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EMPIRICAL ANALYSIS OF CORRELATES OF EDUCATION IN THE SLUM POPULATION: AN EVIDENCE FROM KARACHI, PAKISTAN

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A R T I C L E I N F O

A B S T R A C T

This paper empirically analyzes the correlates of education in the context of slums' population of Karachi, Pakistan. Primary data has been used in the study which was collected through a questionnaire. Through a stratified sampling technique, 380 households were selected from 20 sampled slums. The descriptive analysis includes literacy rate, education level of the unemployed population, percentage of school-aged children who are not attending school, and reasons for not attending the school are presented. A logistic regression model is used to explore the impact of important variables like per capita income of the family, education of family head, dependency ratio, access to school and educational expenses on the educational attainment of family. The literacy rate was found 37 percent while 51 percent of the school-aged children are not attending school. The major reason for children not attending the school is found to be poverty. It is also found that the majority of unemployment is due to illiteracy. The result of the regression model shows that per capita income and education of family head affect the educational attainment positively while dependency ratio, access to school, and expenses on education affect it negatively.

Disciplinary: Economic Science, Educaton Science, Social Science.

1. INTRODUCTION

The world is rapidly urbanizing due to rural-urban migration and fast growth in population. The urban population is rising day by day. The rise in the world, the urban population is threatening. In 1950, 32 percent of the total world population was living in urban areas while in 1980, it rose to 39 percent and in 2000 it was estimated 48 percent. The urbanization is linked with many problems like poor sanitation, environmental pollution, traffic congestion, bad health, and unhygienic conditions (Ahmed et al., 2015; and Ahmed & Mustafa, 2016).

Urbanization is the problem of the whole world. However, in the developing world, this

problem is very severe. In the developing world, there were 881 million slum dwellers in 2014 while this figure was 792 million in 2000 and 689 million in 1990. The population residing in slums has been increasing by about 9 million a year since the year 2000. An unplanned and uncontrolled rise in the urban population is creating problems for the people living there (UN-Habitat, 2013).

Pakistan is one of the developing countries where the intensity and gravity of the matter are very problematic. In 1951, the share of the urban population in Pakistan was about 18 percent. It jumped to about 29 percent and 33 percent in the year 1981 and 1998 respectively (Government of Pakistan, 2001). Urban population is increasing due to several reasons and due to rural-urban migration, it has increased from 6 million to 57 million from 1951 to 2008, respectively (Afzal, 2009; and Afzal et al., 2019).

Rapid urbanization is creating many problems for people living in developing countries like Pakistan. The major problem is finding the appropriate shelter to live (Munir et al, 2019). People with low incomes are unable to have it. As a result, they settle in the open spaces of the cities. These open space settlements are called slums, squatter settlements, or Katchi Abadis (Qadeer, 1983). An interesting contribution in the context of slums was made by Martine (2007). He explains that slums may develop in peri-urban areas, near industrial establishments, sewage disposal sites, garbage disposal, and industrial waste dumping sites.

There are different definitions of slums in different countries. According to Basu and Basu (2016) "The urban areas where buildings are in any respect unfit for human settlements are called slums. Another definition, Encyclopedia of Britannica (2010) explains the term slum as "a residential area that is physically and socially deteriorated and in which satisfactory family life is not possible."

Although slum dwellers are facing many problems, yet the problem of low literacy rates cannot be tolerated. United Nations (UN), especially focused on education while developing Sustainable Development Goals. Sustainable Development Goal (SDG) #4 is about education. It lays stress on ensuring equitable quality education and promoting lifelong learning for all at all ages. UN desires all nations of the world to achieve the targets of SDGs until 2030 but very low literacy rates in slums are one of the major hurdles in meeting the challenges of SDGs (United Nation, 2015).

The slum dwellers do not have easy access to educational institutions. Child labour is common in slums. Due to poverty, children are unable to get an education rather they are forced to do work to support their families (Ahmed et al., 2015). In another study, Ahmed and Mustafa (2016) found that slums are poverty pockets. Slum-dwellers face very poor socio-economic conditions. The majority of the population is deprived of even very basic necessities of life. The literacy rate is found very low as compared to normal settlements.

Tsujita (2013) pointed out the factors which might be hurdles against the schooling of children. He concluded that poverty is one of the major factors which may affect the education of children badly. In the same line, Mangione and Speth (2008) found that the income and socio-economic status of a household, including its educational status, are the major indicators of children's educational attainment.

