Leaving studies because of lack of interest: an analysis of the risk factors of school dropouts in Pakistan

Rafi Amir-ud-Din[1] · Hafiz Zahid Mahmood[1] · Faisal Abbas[2] · Verda Salman[2] · Sameen Zafar[3]

Abstract

Among all the students dropping out of school for different reasons in Pakistan in 2017, nearly 23% of the students dropped out because they were not interested in studies. The vagueness at the heart of lack of interest often leaves the stakeholders clueless about how best to reduce school attrition. This study identifies the factors associated with students' dropping out of school due to lack of interest. We used Pakistan Demographic and Health Survey 2017–18 data and employed multivariate logistic and multinomial logistic regression models. The results suggested that students were more likely to drop out because of a lack of interest when they were enrolled in the lower educational levels, were orphaned, lived in the urban areas, were married, belonged to households where the households head was above 40 years or was female. However, the impact of wealth status, gender, and migration of a family member on dropping out was context-specific.

Keywords School dropout · Gender discrimination · Socio-economic status · Migration · Pakistan

✉ Faisal Abbas
  dr.faisal@s3h.nust.edu.pk

  Rafi Amir-ud-Din
  rafi.amiruddin@gmail.com

  Hafiz Zahid Mahmood
  drhafizzahid@cuilahore.edu.pk

  Verda Salman
  verda.salman@s3h.nust.edu.pk

  Sameen Zafar
  szeconomics@gmail.com

[1] Department of Economics, COMSATS University Islamabad, Lahore Campus, Lahore, Pakistan

[2] Department of Economics, School of Social Sciences and Humanities (S3H), National University of Sciences and Technology (NUST), Islamabad, Pakistan

[3] Suleman Dawood School of Business, Lahore University of Management Sciences (LUMS), Lahore, Pakistan

1 Introduction

Education is considered the best investment for individual and national development (Wu & Wu 2019). According to one estimate, the average marginal return from one year of education is 9% globally, reaching up to 15% in the developed world (Gunderson & Oreopolous 2020; Patrinos & Psacharopoulos 2020). Despite all the dividends that education brings, a sizeable part of humanity is deprived of even the elementary education levels. A large number of children, adolescents and youth in the world remain out of school. A significant ratio of students enrolled in educational institutions is likely to drop out of school with far-reaching consequences.

According to UNICEF, over 258 million children globally remained out of school in 2018, making up around 17% of the population of school-going children (6–17 years old). The situation, in Pakistan, is even more alarming because 22.8 million children aged 5–16 years (almost 44% of the total children of school-going age) remained out of school in 2018 (Unicef 2020) making Pakistan the country with second largest out of school children's population in the world (Unicef 2020). Similar to the high number of out of school children, dropping out of school before completing the program is also widespread. According to recent estimates, 18.31% of the students dropped out before completing their primary education globally in 2017 (Unicef 2020). In Pakistan, 10.35% of the students dropped out before completing their lower secondary education in 2017.

Not every child who is enrolled in school is fortunate enough to complete the desired education level. Many problems haunt the students once they are enrolled in educational institutions. The problems may include poor teaching quality, bullying, harassment by peers and the teachers, and inadequate infrastructure (Hjorth et al. 2016).
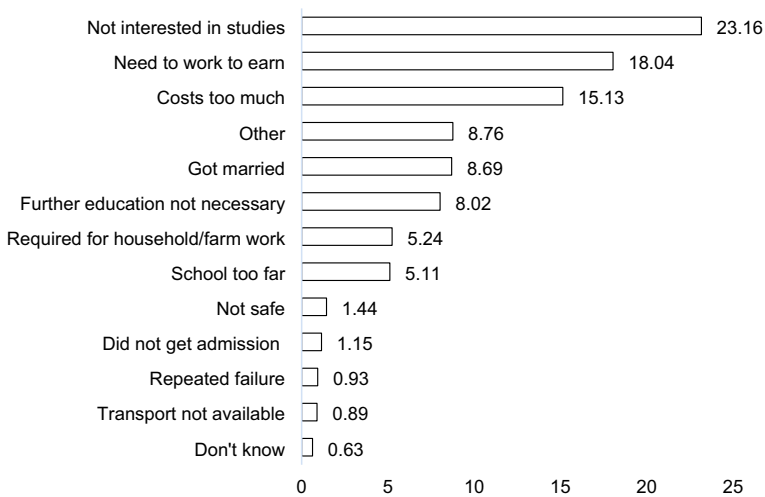
Existing evidence has identified a range of individual, household, and community-related factors associated with dropping out-of-school. Poor physical and emotional health, early life symptoms of behavioural problems, poverty, the divorce of the parents, grade repetition and poor learning outcomes were found to increase the risk of dropping out of school (Frostad et al. 2015; Heetman et al. 2015; No et al. 2016; Prakash et al. 2017). The poor educational performance, younger or higher age for the grade and substance use are some other factors that contribute to students' dropping out of school (Ioana et al. 2015; Prakash et al. 2017).

Pakistan Demographic and Health Survey (PDHS) 2017–18 collected information about the reasons for dropping out of school from the respondents who dropped out of school. The most frequently cited reason for dropping out of school in Pakistan was, surprisingly, the lack of interest in studies (Fig. 1).

Even though the reason *"dropped out of school because of a lack of interest"* is vague, there is reason to believe that some observable factors may be associated with the decision of the students to drop out of school. This study, therefore, sought to identify the individual, household, and community-related characteristics associated with an increased risk of dropping out of school because of lack of interest.

Given the sharp divisions in the gender roles in Pakistan (Yasin & Aslam 2018), it is plausible to think that risk factors of dropping out of school are not the same for male and female students. Similarly, the dynamics of educational life are diverse at different educational levels. As an illustration, students at the elementary educational levels, such as pre-primary and primary level, are not expected to independently decide to drop out of school. The parents or other family elders may choose to get the education of the child discontinued because of socio-economic reasons (Makino 2019; Shahidul 2014). Conversely, the

Reasons for dropping out of school (%)

Reason	Percentage
Not interested in studies	23.16
Need to work to earn	18.04
Costs too much	15.13
Other	8.76
Got married	8.69
Further education not necessary	8.02
Required for household/farm work	5.24
School too far	5.11
Not safe	1.44
Did not get admission	1.15
Repeated failure	0.93
Transport not available	0.89
Don't know	0.63

Fig. 1 Various reasons for leaving schools *Source*: PDHS (2019)

students enrolled in the higher classes may independently decide whether to continue the education or drop out of school. The decision of the students at higher educational levels may be driven by the compulsion to do paid work, marriage (especially for females) and a number of other reasons.

This study, thus, also identifies the gender- and education level-specific individual, household, and community-related risk factors of dropping out of school because of lack of interest.

1.1 Contextualizing high school dropout rates in Pakistan

Pakistan is a developing country with widespread poverty and inequality. The average family size in Pakistan (6.8) is significantly larger than that in the developed countries (cf. 2.6 persons in the USA) (United Nations 2018). Female participation in the labour force is minimal. The dependency ratio (dependents aged zero to 14 and over the age of 65 as a percentage of working-age population) is very high (65 percent in Pakistan vs. 53 percent in North America, for example) (World Bank 2019). Consequently, young children are taken away from schools and forced into labor to complement limited family income. Provincial disparities also exacerbate children dropping out of government schools due to security issues, especially in government schools in Azad Kashmir, Sindh and Balochistan.

There are some cultural and context-specific factors relevant to Pakistan for children dropping out of school. Given the sharp divisions in the gender roles in Pakistan (Yasin & Aslam 2018), it is plausible to think that risk factors of dropping out of school are gender specific. The reasons why a girl has to drop out of school prematurely are diverse and complicated in Pakistan. Girls usually have to leave school because of early marriages (Beattie et al. 2015; Glynn et al. 2018; Sekine & Hodgkin 2017). If the female students are harassed or bullied on the way to or inside the school in Pakistan, they are often forced to leave

the school (Yasin & Aslam 2018). This situation poses a dangerous dilemma for socio-economically vulnerable families. From the family's point of view, the less complicated option is to stop their girls from going to school. After all, it is argued in many rural and some urban areas across the country, a woman has to become a housewife and her education is mostly immaterial to her domestic role as a housewife.

