JSR Publications

Available Online

J. Sci. Res. **12** (1), 29-38 (2020)

JOURNAL OF SCIENTIFIC RESEARCH

www.banglajol.info/index.php/JSR

Factors Associated with Attrition of Girls Students from School in Bangladesh

M. N. Hasan*

Department of Statistics, Shahjalal University of Science and Technology, Sylhet, Bangladesh

Received 29 May 2019, accepted in final revised form 29 September 2019

Abstract

Many girls who enrolled in a school but didn't complete elementary or secondary education, have become a serious problem in the last few decades in Bangladesh. Several studies have been conducted to identify the determinants of school dropout by constructing bivariate and multiple logistic regression (MLR) model. Bangladesh multiple indicator cluster surveys (MICS) 2012 data were selected in this investigation. This study was based on girls aged between 15 and 17 years since all these girls should have been in school or have completed primary education. The backward stepwise method was used for model selection and fitting to the dataset. From 4800 girls, 29.1% were out of school and 70.9% were attending school. Backward stepwise method confirmed that girl's marital status, area, division, wealth index, religion, mothers and father's aliveness and household education were the major reasons of girl's dropout and these covariates are only considered in the analysis. The MLR analysis showed that married girls were significantly (OR 11.06; 95% CI 9.05–13.56) more likely to attrition compared to unmarried girls. School-based programs aimed at preventing child marriage should target girls from the fifth grade because of their escalated risk, and they need to prioritize girls from disadvantaged groups.

Keywords: School dropout; Girls education; Multiple logistic regression.

doi: http://dx.doi.org/10.3329/jsr.v12i1.41579 J. Sci. Res. **12** (1), 29-38 (2020)

1. Introduction

At present world, education is called investment [1,2]. Education is the dynamic force behind any strong economy. It creates prospects and provides societies with a well-educated and skilled workforce [3]. Educating girls is crucial to development, aside from the fundamental value of education, well-educated girls have better income and fewer hesitation, healthier and enhanced educated children compare with more than the boys [4]. But for decades girls in Bangladesh have been discriminated against in education.

Nowadays, children are starting primary school in better figures than ever before, the rate of girls drop out from school remains high in many low-income countries where over

* *Corresponding author:* nayeem5847@gmail.com

half of the girls who start primary school cannot finish their education [5]. As compared to boys the attrition rate is higher for girls in 49 countries [6]. Many studies have resulted in school attendance and attrition rate problems among girls [7]. Higher attrition in high school level education (13-16 years), especially for girls, where gendered social and school experiences combined with financial, marital and childbearing roles, to discourage teenage girls' contribution [8]. A student's family poverty level and the neighborhood poverty level affect student attrition behavior [9]. School-to-school shifts are one of the reasons behind secondary school attrition rate [10]. School's academic and social climate influenced institutional attrition ratios [11]. Schools, where students perceive the discipline to be fair, tend to have lower attrition rates [9]. This paper aims to find out the factors of school dropout among Bangladeshi girls. The three important questions that this study sought to answer are as follows:

- How common is school dropout?
- How much more likely (or less likely) is school attendance and school dropout?
- Who is more likely to leave school?

2. Methods

2.1. *Study design*

We used the 2012-13 Bangladesh multiple indicator cluster survey (MICS) data. The cross-sectional survey is one of the largest household surveys conducted in Bangladesh, and it was designed to provide up-to-date data for monitoring the situation of children and girls. In the survey, a nationally representative sample was obtained through the use of a two-stage, stratified random sample design. In the first stage, urban and rural areas within each region were identified as the main sampling strata. It is based on a sample of 51895 households (43474 rural, 8421 urban) interviewed with a response rate of 98.5% and provides a comprehensive picture of children and girls in the seven divisions (Dhaka, Chittagong, Sylhet, Rajshahi, Rangpur, Barisal, Khulna) in Bangladesh. Districts were identified as the main sampling strata for the sample selection in the second stages. Within each stratum, a specific number of census enumeration areas were selected based on probability proportional to size with oversampling of urban areas. In the second phase, a systematic sample of 20 households was drawn in each sample. From the interviewed households, 59599 girls (age 15-49 years) were identified and 51791 were successfully interviewed with the response rate of 89.3%. Fig. 1 showed the sample flow diagram of this study. The girls' age ranged from 15 to 17 years and ever attended school (n=4800) were included, otherwise excluded from the analysis.

