girls are doing better results than boys. The main reasons for the boys' backwardness are ragging by seniors, involvement in politics, tuition or job to earn money, and involvement in extracurricular activities. Our results could have been different if we could have done research with all the university students in Bangladesh.

This study is not only for a specific area or region of Bangladesh, this study conducted at 12 public universities in different locations in Bangladesh. So, it may represent overall the public university scenarios in Bangladesh. Therefore, the result may have internal and external validity. We recommend that Bangladesh government should be a necessary step to invest for conduct this study on large labels in Bangladesh. So that this result will be more reliable, valid and represent the overall university label education scenario in Bangladesh. The government can be understanding the flaws in the education system at the university level in Bangladesh. And be able to take the right steps to overcome it.

Authors Contribution

The research was conducted by Mst. Bithi Akter. Md. Torikul Islam and Anis Mahmud collected and implementation the data. Md. Torikul Islam and Anis Mahmud analyzed the data and shared the Stata code with Mst. Bithi Akter. They also finalized the data analysis and tabulated the results and wrote a draft copy of the manuscript. Mst. Bithi Akter finalized the manuscript with input from all authors.

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Data and Code Availability

The data sources are provided the Section 2. We will provide the data with questionnaire and our Stata code if anyone needs it.

Ethics Approval

We have worked with honesty and devotion. We have not knowingly engaged in or participated in any harm to another person or animal.

Conflict of Interest

The authors declare that they have no conflicts of interest

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