Male students can drop out of school due to diverse reasons specific to Pakistan's context. Some of the circumstances in which the male children are put under tremendous pressure to drop out of school were large family size coupled with financial hardships and death of earning family member (Mughal et al. 2019). The children are expected to contribute to the household income, which often requires dropping out of school to do full-time jobs. In some cases, male children drop out of school because they had more sisters than brothers, and sisters not allowed going out for paid work because of cultural reasons. Consequently, they had to drop out of school and engage in paid work to supplement the family income. The male children are routinely under pressure to buy a socially acceptable amount of dowry so that they can arrange a respectable marriage ceremony for their sisters (Mughal et al. 2019). Such social and financial pressure on the family to buy the dowry often means that young brothers are forced to leave the school, especially at the secondary school age.

2 Theoretical considerations

Extant literature has identified several factors associated with school dropouts. Dropping out of school is associated with adverse life-long socio-economic and health consequences (Heetman et al. 2015). School dropouts are more likely to indulge in substance use and suicidal ideation or get involved in a range of crimes, such as larceny, assault, drug possession, and drug sales compared with their graduate counterparts (Maynard et al. 2015; Rud et al. 2018). The high school dropouts are at a greater risk of experiencing adverse outcomes, such as being arrested, using illicit drugs, or having poor health by age 27 years (Lansford et al. 2016).

Poor mental health is found to be significantly associated with school dropouts (Hjorth et al. 2016). Introversion, neuroticism, and poor health are associated with an increased risk of dropping out of school (Migali & Zucchelli 2017). Stress is associated with an increase in the cases of school dropout, while optimism is considered to reduce the odds of school dropout (Eicher et al. 2014). Intellectual disability and behavioral disorders increase the risk of dropping out of school (Rahbari et al. 2014). Children's working memory, which is an essential component of cognitive control, decreases the school dropout (Fitzpatrick et al. 2015). Early life symptoms of emerging behavioral problems are associated with school dropout in later life (Heetman et al. 2015).

Household poverty, child marriage, poor learning environment, and bullying/harassment at school increased the odds of school dropout (Prakash et al. 2017). Some other risk factors were the divorce of parents, uneasy relationships with friends, late school entry, grade repetition, and poor academic achievement (No et al. 2016). A study in Norway shows that lack of teacher support and perceived sense of loneliness significantly predicted the intention to leave school (Frostad et al. 2015).

Marijuana use and smoking found to be important risk factors of high school dropouts. Poor performance in literacy and numeracy predicts a higher dropout risk (Zuilkowski et al. 2016). Furthermore, the students who are not obliged to be in formal education, who are male

and the students who are living with single parents, are more likely to drop out of the school (van der Steeg et al. 2015).

Community-level risk factors, such as intractable family problems, reduced children's interest in education (Rahbari et al. 2014). A study on primary school dropouts in Kenya showed that children were the primary decision-makers regarding their school decisions rather than the parents (Zuilkowski et al. 2016). The social practice of hypergamy (making sure that the educational level of the groom is at least equal to the education level of the bride) and the expectation of dowry payments to the groom increased the likelihood of dropping out of school for girls in Pirgonj in Bangladesh (Shahidul 2014).

To the best of our knowledge, the existing literature has not addressed the issue of what causes the students to lose interest in studies, which consequently leads them to drop out of school. This study has, thus, filled this critical gap in Pakistan's context by identifying the drivers of school dropout and disaggregated this analysis by gender and education levels.

3 Methods

3.1 Data

This study used data from the Pakistan Demographic and Health Survey (PDHS) 2017–18. PDHS is a nationally representative survey and collected data using a two-stage sampling strategy. The first stage stratified the data from four provinces, including Punjab, Sindh, Balochistan, Khyber Pakhtunkhwa, in addition to Gilgit-Baltistan, Islamabad Capital Territory, Azad Jammu and Kashmir, and FATA. The urban and rural areas divided into smaller units called enumeration blocks *(EBs)*. In the second stage, a systematic random sampling technique used to collect data from the individuals. This study includes all the individuals between 5 and 24 years of age, who reported "dropped out of school" or "attended school" in the current school year. Out of a total sample of 100,868 individuals, 54.1% were ineligible; their age being either less than five or greater than 24 years. Around 19.3% were excluded because they did not report being enrolled in the current year or have dropped out in the current year. Out of the remaining 35,161 respondents, 26,338 (74.9%) were currently enrolled. Out of 8,823 respondents who dropped out of school, 6,727 (76.2%) dropped out despite being interested in the studies, while 2,096 (23.8%) dropped out because of a lack of interest in the studies.

3.2 Outcome variables

The dependent variable in our logit regression model is "leaving school because of a lack of interest". The dependent variable takes the value 1, when an individual drops out of school because of lack of interest and 0 otherwise. Since our primary interest lies in identifying the factors, which make students, drop out of school because of a lack of interest, it was possible to test multiple interesting hypotheses. First, we compared the group of students who left because of a lack of interest with those students who currently enrolled in the school. The outcome variable in this case is:

$$f(y) = \begin{cases} 1 & \text{If a student drops out of school because of lack of interest} \\ 0 & \text{If a student is currently enrolled in school} \end{cases}$$

Secondly, we compared the group of students who left school because of a lack of interest with those students who left school despite being interested in their studies. The objective of this type of school dropout comparison was to see how different factors play their role in interrupting the educational careers of the students when the only difference in both the groups lies in the nature of the interest in the studies and the outcome variable, in this case, is:

$$f(y) = \begin{cases} 1 \text{ If a student drops out of school because of lack of interest} \\ 0 \text{ If a student drops out of school despite being interested in studies} \end{cases}$$

Finally, we constructed a multinomial variable where the students who left because of a lack of interest *and* the students who left school despite being interested in studies compared with the students who are currently enrolled. The outcome variable is:

$$f(y) = \begin{cases} 0 \text{ If a student is currently enrolled in the school} \\ 1 \text{ If a student drops out of school because of lack of interest in studies} \\ 2 \text{ If a student drops out of school despite being interested in studies} \end{cases}$$

Factors associated with dropping out of school may be highly context-specific. For example, there is reason to believe that for a patriarchal society like Pakistan (Shahidul 2014; Yasin & Aslam 2018), the factors that contribute to the students' dropping out might not be the same for boys and girls. Similarly, different factors might contribute to the students dropping out of school at different educational levels. Therefore, we have done a disaggregated regression analysis by i) gender, and ii) education level of the students. We divided the education level into four categories: i) incomplete primary (1–4 grade); ii) complete primary (5th grade); iii) secondary education (6—10 grade) and iv) higher education (> 10 grade).

Taking evidence from the relevant literature (Adanikin et al. 2017; Daniels & Adair 2004; Glynn et al. 2018; Mee et al. 2018; Molla et al. 2015), we included a wide array of individual, household, and community-related independent variables (Table 1*).*

4 Results

Table 1 gives the descriptive statistics of the variables used in the study. About 91% household have male head and 9% female-headed household in the sample. Of total household head whose age is less than 40 years is about 27% and 73% are above 40 years of age. Furthermore, about 23% household have at least one migrant member of the family.

Table 2 tests the strength of the association between predictor variables and the outcome variable. Except for the ownership of agricultural land, all the variables were significantly associated with the outcome variable, including the orphan status of a student and the migration of some members of the household. We included agricultural land in the regression models because of the theoretical reason that children are often removed from school for work on agricultural lands.