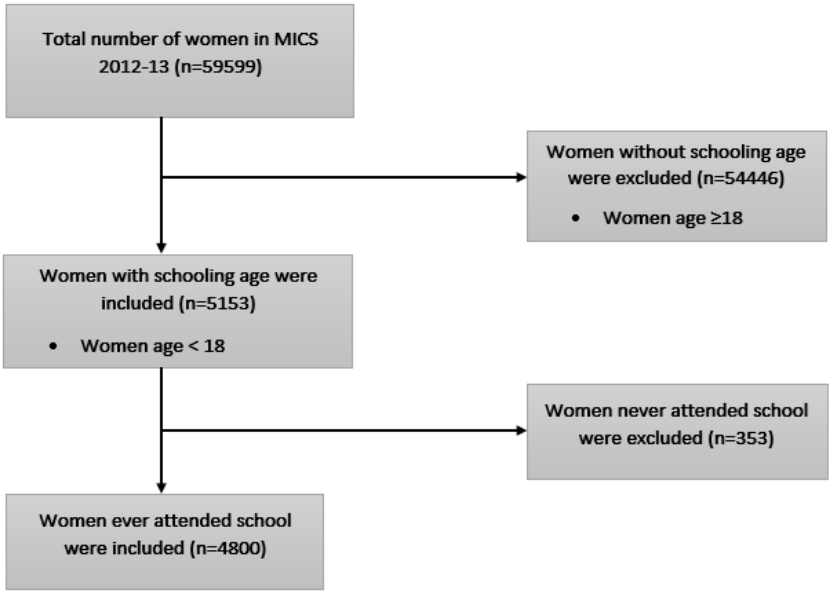

Fig. 1. Study population.

2.2. *Response variable*

In this study, the dependent variable is the school attrition. Attrition is identified by a woman, was ever attended school but not in school in the current school year prior to the data collection (Table 1).

2.3. *Predictor variable*

A number of demographic and socio-economic factors are associated with the girl's school attrition. Predictor variables on the basis of the previous study [2,10,12–17] are included in this study (Table 1). The wealth index is calculated using easy-to-collect data on a household's ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities.

2.4. *Statistical analysis*

We used a multiple logistic regression model for identifying the risk factors associated with school attrition. Analysis was carried out in two stages. In the first stage, Chi-Square test was carried out. Based on the Chi-Square test only nine variables were significant with attrition variable at a 95% level of significance (Table 2). In second stage, a multiple logistic regression was carried out. The multiple logistic regression model includes the independent variables: age, married, area, division, wealth index, religion, mother alive,

father alive and household education. Logistic regression was applied and odds ratios (ORs) with 95 % CI were used to evaluate the factors associated with school attrition among 15-17 years aged girls. The statistical analysis and data management for this study has been carried out using R (survey package) and SPSS (IBM SPSS 25).

Table 1. Factors used for predicting school attrition.

Response Variable	Values
School attrition	Yes, No
Predictor Variables	
Girls age (Year)	15,16,17
Marital status	Married, Unmarried
Area	Rural, Urban
Divisions	Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, Sylhet
Household wealth index	Poorest, Poor, Middle, Rich, Richest
Household education	None, Primary incomplete, Primary complete, Secondary Incomplete, Secondary complete
Religion	Islam, Others
Mother alive	Yes, No
Father alive	Yes, No

3. Ethics Approval

Our study was wholly based on an analysis of existing public domain health survey datasets obtained from Bangladesh Multiple Indicator Cluster Survey (MICS) collected in 2012–13, which were collected from eligible respondents'. The procedures were reviewed and approved by the national statistical office, Bangladesh Bureau of Statistics (BBS) and UNICEF. Because this study involves secondary data analyses of a publicly available dataset which are freely available on the UNICEF website (http://www.mics.unicef.org/) with all identifier information removed, ethical approval from respective institutions was not required.