Table 1 Descriptive statistics of the variables used in this study

Variable	Levels	N	(%)
Attendance	Enrolled[a]	26,338	74.9
	Left: Interested (LI)[b]	6727	19.1
	Left: Not interested (LNI)[c]	2096	6.0
Not interested vs. Interested	Left: Interested (LI)	6727	76.2
	Left: Not interested (LNI)	2096	23.8
Not interested vs. enrolled	Enrolled	26,338	92.6
	Left: Not interested (LNI)	2096	7.4
Highest education level	Incomplete primary	12,442	24.1
	Primary	6656	12.9
	Secondary	20,472	39.6
	Higher	12,085	23.4
Gender	Female	51,044	50.6
	Male	49,825	49.4
Current marital status	Never married	20,179	32.6
	Ever married	41,774	67.4
Age of head of household	<40	26,934	26.7
	40+	73,935	73.3
Sex of head of household	Male	91,558	90.8
	Female	9311	9.2
Is mother alive?	Yes	44,936	98.4
	No	743	1.6
Is father alive?	Yes	44,233	96.8
	No	1445	3.2
Has any household member migrated	No	77,864	77.2
	Yes	23,005	22.8
Source of drinking water	Unprotected water source	13,906	13.8
	Protected water source	86,963	86.2
Type of toilet facility	Not improved toilet facility	17,314	17.2
	Improved toilet facility	83,549	82.8

Table 1 (continued)

Variable	Levels	N	(%)
Household wealth index	Poorest	20,305	20.1
	Poorer	21,725	21.5
	Middle	19,642	19.5
	Richer	18,607	18.5
	Richest	20,590	20.4
Owns agriculture land	No	66,137	65.6
	Yes	34,695	34.4
Residence type: Urban/Rural	Rural	51,859	51.4
	Urban	49,010	48.6
Does the respondent suffer from any disability	No	129	0.2
	Wear glasses or contact lenses	373	0.4
	Have difficulty seeing	750	0.9
	Wear a hearing aid	1560	1.8
	Have difficulty hearing	3081	3.5
	Have difficulty communicating using usual language	7947	9.1
	Have difficulty remembering or concentrating	2592	3.0
	Have difficulty walking or climbing steps	65,898	75.2
	Have difficulty washing all over or dressing	5276	6.0
	The highest degree of difficulty for any of the impairments	40	0.1

Table 2 Enrolled vs left school because of lack of interest vs left school despite interested

	Enrolled	Left because		P-value
		Not interested	Interested	
	%	%	%	
Education level*				
Incomplete primary (n=10,629)	83.6	5.2	11.2	0.000
Primary (n=3,258)	40	13.8	46.2	
Secondary (n=10,860)	57	11	32	
Higher (n=4,212)	60.5	3.9	35.6	
Total (n=28,959)	65.3	8.3	26.5	
Respondent's gender				
Female (n=16,381)	68.5	5.2	26.3	0.000
Male (n=18,780)	73.4	8.5	18.1	
Total (n=35,161)	71.1	6.9	22	
Marital status				
Never married (n=12,952)	48.8	13.9	37.3	0.000
Ever married (n=2,511)	7	13	80.1	
Total (n=15,463)	41.4	13.7	44.9	
Head's age				
<40 (n=8,306)	78.9	4	17.1	0.000
40+ (n=26,855)	68.6	7.9	23.5	
Total (n=35,161)	71.1	6.9	22	
Head's gender				
Male (n=31,225)	71.1	6.8	22.1	0.106
Female (n=3,936)	70.6	8.3	21	
Total (n=35,161)	71.1	6.9	22	
Mother alive				
Yes (n=24,543)	88.3	3.4	8.3	0.000
No (n=461)	76.2	7.9	15.8	
Total (n=25,004)	88.1	3.5	8.4	
Father alive				
Yes (n=23,988)	88.5	3.4	8.1	0.000
No (n=1,015)	78.3	6.6	15	
Total (n=25,003)	88.1	3.5	8.4	
Migrated member				
No (n=26,666)	72.3	6.6	21.1	0.000
Yes (n=8,495)	66.8	8.1	25.2	
Total (n=35,161)	71.1	6.9	22	
Drinking water source				
Unprotected (n=4,351)	77.2	5.2	17.5	0.001
Protected (n=30,810)	70.6	7.1	22.3	
Total (n=35,161)	71.1	6.9	22	
Household wealth index				
Poorest (n=4,917)	72.8	6.8	20.4	0.000
Poorer (n=7,558)	67.6	8.5	23.9	
Middle (n=7,583)	68	7.9	24.2	

Table 2 (continued)

	Enrolled	Left because		P-value
		Not interested	Interested	
	%	%	%	
Richer (n=7,301)	69.7	7.2	23.2	
Richest (n=7,802)	77.7	4.5	17.8	
Total (n=35,161)	71.1	6.9	22	
Owns agriculture land				
No (n=22,788)	71	6.9	22.1	0.951
Yes (n=12,367)	71.2	7	21.7	
Total (n=35,155)	71.1	7	22	
Residence type				
Rural (n=16,891)	70	7.6	22.4	0.034
Urban (n=18,270)	72.7	6	21.3	
Total (n=35,161)	71.1	6.9	22	

LI: Left despite being interested in studies; ## LNI: Left school because of lack of interest

*Incomplete primary=1–4 grade, complete primary=5th grade, secondary education=6—10 grade and higher education=>10 grade

4.1 Regression analysis

4.1.1 Logit regression: left because of lack of interest vs. enrolled

Compared to the children who currently enrolled in school, the children who left school because of lack of interest were significantly more likely to be at the primary education level (vs incomplete primary), lived in households with the head aged above 40 years. Conversely, the children belonging to richer or richest households (vs poorest households) and the households owning agriculture land, were significantly less likely to drop out of school because of lack of interest *(Model 1 in Table 3)*.

4.1.2 Logit regression: left because of lack of interest vs. left despite interest

Compared to the children who left school despite being interested, the children who left school because of lack of interest were significantly more likely to be male (vs female), and significantly less likely to have completed primary level education (vs incomplete primary) *(Model 2 in Table 3)*. Apart from the gender and education level, both types of school dropouts were statistically no different from each other.

4.1.3 Multinomial regression: leaving because of no interest vs enrolled

Compared to the currently enrolled, the children who left school due to lack of interest were more likely to be in the primary or secondary education level (vs the incomplete primary), belonged to household where the age of the head was above 40 years (vs less than

Table 3 Logit and multinomial logit regression results

	(1) Logit LNI## vs. Enrolled	(2) LNI## vs. LI	(3) Multinomial Logit LNI# vs. Enrolled	(4) LI# vs. Enrolled
Education Level	*Ref: Incomplete Primary*			
Primary	**3.898*****	**0.695***	**3.954*****	**5.929*****
	(9.17)	(−2.16)	(9.17)	(16.15)
Secondary	1.638**	0.959	**1.647*****	**1.783*****
	(3.31)	(−0.25)	(3.36)	(5.28)
Higher	0.586	0.418	0.596	1.500
	(−0.62)	(−1.00)	(−0.60)	(1.19)
Respondent's Gender	*Ref: Female*			
Male	1.169	**2.170*****	1.186	**0.530*****
	(1.14)	(5.26)	(1.27)	(−6.37)
Head's age	*Ref: < 40 years*			
40+	**1.713****	1.286	**1.709****	**1.333***
	(2.98)	(1.29)	(2.98)	(2.37)
Head's gender Female	*Ref: Male*			
	1.024	1.116	1.045	0.890
	(0.10)	(0.46)	(0.19)	(−0.74)
Mother alive	*Ref: Yes*			
No	1.943	1.451	1.947	1.411
	(1.90)	(0.96)	(1.92)	(1.46)
Father alive	*Ref: Yes*			
No	1.625	0.864	1.684	**1.876****
	(1.79)	(−0.50)	(1.95)	(3.29)
Migrated member	*Ref: No*			
Yes	0.933	0.747	0.928	**1.287***
	(−0.46)	(−1.73)	(−0.49)	(2.50)
Drinking water source	*Ref: Unprotected*			
Protected	1.677	1.080	1.633	1.328
	(1.91)	(0.30)	(1.84)	(1.78)
Household wealth index	*Ref: Poorest*			
Poorer	1.056	1.422	1.097	0.808
	(0.34)	(1.73)	(0.58)	(−1.67)
Middle	0.693	1.328	0.709	**0.550*****
	(−1.97)	(1.24)	(−1.82)	(−4.08)
Richer	**0.503*****	1.243	**0.521****	**0.402*****
	(−3.42)	(0.84)	(−3.25)	(−5.33)
Richest	**0.187*****	1.239	**0.191*****	**0.147*****
	(−6.54)	(0.70)	(−6.47)	(−10.93)
Owns agriculture land	*Ref: No*			
Yes	**0.676****	0.867	**0.667****	**0.791***
	(−2.83)	(−0.85)	(−2.92)	(−2.38)
Residence type	*Ref: Rural*			

Table 3 (continued)

	(1)	(2)	(3)	(4)
	Logit		Multinomial Logit	
	LNI[##]	LNI[##]	LNI[#]	LI[#]
	vs. Enrolled	vs. LI	vs. Enrolled	vs. Enrolled
Urban	1.114	0.991	1.104	1.047
	(0.67)	(–0.05)	(0.60)	(0.42)
Observations	13,378	2009	14,808	
F	13.63	3.519	18.28	
P	1.30e–29	0.00000634	1.49e–60	

Exponentiated coefficients; t statistics in parentheses. [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

LI: Left despite being interested in studies; ## LNI: Left school because of lack of interest

40 years), less likely to be a member of the richer and richest wealth-status households (vs the poorest household), and with agricultural land ownership (vs households who did not own agricultural land) *(Model 3 in Table 3)*.

4.1.4 Multinomial regression: leaving despite interest vs enrolled

Compared to the children who were currently enrolled, the children who left despite their interest in studies were significantly more likely to be at the primary or the secondary level (vs incomplete primary education), lived in the households where the head of the household was above 40 (vs < 40), were those who had lost a father, or lived in the households where some family member had migrated for economic reasons. Conversely, the children who dropped out of school, despite being interested in the studies, were less likely to be male, lived in the middle or higher wealth status households, and owned agricultural land *(Model 4 in Table 3)*.

4.2 Regression analysis disaggregated by gender

4.2.1 Logit regression: left because of lack of interest vs enrolled

Compared to the female students who were currently enrolled in school, the factors which protected the female students from dropping out of school because of lack of interest were being enrolled in higher education levels and belonging to the richest households *(Model 1 in Table 4)*. Conversely, the only factor that protected the male students from dropping out of school was their enrolment at the higher educational levels. Interestingly, the higher wealth status did not provide any protection against dropping out of school in the case of male students *(Model 2 in Table 4)*.

The risk factors of dropping out of school for the female students were their marriage and the migration of some family member. For the male students, the risk factors were belonging to the poorer households and having been married. The migration of household member increased the risk of dropping out of school only in the case of the female students. In contrast, the impact on male students was not statistically significant.

Table 4 Logistic regression disaggregated by gender

	(1) Female LNI vs Enrolled	(2) Male LNI vs Enrolled	(3) Female LNI vs LI	(4) Male LNI vs LI
Education level	*Ref: Incomplete Primary*			
Primary	1.690	1.375	**0.587****	0.812
	(1.52)	(1.28)	(–2.89)	(–1.07)
Secondary	**0.112*****	**0.230*****	**0.495*****	0.809
	(–8.89)	(–7.07)	(–4.40)	(–1.28)
Higher	**0.0246*****	**0.0510*****	**0.153*****	**0.260*****
	(–10.53)	(–11.28)	(–6.51)	(–5.99)
Head's age	*Ref: < 40 years*			
40+	1.505	1.256	**1.555***	**1.417***
	(1.54)	(1.46)	(2.35)	(2.03)
Head's Gender	*Ref: Male*			
Female	1.258	1.366	**1.491***	1.285
	(1.07)	(1.62)	(2.01)	(1.29)
Migrated member	*Ref: No*			
Yes	**1.754*****	1.061	1.028	1.075
	(3.53)	(0.42)	(0.18)	(0.50)
Drinking water source	*Ref: Unprotected*			
Protected	1.712	1.436	0.832	0.932
	(1.64)	(1.63)	(–0.85)	(–0.27)
Household wealth index	*Ref: Poorest*			
Poorer	1.192	**1.841***	1.030	**1.581***
	(0.55)	(2.53)	(0.10)	(2.11)
Middle	1.011	**2.053****	1.206	**1.616***
	(0.04)	(3.13)	(0.74)	(2.10)
Richer	0.703	**1.989****	1.132	**1.902****
	(–1.24)	(2.72)	(0.48)	(2.72)
Richest	**0.523***	1.518	1.306	**2.408****
	(–2.08)	(1.39)	(0.92)	(3.08)
Residence type	*Ref: Rural*			
Urban	1.247	0.774	1.078	**0.651***
	(1.10)	(–1.30)	(0.40)	(–1.99)
Marital status	*Ref: Never married*			
Ever married	**11.59*****	**5.340*****	**0.504*****	**0.609****
	(9.12)	(7.59)	(–3.35)	(–3.28)
Observations	2821	4340	3271	3220
F	28.11	24.34	5.673	6.890
P	2.47e–48	7.57e–44	1.37e–09	3.96e–12

Exponentiated coefficients; *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2.2 Logit regression: left because of lack of interest vs left despite interest

Compared to the male students who left despite their interest in the studies, the female students were less likely to drop out because of lack of interest when they enrolled at primary, secondary and higher education level *(Model 3 Table 4)*. In contrast, their male counterparts protected against dropping out only when they enrolled at a higher education level *(Model4 Table 4)*. Both male and female students were significantly more likely to drop out when the head of the household was aged above 40. Only the female students were likely to drop out when the head of the household was a female. The household wealth status had no significant impact on dropping out of the female students. In contrast, an increase in the household wealth monotonically increased the risk of male students' dropping out of school because of lack of interest. Although considering the wealth as a risk factor might be equivalent to jumping at the conclusion, there is reason to believe that the richest households systematically differ from the poorest households with regard to the educational experience of the students.

The male students were less likely to drop out of the school in the urban areas, whereas the residential status did not have any significant impact on the female students. Interestingly, being married served as a protective factor against dropping out of school because of a lack of interest in studies for both male and female students.

4.2.3 Multinomial regression: leaving because of lack of interest vs enrolled

Compared to the female students who were currently enrolled, the female students who left school because of lack of interest in their studies were more likely to be living in the households where some household member had migrated or when they were married *(Model 1 in Table 5)*. However, the male students were more likely to drop out when they belonged to the middle and richer income households, or when they were married (Model 3 in Table 5).

The factors which protected the female students from dropping out of school were enrollment at higher educational levels (the secondary and higher education), and being in the richest households *(Model 1 in Table 5)*. The factors that protected the male students from dropping out of school were also the enrollment at the higher educational levels (secondary and higher education) *(Model 3 in Table 5)*.

4.2.4 Multinomial regression: leaving despite interest vs enrolled

Compared to the female students who were currently enrolled, the female students who dropped out despite their interest in their studies were more likely to be enrolled at the primary education level and belonged to the households where some family member had migrated, had access to the protected water source, and were married *(Model 2 Table 6)*. Their male counterparts were more likely to drop out despite their interest in studies, when they enrolled at the primary level, or had access to the protected water source or were married (Model 4 in Table 6).

The factors that protected the female students from dropping out of school were enrollment at the higher educational levels (secondary and higher education) and living in the richest households *(Model 2 in Table 6)*. The factors that protected their male counterparts

Table 5 Multinomial logistic regression disaggregated by gender

	(1)	(2)	(3)	(4)
	Female	Male		
	LNI	LI	LNI	LI
	vs Enrolled	vs Enrolled		
Education level	*Ref: Incomplete Primary*			
Primary	1.780	**3.053****	1.363	**1.713***
	(1.66)	(3.31)	(1.27)	(2.55)
Secondary	**0.104*****	**0.211*****	**0.227*****	**0.280*****
	(−9.30)	(−6.12)	(−7.21)	(−7.62)
Higher	**0.0268*****	**0.171*****	**0.0532*****	**0.201*****
	(−10.95)	(−6.88)	(−11.43)	(−9.07)
Head's age	*Ref: < 40 years*			
40+	1.371	0.865	1.265	0.909
	(1.46)	(−0.97)	(1.56)	(−0.77)
Head's gender	*Ref: Male*			
Female	1.327	0.861	1.211	0.900
	(1.43)	(−0.98)	(1.04)	(−0.76)
Migrated member	*Ref: No*			
Yes	**1.553****	**1.491*****	1.136	1.074
	(3.03)	(4.01)	(0.96)	(0.72)
Drinking water source	*Ref: Unprotected*			
Protected	1.569	**1.801****	1.362	**1.424***
	(1.64)	(3.31)	(1.40)	(2.25)
Household wealth index	*Ref: Poorest*			
Poorer	1.173	1.150	**2.012****	1.313
	(0.50)	(0.61)	(3.06)	(1.56)
Middle	0.940	0.791	**2.033*****	1.267
	(−0.23)	(−0.99)	(3.37)	(1.44)
Richer	0.715	0.653	**1.976****	1.007
	(−1.23)	(−1.83)	(2.93)	(0.04)
Richest	**0.487***	**0.402*****	1.566	**0.672***
	(−2.42)	(−3.84)	(1.57)	(−2.06)
Residence type	*Ref: Rural*			
Urban	1.298	1.191	0.778	1.206
	(1.44)	(1.57)	(−1.25)	(1.60)
Marital status	*Ref: Never married*			
Ever married	**11.98*****	**23.32*****	**4.824*****	**7.783*****
	(9.62)	(17.00)	(8.18)	(14.44)
Observations	5548	6621		
F	28.03	22.10		
P	1.06e−74	6.54e−63		