4. Results

A total of 4800 girls generated as a subsample. Among them, 15 (36.40%), 16 (34.10%) and 17-year-old (29.50%) girls were included in the analysis, respectively (Fig. 2)**.** Among 15-year-old girls, 7.20% were out of school and 29.20% of girls were attending school. Similarly, the percentage of 16 and 17-year-old girls were 10.60% and 11.30%, respectively (Fig. 3)**.**

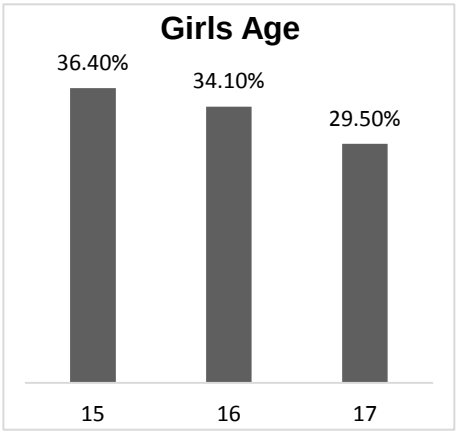

Fig. 2. Percentage of girls by age

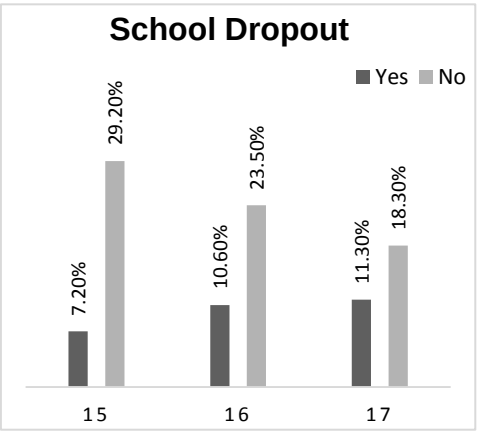

Fig. 3. Percentage of girls by age and attrition

In Table 2, we can see that girls overall mean age was 15.93 years (SD = 0.81). It was seen that married girls (10.62%) were out of school, and only 5.04% were attending school. Among those who were unmarried, 65.90% were attending school, and 18.44% were out of school. 24.69% of girls were sampled from the rural area and out of school. Girls in urban area were 4.38% and out of school. The household who reported no education level has 16.75% dropout girls and only 1.69% of attrition girls lived in the second complete household. According to p-value, all socio-demographic characteristics were statistically significantly between school dropouts.

Table 3 depicts that, age of girls is observed as an important factor for girls drop out of school; for instance, the girls aged between 17 years have a higher odds (OR=2.19, 95%, CI: [1.82, 2.64]). The table showed us that the rate of attrition is high among married girls and it was 11.03 times higher (OR=11.03, 95%, CI: [9.02, 13.53]) and compared with urban areas the rate of attrition in rural areas was 31% (OR=0.69, 95%, CI: [0.56, 0.86]). Compare to Barisal there was a noticeable difference in attrition proportion between different divisions in Bangladesh. The attrition rate is very high in Sylhet 4.63 times (OR=4.60, 95%, CI: [3.32, 6.41]) while Khulna holds the lowest rate and it was (OR=0.90, 95%, CI: [0.65, 1.26]).

Table 2. Prevalence & Chi-Square test of attrition by different factors.