Exponentiated coefficients; *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 Logit model: disaggregated by education level

Left: Not Interested vs Enrolled	(1) Incomplete Primary	(2) Primary	(3) Secondary	(4) Higher
Respondent's gender	*Ref: Female*			
Male	0.997	0.758	1.451	1.670
	(−0.01)	(−1.14)	(1.55)	(1.83)
Head's age	*Ref: < 40 years*			
40+	**2.124*****	1.984	1.038	0.738
	(3.37)	(1.87)	(0.12)	(−0.77)
Head's gender	*Ref: Male*			
Female	0.842	1.844	1.300	1.119
	(−0.55)	(1.35)	(0.81)	(0.29)
Mother alive	*Ref: Yes*			
No	**3.094****	1.685	0.966	
	(2.61)	(1.07)	(−0.05)	
Father alive	*Ref: Yes*			
No	**2.406****	0.934	0.952	
	(2.60)	(−0.12)	(−0.10)	
Migrated member	*Ref: No*			
Yes	1.191	0.612	0.821	1.069
	(0.79)	(−1.42)	(−0.74)	(0.22)
Drinking water source	*Ref: Unprotected*			
Protected	1.177	2.155	2.100	1.538
	(0.48)	(1.61)	(1.78)	(0.76)
Household wealth index	*Ref: Poorest*			
Poorer	0.822	1.117	**2.843***	**299.3*****
	(−0.85)	(0.28)	(2.11)	(5.24)
Middle	**0.462****	0.560	**2.752***	**164.9*****
	(−2.75)	(−1.31)	(2.06)	(4.73)
Richer	**0.517***	**0.260***	1.494	**219.6*****
	(−2.38)	(−2.35)	(0.78)	(5.00)
Richest	**0.0859*****	**0.0408*****	1.433	**125.9*****
	(−5.34)	(−5.00)	(0.67)	(4.40)
Owns agriculture land	*Ref: No*			
Yes	0.677	0.702	0.570	0.793
	(−1.94)	(−1.25)	(−1.96)	(−0.65)
Residence type	*Ref: Rural*			
Urban	1.085	**2.035***	0.758	0.791
	(0.37)	(2.08)	(−0.99)	(−0.70)
Marital status	*Ref: Never married*			
Ever married			**10.64****	**3.232****
			(2.98)	(3.26)
Observations	7456	1349	2476	2211
F	6.943	3.413	2.239	4.229
P	3.08e−12	0.0000526	0.00621	0.00000291

Exponentiated coefficients; *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

from dropping out of school were enrolment at the secondary and higher education level, and belonging to the richest wealth quintile *(Model 4 in Table 6).*

5 Regression analysis disaggregated by educational level

5.1 Logit regression: left because of no interest vs enrolled

Compared to the students who were enrolled, the risk factors of dropping out at the incomplete primary level were living in the household where the head of the household was aged above 40, being orphaned (both father and mother died), or belonging to the poorest wealth quintile (Model 1 in Table 6). Risk factors at the primary level were being in the poorest household wealth quintile and living in urban areas (Model 2 in Table 6). Risk factors at the secondary level were being in the poorer or middle wealth quintile and being married (Model 3 in Table 6). Risk factors at the higher education level were being rich and being married (Model 4 in Table 6).

5.2 Logit regression: left because of lack of interest vs left despite interest

Compared with the students who left the school despite being interested in their studies, the students who dropped out because of lack of interest at the pre-primary level were more likely to be male *(Model 1 in Table 7).* The students who dropped out because of lack of interest at the primary level were more likely to be male and significantly less likely to drop out when some household member had migrated *(Model 2 in Table 7).* The students who dropped out because of lack of interest at the secondary level were more likely to be male, or lived in female-headed households, lived in households with middle and higher wealth quintiles.

However, they were significantly less likely to drop out when some household member had migrated *(Model 3 in Table 7).* The students who dropped out because of lack of interest at the higher level were more likely to be male, or owned agricultural land, and least likely to drop out when they belonged to the poorest households or were married *(Model 4 in Table 7).*

5.3 Multinomial regression: dropping out because of lack of interest vs enrolled

The children most likely to drop out of school because of lack of interest at the pre-primary level were those living in the households where head of the household was above 40, were orphaned (both father and mother died) or belonged to the poorest wealth quintile *(Model 1 in Table 8).* The children most likely to drop out of school because of lack of interest at the primary level were those who lived in the poorest wealth quintile *(Model 3 in Table 8),* at the secondary level were those who were married or lived in the poorer or middle wealth quintiles *(Model 5 in Table 8),* at the higher level were those who lived in female-headed households, were married *(Model 7 in Table 8).* The children who belonged to the poorest households were least likely to drop out of school due to a lack of interest in studies. In multinomial regression compared to the children who were currently enrolled, the children who were significantly more likely to drop out of school, despite their interest in the studies were the ones, who were female, lived in the households with head of the household above 40, were orphaned (both mother and father passed away), lived in the poorest households,

Table 7 Logit model: disaggregated by education level

Left: not interested vs interested	(1) Incomplete Primary	(2) Primary	(3) Secondary	(4) Higher
Respondent's gender	*Ref: Female*			
Male	**1.608***	**1.883***	**3.685*****	**2.631*****
	(2.16)	(2.48)	(3.96)	(3.53)
Head's age	*Ref: < 40 years*			
40+	1.392	1.493	1.075	0.650
	(1.32)	(0.98)	(0.19)	(–1.14)
Head's gender	*Ref: Male*			
Female	0.531	2.038	**2.900***	1.568
	(–1.57)	(1.51)	(2.47)	(1.29)
Mother alive	*Ref: Yes*			
No	1.788	1.117	2.015	
	(1.17)	(0.22)	(1.16)	
Father alive	*Ref: Yes*			
No	1.349	0.678	0.432	
	(0.64)	(–0.69)	(–1.63)	
Migrated member	*Ref: No*			
Yes	1.387	**0.463***	**0.425****	0.911
	(1.27)	(–2.24)	(–2.92)	(–0.29)
Drinking water source	*Ref: Unprotected*			
Protected	0.768	1.091	1.208	1.184
	(–0.75)	(0.16)	(0.36)	(0.26)
Household wealth index	*Ref: Poorest*			
Poorer	1.090	2.072	2.643	**246.8*****
	(0.27)	(1.62)	(1.77)	(4.98)
Middle	0.874	1.156	**6.119****	**212.2*****
	(–0.39)	(0.29)	(3.26)	(4.71)
Richer	1.455	1.032	**3.249***	**334.5*****
	(0.96)	(0.06)	(2.09)	(5.20)
Richest	0.573	0.294	**8.807*****	**210.5*****
	(–1.08)	(–1.76)	(3.55)	(4.63)
Owns agriculture land	*Ref: No*			
Yes	0.913	0.777	0.994	1.144
	(–0.38)	(–0.82)	(–0.02)	(0.39)
Residence type	*Ref: Rural*			
Urban	0.998	1.478	0.714	0.801
	(–0.01)	(1.04)	(–1.13)	(–0.61)
Marital status	*Ref: Never married*			
Ever married			0.827	**0.387***
			(–0.28)	(–2.50)
Observations	794	566	524	1200
F	1.211	2.208	3.280	5.075
P	0.270	0.00988	0.0000847	8.77e–08

Exponentiated coefficients; *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8 Multinomial logit: disaggregated by education

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incomplete Primary		Primary		Higher			
				Secondary				
	LNI# vs Enrolled	LI##	LNI	LI vs Enrolled	LNI vs Enrolled	LI	LNI vs Enrolled	LI
Respondent's gender	*Reference Category: Female*							
Male	0.996	0.625***	0.819	0.459***	1.525	0.428***	1.800*	0.704**
	(−0.02)	(−3.39)	(−0.88)	(−3.98)	(1.70)	(−5.17)	(2.10)	(−3.17)
Head's age	*Ref: <40 years*							
40+	2.121***	1.536*	1.919	1.265	1.004	0.993	0.734	1.057
	(3.36)	(2.52)	(1.76)	(1.08)	(0.01)	(−0.03)	(−0.76)	(0.29)
Head's gender	*Ref: Male*							
Female	0.841	1.545	1.850	0.787	1.347	0.555*	1.109	0.710*
	(−0.55)	(1.69)	(1.45)	(−0.82)	(0.93)	(−2.24)	(0.27)	(−2.05)
Mother alive	*Ref: Yes*							
No	3.191**	1.977*	1.853	1.820	0.952	0.536		
	(2.74)	(2.17)	(1.19)	(1.52)	(−0.08)	(−1.31)		
Father alive	*Ref: Yes*							
No	2.528**	2.065*	1.060	1.615	0.958	1.497		
	(2.72)	(2.28)	(0.11)	(1.34)	(−0.09)	(1.35)		
Migrated member	*Ref: No*							
Yes	1.189	0.864	0.623	1.399	0.835	1.802**	1.081	1.186
	(0.78)	(−0.90)	(−1.41)	(1.86)	(−0.68)	(3.11)	(0.26)	(1.20)
Drinking water source	*Ref: Unprotected*							
Protected	1.150	1.331	2.130	1.715	2.229	1.222	1.421	1.356
	(0.41)	(1.36)	(1.62)	(1.66)	(1.82)	(0.72)	(0.60)	(1.44)
Household wealth index	*Ref: Poorest*							
Poorer	0.837	0.823	1.154	0.572*	3.041*	1.461	266.0***	1.051
	(−0.78)	(−1.09)	(0.35)	(−2.50)	(2.31)	(1.21)	(5.17)	(0.13)

Table 8 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incomplete Primary		Primary	Secondary	Higher			
	LNI# vs Enrolled	LI##	LNI	LI vs Enrolled	LNI vs Enrolled	LI	LNI vs Enrolled	LI
Middle	0.468**	0.553**	0.596	0.499**	2.799*	0.614	159.9***	0.755
	(-2.70)	(-2.59)	(-1.17)	(-2.87)	(2.14)	(-1.71)	(4.73)	(-0.62)
Richer	0.527*	0.387***	0.290*	0.251***	1.562	0.639	218.4***	0.727
	(-2.31)	(-3.44)	(-2.28)	(-4.93)	(0.88)	(-1.45)	(5.02)	(-0.74)
Richest	0.0870***	0.160***	0.0439***	0.119***	1.442	0.215***	119.6***	0.617
	(-5.30)	(-5.73)	(-5.00)	(-6.50)	(0.69)	(-4.58)	(4.36)	(-1.13)
Owns land	Ref: No							
Yes	0.679	0.742*	0.732	0.975	0.606	0.768	0.792	0.697*
	(-1.93)	(-2.02)	(-1.10)	(-0.14)	(-1.81)	(-1.42)	(-0.67)	(-2.45)
Residence type	Ref: Rural							
Urban	1.084	0.963	1.954	1.235	0.780	1.019	0.765	0.997
	(0.36)	(-0.19)	(1.95)	(0.94)	(-0.88)	(0.10)	(-0.78)	(-0.02)
Current marital status	Ref: Never Married							
Ever married					12.97***	17.63***	3.483***	9.442***
					(3.54)	(5.94)	(3.40)	(12.67)
Observations	7991		1779		2852		3290	
F	8.147		4.112		6.107		11.50	
p	3.03e-24		3.54e-10		4.50e-18		2.97e-32	

Exponentiated coefficients; t statistics in parentheses. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. # LNI: Left school because of lack of interest; ##LI: Left despite being interested in studies

or when they did not own the agriculture land *(Model 2 in Table 8)*. At the primary level were female, or were in the poorest wealth quintile *(Model 4 in Table 8)*, at the secondary level were those who were female, or when some household member had migrated, or when they lived in the poorest wealth quintile or they were married *(Model 6 in Table 8)* and at the higher level were female, or who lived in female-headed households, or did not own agricultural land, or were married (Model 8 in Table 8).

6 Discussion

The results suggest that the students more likely to drop out of school because of lack of interest when they enrolled in lower educational levels (pre-primary and primary), when they lost one or both of their parents, lived in the urban areas, got married, or lived in households where the head of the household was above 40, or in the female-headed households. The students were less likely to drop out of school because of a lack of interest when they owned agricultural land. Reasons such as the impact of wealth status and the gender of the student, and the migration of a family member, however, context-specific.

The male and female students dropping out of school because of lack of interest differed with respect to their household wealth status, the migration of a household member, the gender of the household head, and the rural–urban residential status. Similarly, the students at different educational levels significantly differed with respect to the age of the head of the household, wealth status, rural–urban residential status, and whether the students orphaned or not.

Age is an important predictor of dropping out of school, especially when the head of the household was above 40 years. One straightforward explanation of this link is that when the household head is old (which is mostly the father in Pakistan), the index child, that is, the child dropping out of school must be younger. It has been widely observed that individuals are more ambitious and more engaged in the academic life of their first-born children because they are young at that time. As they grow old, their passion for education of the younger children subsides. Edwards and Alldred (2000) have provided an excellent summary of the extent of parental involvement, and the reasons thereof, in the children's academic lives. Change in the level of parental engagement with children's education over time may not directly relate with the enrolment of the students but may be reflected in less interest in the homework of the children or less engagement with the teachers of the children (Renkl 2002). Even if it is perfectly plausible to think that children's education is an investment, the practice may go against this type of "rational" thinking. In Pakistan, many poor people get their children off school because the young children's contribution to family income is the more urgent concern of the parents rather than the long-term economic returns from higher education.

The ownership of agricultural land is a protective factor against children's dropping out of school. This finding runs counter to the famous *"wealth paradox of child farm labor"* in which the children from land-rich households are more likely to be at work than in school (Bhalotra & Heady 2003). Even if the children at the elementary educational levels in our sample are not expected to cultivate the land themselves, the significance of the ownership of agricultural land lies in the fact that the children, who own agricultural land, belong to the wealthier households where proprietary rights are secure. It is reasonable to assume that the ownership of some types of assets, such as livestock (oxen and cattle) is labor-saving (Shumetie & Mamo 2019), and so is the ownership of agricultural land when it is

leased out or some share-crop arrangement is put in place. Therefore, the protective role of ownership of agricultural land is plausible.

While it is intuitive to expect that higher wealth status is a protective factor against dropping out of school, and lower wealth status is the risk factor of dropping out of school, the counter situation is also probable. In Pakistan, the business families of the urban areas often get their children away from the school at a relatively younger age and launch them in their businesses as the apprentice.

Dana et al. (2020) provided an excellent case study of the *Memons*, a frontline business family of Pakistan, whose entrepreneurially oriented community structure largely characterizes the educational priorities of other business families in Pakistan. It was found that, contrary to the preferences of the majority of educated youth, *Memons* looked unfavorable at the government jobs and preferred launching their own business. A study in Pakistan found that nearly three-fourths of the children intended to launch their own business rather than pursue a paid job (Faisal et al. 2019). This could be the reason why children belonging to richer homes are more likely to drop out of school. One natural corollary of the educational priorities of the business communities, backed by a significant amount of anecdotal evidence, is that the business community puts their daughters in the educational institutions for longer years to find a better match in the labor market. In the rural areas, higher wealth status may guarantee minimum capital to launch some small to medium level business, especially in livestock or dairy farming.