		Attrition			
		Yes, N (%)	No, N (%)	Total, N (%)	P-Value
Age	15	346 (7.21)	1400 (29.17)	1746 (36.38)	0.000
	16	509 (10.60)	1129 (23.52)	1638 (34.12)	
	17	540 (11.25)	876 (18.25)	1416 (29.50)	
Married					
	Yes	510 (10.62)	242 (5.04)	752(15.66)	0.000
	No	885 (18.44)	3163 (65.90)	4048(84.34)	
Place of residence					
	Rural	210(4.38)	638(13.29)	848(17.67)	0.003
	Urban	1185(24.69)	2767(57.65)	3952(82.34)	
Division					
	Barisal	108(2.25)	379(7.90)	487(10.15)	0.000
	Chittagong	280(5.83)	627(13.06)	907(18.89)	
	Dhaka	344(7.17)	849(17.69)	1193(24.86)	
	Khulna	169(3.52)	509(10.60)	678(14.12)	
	Rajshahi	143(2.98)	350(7.29)	493(10.27)	
	Rangpur	150(3.12)	440(9.17)	590(12.29)	
	Sylhet	201(4.19)	251(5.23)	452(9.42)	
Household wealth index					
	Poorest	394(8.21)	412(8.58)	806(16.79)	0.000
	Poor	365(7.60)	671(13.98)	1036(21.58)	
	Middle	275(5.73)	773(16.10)	1048(21.83)	
	Rich	239(4.98)	815(16.98)	1054(21.96)	
	Richest	122(2.54)	734(15.29)	856(17.83)	
Religion					
	Islam	1252(26.08)	2977(62.02)	4229(88.10)	0.028
	Others	143(2.98)	428(8.92)	4(11.9)	
Mother Alive					
	Yes	1299(27.06)	3308(68.92)	4607(95.98)	0.000
	No	96(2.00)	97(2.02)	193(4.02)	
Father Alive					
	Yes	1241(25.85)	3187(66.40)	4428(92.25)	0.000
	No	154(3.21)	218(4.54)	372(7.75)	
Household Education					
	None	804(16.75)	1222(25.46)	2026(42.21)	0.000
	Primary Incomplete	203(4.23)	505(10.52)	708(14.75)	
	Primary Complete	144(3.00)	405(8.44)	549(11.44)	
	Secondary Incomplete	163(3.40)	689(14.35)	82(17.75)	
	Secondary Complete	81(1.69)	584(12.17)	66(13.86)	

The family wealth played a great role in the attrition rate of girls. The household primary incomplete, primary complete, secondary incomplete and secondary complete have a 39% (OR=0.61, 95%, CI: [0.49, 0.75]), 34% (OR=0.66, 95%, CI: [0.51, 0.83]), 55% (OR=0.45, 95%, CI: [0.36, 0.56]) and 68% (OR=0.32, 95%, CI: [0.24, 0.44]) less odds of attrition in comparison with the girls whose household have no education.

Table 3. Factors associated with school attrition of girls' in Bangladesh.

Characteristics		Adjusted OR	95% CI	P-Value
Age				
	16	1.70	[1.42, 2.03]	0.000
	17	2.19	[1.82, 2.64]	0.000
	15	Reference		
Married				
	Yes	11.03	[9.02, 13.53]	0.000
	No	Reference		
Area				
	Urban	0.69	[0.56, 0.86]	0.001
	Rural	Reference		
Division				
	Chittagong	2.34	[1.74, 3.18]	0.000
	Dhaka	1.81	[1.35, 2.43]	0.000
	Khulna	0.90	[0.65, 1.26]	0.541
	Rajshahi	0.99	[0.70, 1.40]	0.934
	Rangpur	0.97	[0.70, 1.36]	0.870
	Sylhet	4.60	[3.32, 6.41]	0.000
	Barisal	Reference		
Household wealth index				
	Poorest	6.18	[4.52, 8.31]	0.000
	Poor	3.44	[2.54, 4.56]	0.000
	Middle	2.05	[1.53, 2.74]	0.000
	Rich	1.65	[1.24, 2.18]	0.001
	Richest	Reference		
Religion				
	Islam	1.36	[1.08, 1.72]	0.010
	Others	Reference		
Mother alive				
	Yes	0.50	[0.35, 0.72]	0.001
	No	Reference		
Father alive				
	Yes	0.78	[0.59, 1.02]	0.064
	No	Reference		
Household education				
	Primary incomplete	0.61	[0.49, 0.75]	0.000
	Primary complete	0.66	[0.51, 0.83]	0.001
	Secondary incomplete	0.45	[0.36, 0.56]	0.000
	Secondary complete	0.32	[0.24, 0.44]	0.000
	None	Reference		

5. Discussion

In this study, about one-third of the girls students aged 15-17 years are out-of-school, which is consistent with previously reported national survey [18]. The risk of girls dropping out is high on age 15, peaks on age 16 and remains high on age 17. This finding confirms previous Bangladeshi studies that show a high prevalence of attrition with age [19,20]. The prevalence of school attrition is significantly higher among rural girl students

as compared to urban girl students. These findings are consistent with previously reported results [19,21].

Division of girl students showed an association with school dropout. The percentage of dropout was high on Dhaka division. But this result changed when we check division wise dropout. The study's findings in relation to division were consistent with previous research [22].

Household wealth status those have poorest girls were more likely to be dropout. According to the literature [23], poorest household had a high prevalence with school dropout which have been associated with wealth status of household.

A number of key factors associated with school attrition. Many analysis demonstrates that the age of the girls student, marital status, mother aliveness, father aliveness, place of residence, division, wealth index of household, religion and household education have statistically significant associations with girls school attrition [3,24-28], and this association was found in this current study.

The current study shows that marriage was the most common reason given for girls' school dropout. The analysis also demonstrates that married girls aged 15–17 in Bangladesh are more likely to leave school than their unmarried peers. Again, the study results in this regard are consistent with literature [29]. This study also shows an association between girls' school dropout and household wealth index. Girls with poorest wealth index are approximately more likely to leave school, compared to richest girls. Girls living in the Sylhet division are 4.63 times more likely to drop out of school than the girls who living in Barisal division. This can also be linked to other division due to limited availability of study materials or due to lower socioeconomic status [30]. The study also revealed that urban areas sampled were the low risk of dropout, could be due to the high proportion of urban residents are aware about the importance of girls education [13].

The study has a number of strengths. The nationally representative data used in this study was collected from different levels of Bangladesh. This data set is collected through a reliable and uniform procedure, which provides an important source of information on infant feeding practices and infant diseases with minimize the measurement error and bias. The response rates of this study were high. One of the strengths of the present study was to remove this clustering effect to attain accurate risk factors by considering the effect of cluster variation. It is also ensuring that the standard errors of coefficients have been accurately estimated. Bangladesh multiple indicator cluster surveys (MICS) is the nationally representative household survey of Bangladesh. However, the main limitation of this paper is to use a cross-sectional study and hence it may produce selection and information bias and this study such as the information was derived from a secondary source. Due to financial and time constrain, the paper could not add primary data in supporting the MICS data.

6. Conclusion

The current study yields solid evidence that many factors significantly increases girls' risk of school dropout in Bangladesh. Despite the limitations discussed above, the strength of the association and the frequency of reporting of marriage as the main reason for school dropout are remarkable enough to warrant the conclusion that child marriage is a main driver of girls' dropping out of school in Bangladesh. Reducing the risk of dropout requires strategies that retain girls in school and facilitate a smooth transition to secondary education. School-based programmes aimed at preventing child marriage should target girls from the fifth grade because of their escalated risk, and they need to prioritize girls from disadvantaged groups. Schools with smaller class size, stronger relationships between students and adults, and a focused, rigorous and relevant curriculum are better as intervention measures. The problem of attrition lies more with poverty, ignorance, mismanagement and discontinuity, rather than high-stake mal-adjustment. So poverty alleviation, national level awareness, making curriculum more relevant, and better management of the implementation process (including reduction in class-size, solving teachers' problems of both money and expertise, and academic supervision) of education would be solution paths in Bangladesh for better retention.