On the other hand, poor children are made to realize that their only chance of breaking out of the vicious cycle of poverty is education (Ladd 2012). This understanding is consistent with our findings that the poorest children are least likely to drop out of school because of a lack of interest. One additional possibility is that the poor children have a very clear understanding that they would be forced into labor on the farm once they leave school, which is often a more challenging alternative in terms of its physical demand (O'Neill 2014). Public education at the school level is highly subsidized and relatively inexpensive. Therefore, the opportunity costs of staying in the school for poor children may not be very high. The poor parents thus encourage their children to stay at school in hopes of a better future.

The poor people justify the discontinuation of the education of young children because jobs are hard to come by, especially with low levels of education (Edwards & Alldred 2000). Poor people cannot afford expensive higher education in college and universities. Some evidence also suggests that the economic returns from a marginal increase in the educational years are higher at the higher educational levels and is insignificant at the lower educational levels (Dickson & Harmon 2011).

The family structure of Pakistan presupposes that the marital expenses of the girls have to be borne out by the girl's family. Dowry is a traditional custom in Pakistan and puts enormous pressure on the economy of poor households (Makino 2019). Male children routinely drop out of school to contribute to the family finances to arrange marriages of the girls (Ali et al. 2013). For the cases where adults have migrated to other countries, the male children often face the axe in the school (Arif & Chaudhry 2015). In Pakistan, men are expected to manage farming activities. If the family elders are not at home or cannot manage farming because of some health or other reasons, it is the male students who have to leave school.

Different factors play their role in causing students to drop out of schools at different educational levels. For the elementary levels, dropping out of school could result from the failure on the part of parents to realize the significance of education for the children's life-long careers. The poor parents often argue that the chances of their children's getting a

government job are minimal. Thus, they think they should not *waste* time on education when young children can learn valuable life-skills through apprenticeship and increase family income. A study found that poor quality education is a poverty trap with adverse lifelong socio-economic consequences for the student (van der Berg et al. 2011).

Generally, the students at the higher levels drop out of school to fill the gap left by unfavorable circumstances (Hussain & Saud 2017). The girls may drop out of school at the elementary levels because the parents are not entirely convinced of the significance of education for the girls. But for the higher levels, the girls may drop out because of marriage or to protect family honor in case of harassment (Bhanbhro et al. 2013; Makino 2019).

The regression analysis disaggregated by gender gave a counter-intuitive result that the migration of a family member was a risk factor for female students, but had an insignificant impact on dropping out of school by the male students. Most of the migrants in Pakistan are males. If some male family member migrates, it is expected that only an adult male family member may take care of the responsibilities outside the household. As the students in their educational life are relatively younger, they may not be tasked with the responsibilities that only grown-up family members can take care of.

A study found that Pakistan's urbanization was messy and hidden (Qadeer, 2000). Low-density neighborhoods continuously sprawl, and cities grow out of administrative boundaries to include "ruralopilises". Pakistan is ranked eighth among the ten countries that hold 60 per cent of the global share of substandard housing. The quality of life in the squalid ghettos of the large cities is much poorer than in the less developed rural areas. The intra-household social bonds are weakening. With the controlling mechanism in the family significantly watered down, the students are justifiably more likely to drop out of school than the rural students.

It is quite evident that marriage is a risk factor for dropping out of school. It is generally the female students who are forced into child marriage. Given the patriarchal values of Pakistani society, it is challenging for the married women to continue their education.

Once a woman becomes a mother, it becomes very challenging to balance household responsibilities and studies. Boys are less likely to force into child marriage. However, the boys who marry during their education are the ones who generally belong to poor households and are, therefore, expected to be under the economic compulsions to drop out of school. In a nutshell, the reason behind the male students dropping out because of marriage is related to the economic exigencies. In contrast, female students drop out because they have to stick to the patriarchal social norms in most cases. Children living in households headed by women are more likely to drop out. The female heads cannot interact with the teachers and school the way a male head of the household can do.

7 Conclusion

This study explored the factors associated with students dropping out of school because of the lack of interest in studies. We found that the students were more likely to drop out of school because of lack of interest when they were enrolled in the lower educational levels (pre-primary and primary), were orphaned (lost one or both of their parents), lived in the urban areas, got married, lived in the households where the head of the household was above 40 years, or lived in the female-headed households. Alternatively, students were less likely to drop out of school because of a lack of interest when they owned agricultural land. However, the impact of wealth status, the gender of the student and the migration

of a family member were context-specific. The male and female students dropping out of school because of a lack of interest differed with respect to their household wealth status, the migration of a household member, gender of the household head, and rural–urban residential status. This study has important policy implications. Lack of interest in studies does not occur in a vacuum, and many identifiable factors can be controlled to reduce dropout rates. Given the higher likelihood that students drop out more frequently at the lower educational levels and in urban areas, specific policies may be tailored to reduce school dropout rates at the primary level, such as increased monitoring through linkages with the communities in the urban areas. In rural areas, closer social bonds define interpersonal relations. In the urban areas, the increasing trend of nuclear and atomistic family structures does not allow the same level of social control to bring school dropouts back to school. So innovative measures are required to reduce school dropout rates. Female members generally head the family only when the male members die, migrate, or otherwise do not fulfil their expected social role. Therefore, public policies need to prioritize the needs of such families with a focus on the continuation of education of young children. The same argument can be made about the families where children are orphaned. Given the vital link between marriage and school dropouts, discouraging child marriages may be an important policy measure to reduce school dropouts.

References

Adanikin, A.I., Adanikin, P.O., Orji, E.O., Adeyanju, B.T.: Survey of sexual activity and contraceptive use among unmarried young school and college drop-outs in a defined nigerian population. J Biosoc Sci **49**(5), 675–684 (2017). https://doi.org/10.1017/S002193201600050X

Ali, T.S., Árnadóttir, G., Kulane, A.: Dowry practices and their negative consequences from a female perspective in Karachi, Pakistan—a qualitative study. Health **5**(7D), 84 (2013)

Arif, R., Chaudhry, A.: The effects of external migration on enrolments, accumulated schooling and dropouts in Punjab. Appl. Econ. **47**(16), 1607–1632 (2015)

Bano, Z., Fatima, S., Naz, I.: Stigma as a predictor of psychological issues among orphans resides in orphanages. Pakistan Armed Forces Medical Journal **69**(3), 631–637 (2019)

Beattie, T.S., Bhattacharjee, P., Isac, S., Davey, C., Javalkar, P., Nair, S., Thalinja, R., Sudhakar, G., Collumbien, M., Blanchard, J.F., Watts, C., Moses, S., Heise, L.: Supporting adolescent girls to stay in school, reduce child marriage and reduce entry into sex work as HIV risk prevention in north Karnataka, India: protocol for a cluster randomised controlled trial. BMC Public Health **15**, 292 (2015). https://doi.org/10.1186/s12889-015-1623-7

Bhalotra, S., Heady, C.: Child farm labor: the wealth paradox. The World Bank Econom. Rev. **17**(2), 197–227 (2003)

Bhanbhro, S., Wassan, M.R., Shah, M., Talpur, A.A., Wassan, A.A.: Karo Kari: the murder of honour in sindh Pakistan: an ethnographic study. Int. J. Asian Soc. Sci. **3**(7), 1467–1484 (2013)

Dana, L.-P., Gurau, C., Light, I., & Muhammad, N. (2020). Family, community, and ethnic capital as entrepreneurial resources: Toward an integrated model. *Journal of Small Business Management*, 1–27.

Daniels, M.C., Adair, L.S.: Growth in young Filipino children predicts schooling trajectories through high school. J Nutr **134**(6), 1439–1446 (2004). https://doi.org/10.1093/jn/134.6.1439

Dickson, M., Harmon, C.: Economic returns to education: what we know, what we don't know, and where we are going—some brief pointers. Econ. Educ. Rev. **30**(6), 1118–1122 (2011)

Edwards, R., Alldred, P.: A typology of parental involvement in education centring on children and young people: negotiating familialisation, institutionalisation and individualisation. Br. J. Sociol. Educ. **21**(3), 435–455 (2000)

Eicher, V., Staerklé, C., Clémence, A.: I want to quit education: a longitudinal study of stress and optimism as predictors of school dropout intention. J. Adolesc. **37**(7), 1021–1030 (2014)

Faisal, T., Hyder, M., & Zaidi, S. S. Z. (2019). Behavioral aspects of youth in pakistan: un-employment and entrepreneurship. *Academic Research International*, *10*.

Fitzpatrick, C., Archambault, I., Janosz, M., Pagani, L.S.: Early childhood working memory forecasts high school dropout risk. Intelligence **53**, 160–165 (2015)

Frostad, P., Pijl, S.J., Mjaavatn, P.E.: Losing all interest in school: social participation as a predictor of the intention to leave upper secondary school early. Scand. J. Educ. Res. **59**(1), 110–122 (2015)

Glynn, J.R., Sunny, B.S., DeStavola, B., Dube, A., Chihana, M., Price, A.J., Crampin, A.C.: Early school failure predicts teenage pregnancy and marriage: a large population-based cohort study in northern Malawi. PLoS ONE **13**(5), e0196041 (2018). https://doi.org/10.1371/journal.pone.0196041

Gunderson, M., & Oreopolous, P. (2020). Returns to education in developed countries. In *The Economics of Education* (pp. 39–51). Elsevier.

Heetman, I., Bosma, H., Kuiper, G., Feron, F.: Preventive healthcare surveillance can detect emerging behavioural problems that are related to later school dropouts. Acta Paediatr. **104**(1), e27–e31 (2015)

Hjorth, C. F., Bilgrav, L., Frandsen, L. S., Overgaard, C., Torp-Pedersen, C., Nielsen, B., & Bøggild, H. (2016). Mental health and school dropout across educational levels and genders: a 4.8-year follow-up study. *BMC public health*, *16*(1), 976.

Hussain, M., Saud, A.: Socio-economic determinants of working children: evidence from capital territory of Islamabad. Pakistan. Pakistan Administrat. Rev. **1**(2), 145–158 (2017)

Ioana, M. I., Anda, M. I., Cornelia, P., Mariana, C. R.: School dropout–A social problem in Romania. Proc. Soc. Behav. Sci. **182**, 623–628 (2015)

Ladd, H.F.: Education and poverty: confronting the evidence. J. Policy Anal. Manage. **31**(2), 203–227 (2012)

Lansford, J.E., Dodge, K.A., Pettit, G.S., Bates, J.E.: A public health perspective on school dropout and adult outcomes: a prospective study of risk and protective factors from age 5 to 27 years. J. Adolesc. Health **58**(6), 652–658 (2016)

Makino, M.: Marriage, dowry, and women's status in rural Punjab. Pakistan. J. Populat. Econom. **32**(3), 769–797 (2019)

Maynard, B.R., Salas-Wright, C.P., Vaughn, M.G.: High school dropouts in emerging adulthood: substance use, mental health problems, and crime. Community Ment. Health J. **51**(3), 289–299 (2015)

Mee, P., Fearon, E., Hassan, S., Hensen, B., Acharya, X., Rice, B.D., Hargreaves, J.R.: The association between being currently in school and HIV prevalence among young women in nine eastern and southern African countries. PLoS ONE **13**(6), e0198898 (2018). https://doi.org/10.1371/journal.pone.0198898

Migali, G., Zucchelli, E.: Personality traits, forgone health care and high school dropout: evidence from US adolescents. J. Econ. Psychol. **62**, 98–119 (2017)

Molla, M., Mitiku, I., Worku, A., Yamin, A.: Impacts of maternal mortality on living children and families: a qualitative study from Butajira. Ethiopia. Reprod Health **12**(Suppl 1), S6 (2015). https://doi.org/10.1186/1742-4755-12-S1-S6

Mughal, A.W., Aldridge, J., Monaghan, M.: Perspectives of dropped-out children on their dropping out from public secondary schools in rural Pakistan. Int. J. Educat. Developm. **66**, 52–61 (2019). https://doi.org/10.1016/j.ijedudev.2019.02.004

Nazeer, A., & Khurram, S. (2017). Causes and circumstances of enrolment and moving out of the children in child care centres and orphanages. *Secours Islamic France*.

No, F., Taniguchi, K., Hirakawa, Y.: School dropout at the basic education level in rural Cambodia: identifying its causes through longitudinal survival analysis. Int. J. Educ. Dev. **49**, 215–224 (2016)

O'Neill, R.: Perpetuating a vicious cycle: the causes and effects of poorly educated children in Sierra Leone. Global Majority E-J. **5**(1), 44–56 (2014)

Patrinos, H. A., & Psacharopoulos, G. (2020). Returns to education in developing countries. In *The Economics of Education* (pp. 53–64). Elsevier.

PDHS. (2019). *Pakistan Demographic and Health Survey 2017–18*.

Prakash, R., Beattie, T., Javalkar, P., Bhattacharjee, P., Ramanaik, S., Thalinja, R., Murthy, S., Davey, C., Blanchard, J., Watts, C.: Correlates of school dropout and absenteeism among adolescent girls from marginalized community in north Karnataka, south India. J. Adolesc. **61**, 64–76 (2017)

Qadeer, M. A.: Ruralopolises: the spatial organisation and residential land economy of high-density rural regions in South Asia. Urban Stud. **37**(9), 1583–1603 (2000)

Rahbari, M., Hajnaghizadeh, F., Damari, B., Adhami, B.: Dropouts and social determinants of health; policy for the prevention of school dropout, qualitative study of the causes and interventions. Int. J. Prev. Med. **5**(11), 1396 (2014)

Renkl, M.: Oldest, youngest, or in between: How your child's birth order can affect her personality, and what you can do to influence its impact. Parenting **16**(5), 82–86 (2002)

Rud, I., van Klaveren, C., Groot, W., van den Brink, H.M.: What drives the relationship between early criminal involvement and school dropout? J. Quant. Criminol. **34**(1), 139–166 (2018)

Salah, M. A. (2008). The impacts of migration on children in Moldova. *United Nations Children's Fund Working Paper. New York: United Nations Children's Fund, Division of Policy and Practise*.

Sekine, K., Hodgkin, M.E.: Effect of child marriage on girls' school dropout in Nepal: analysis of data from the multiple indicator cluster survey 2014. PLoS ONE **12**(7), e0180176 (2017). https://doi.org/10.1371/journal.pone.0180176

Shahidul, S.: Parents' class background and hypergamy in the marriage market of bangladesh: does the dowry affect school dropout among girls? Asia Pac. Educ. Res. **23**(3), 709–715 (2014)

Shumetie, A., Mamo, K.: Effect of cropland and livestock ownership on child labour in eastern Ethiopia: empirical examination of the wealth paradox. Int. J. Child Care and Educat. Policy **13**(1), 5 (2019)

Unicef. (2020). *Education: Giving every child the right to education*. UNICEF. https://www.unicef.org/pakistan/education

United Nations. (2018). *Household Size and Composition Around the World 2017* (United Nations' Data Booklet, Issue. https://www.un.org/en/development/desa/population/publications/pdf/ageing/household_size_and_composition_around_the_world_2017_data_booklet.pdf

van der Berg, S., Burger, C., Burger, R., de Vos, M., du Rand, G., Gustafsson, M., Moses, E., Shepherd, D.L., Spaull, N., Taylor, S., van Broekhuizen, H., von Fintel, D.: Low quality education as a poverty trap. SSRN Electron. J. (2011). https://doi.org/10.2139/ssrn.2973766

van der Steeg, M., van Elk, R., Webbink, D.: Does intensive coaching reduce school dropout? evidence from a randomized experiment. Econ. Educ. Rev. **48**, 184–197 (2015)

World Bank. (2019). *Age dependency ratio (% of working-age population) | Data*. https://data.worldbank.org/indicator/SP.POP.DPND

Wu, E. H., & Wu, R. (2019). Collaborative Model of Emerging Technologies in Asia Pacific. Proceedings of the 2019 the 5th International Conference on e-Society, e-Learning and e-Technologies,

Yasin, S. A., & Aslam, S. (2018). School Dropout of Rural Girls in Pakistan: Exploring the Role of Gender Discrimination. *Journal of Research & Reflections in Education (JRRE)*, *12*(1).

Zuilkowski, S.S., Jukes, M.C., Dubeck, M.M.: "I failed, no matter how hard I tried": a mixed-methods study of the role of achievement in primary school dropout in rural Kenya. Int. J. Educ. Dev. **50**, 100–107 (2016)