References

1. I. O. Mike, A. Nakajjo, and D. Isoke, Socioeconomic Determinants of Primary School Dropout: The Logistic Model Analysis, (Economic Policy Research Center, Makerere University, 2008). https://mpra.ub.uni-muenchen.de/id/eprint/7851
2. N. Sultana, City Univ. Res. J. Malaysia 164 (2017).
3. G. C. Gondwe, M.Sc. Thesis, Graduate Faculty of St. Cloud State University, 2016.
4. M. A. Amadi, E. Role, and L. N. Makewa, Int. J. Humanit. Soc. Sci. **3**, 8 (2013).
5. R. Sabates, A. Hossain, and K. M. Lewin, School Drop Out in Bangladesh: New Insights from Longitudinal Evidence (Centre for International Education, Department of Education School of Education & Social Work, University of Sussex , United Kingdom, 2010).
6. A. H. M. Shahidul and S. M. Karim, Eur. J. Res. Reflect. Educ. Sci. **3**, 25 (2015).
7. T. Tuwor and M. A. Sossou, Int. J. Incl. Educ. **12**, 363 (2008). https://doi.org/10.1080/13603110601183115
8. R. Prakash, T. Beattie, P. Javalkar, P. Bhattacharjee, S. Ramanaik, R. Thalinja, S. Murthey, C. Davey, J. Blanchard, C. Watts, M. Collumbien, S. Mosses, L. Heise, and S. Isac, J. Adolesc. **61**, 64 (2017). https://doi.org/10.1016/j.adolescence.2017.09.007
9. P. Goldschmidt and J. Wang, Am. Educ. Res. J. **36**, 715 (1999). https://doi.org/10.2307/1163518
10. J. W. Alspaugh, Am. Second. Educ. **29**, 2 (2000).
11. R. W. Rumberger, Am. Educ. Res. J. **32**, 583 (1995). https://doi.org/10.2307/1163325
12. M. Nyoni, T. Nyoni, and B. W. Garikai, Dyn. Res. Journals' J. Econ. Finance **2**, 1 (2017).
13. S. M. Shahidul and A. H. M. Z. Karim, Eur. J. Res. Reflection Edu. Sci. **3**, 25 (2015).
14. G. Gangoli, M. McCarry, and A. Razak, Child. Soc. **23**, 418 (2009). https://doi.org/10.1111/j.1099-0860.2008.00188.x
15. T. Yancey, Master's Thesis, The University of San Francisco, 2015.

16. Q. Wodon, S. Petroni, L. Thompson, C. Male, A. Onagoruwa, A. Savadogo, J. Edmeades, A. Kes, and N. John, Child Marriage and the 2030 Agenda: Selected Findings from Early Research (2015).
17. S. K. Mahato, Int. J. Sci. Eng. Res. **7**, 698 (2016). https://doi.org/10.14299/ijser.2016.07.002
18. M. M. Zaman, Dropout at Primary and Secondary Level A Challenge to Ensure Rights to Education for the Government of Bangladesh, Dissertation (Inst. of Governance Studies, BRAC University, Dhaka, 2014).
19. S. Psaki, Prospects, **46**, 109 (2016). https://doi.org/10.1007/s11125-016-9379-0
20. Bangledesh Education Statistics, Bangladesh Bureau of Educational Information and Statistics (BANBEIS) (Ministry of Education, Dhaka, Bangladesh, 2016).
21. T. Yancey, The Multidimensionality of Schoolgirl Dropouts in Rural Bangladesh (2015).
22. R. Sabates, A. Hossain, and K. M. Lewin, Int. J. Educ. Dev. **33**, 225 (2013). https://doi.org/10.1016/j.ijedudev.2012.09.007
23. K. Sekine and M. E. Hodgkin, PLoS One **12**, Article ID e0180176 (2017). https://doi.org/10.1371/journal.pone.0180176
24. A. Raj, E. C. Jackson, K. A. McClendon, Y. Belayneh, and L. McDougal, BMC Public Health, **19**, 19 (2019). https://doi.org/10.1186/s12889-018-6340-6
25. M. Zaman, Dropout at Primary and Secondary Level: A Challenge to Ensure Rights to Education for the Government of Bangladesh (2014).
26. G. V. Kyari and J. Ayodele, Mediterr. J. Soc. Sci. **5**, 571 (2014).
27. S. Imtiaz, Factors of Drop Out at Primary Schools Level: Case Studies From the Islamic Republic of Pakistan (University of Nordland, 2014).
28. K. Asrese and M. Abebe, Humanit. Soc. Sci. **2**, 11 (2014). https://doi.org/10.11648/j.hss.20140202.11
29. K. Sekine and M. E. Hodgkin, PLoS One **12**, Article ID e0180176 (2017). https://doi.org/10.1371/journal.pone.0180176
30. I. O. N. Mike and D. A. Nakajjo, African J. Econ. Rev. **4**, 25 (2016).