Debi (2001) analyzed many problems faced by slum children in achieving an education. Most significant of these problems are poor health, family background, unfavorable home conditions, large family size, poor living conditions, surrounding environment, migration, language problem, unstable sources of earning, poor economic conditions, poor parental education, and unfavorable

environment of learning, etc.

Many studies point out the factors which may affect education in slums. For example, Al-Samarrai and Peasgood (1998) identified that among many factors that may affect the education of children living in slums of Islamabad, parental education is most important of all. Parental education affects education positively. Similarly, Handa and Simler (2004) found that child's age and household income are significant indicators affecting the schooling in slums. The gender of the child is also one of the significant factors which may affect the education of slum children. The enrolment of girls is significantly less than that of boys.

After the debate, we conclude that there is a need to study that might discuss the determinants of education comprehensively using statistical analysis. This study is especially devised to explore the determinants of education in the slums of Karachi, Pakistan using descriptive analysis of the variables related to education and logistic regression analysis.

2. METHODOLOGY

In this section methodology used for this piece of research has been discussed. This section consists of three parts.

2.1 SAMPLING

The target population is all the slums of Karachi, Pakistan. The list of slums was taken from the Karachi Development Authority (KDA). It was used as a sampling frame. Sampling consists of two steps. Sample slums were chosen based on variability in the dwelling units among slums. Representative households were chosen based on variation in income which was estimated through a pre-questionnaire.

Table 1: The Selection of Sample Slum Wise (Source: Authors' calculations).

No.	Selected Slums	No of Households
1	Grass Bandar (South)	07
2	Nishterabad (Karachi)	08
3	Akal Bonga (South)	09
4	Rehman Abad (Central)	11
5	Qasimabad, Extension (Malir)	13
6	Shireen Jinnah Colony (Clifton)	15
7	Jehangirabad, Extension (South)	08
8	Chonna Bhatti (South)	10
9	Sadiq Nagar, Extension (Central)	11
10	Siraj Colony (Central)	16
11	Jamal Goth (Landhi)	18
12	Allah Dad Colony, Extension (Landhi)	13
13	Chiragh Colony, Extension (Landhi)	14
14	Moosa Goth (Central)	17
15	Hijrat Colony (South)	19
16	Madina Colony, Extension (Malir)	30
17	Wahid Colony, Extension (Nazimabad)	33
18	Mujahid Colony (Nazimabad)	29
19	Baloch Para (South)	34
20	Qayyumabad, Extension (Korangi)	63

2.2 COLLECTION OF DATA

All the slums have been divided into six categories (Strata) keeping in view that the slums have close variations within each stratum. The sample slums were selected based on variability among

dwelling units in different slums. The proportional allocation method was used and a sample of 20 slums was adopted to determine the sample size based on variation in income which was collected through a pre questionnaire. The overall sample consists of 380 households from 20 sample slums. This overall sample size was equally distributed in different strata. Again in each slum, the sample size was distributed according to the weight of the number of households. The selection of sample slum wise is shown in Table 1.

The study is based on primary data which has been collected through a questionnaire, covering all domains of the study's objectives. The statistical validity of the questionnaire was tested. Before the final circulation, the questionnaire was pre-tested through a pilot survey.

2.3 JUSTIFICATION OF VARIABLES AND REGRESSION MODEL

Per capita income, education of family head, the dependency ratio (Number of dependent individuals in the family), access to school (Distance to school in Km), and educational expenses in rupees are important explanatory variables that might affect the education of a family. All the explanatory variables have been taken from existing literature.

There is considerable literature that shows a positive relationship between family income and education of the family (Behrman, 1997; Dearden et al., 1997: Krueger, 2004; and Black and Devereux, 2011). Access to school (Distance to school in Km) is another significant variable that may affect education. We find from the available literature that greater the distance from school lesser will be an educational achievement. It shows that a negative association exists between the distance of school and attainment of family education (Baluch and Shahid, 2008). Education of the family head has a positive impact on the educational attainment of the family (Baluch and Shahid, 2008 and Björklund and Salvanes, 2011).

Greater the dependency ratio lesser will be the educational attainment (See Black et al., 2005; Lee, 2008; Baluch and Shahid, 2008 and Qian, 2013). From the literature, there is a negative association between the education of the family and educational expenses (Baluch and Shahid, 2008). To see the impact of these variables on the health of the family, a regression model of health is built. The functional form of health model is given as

$$E = \beta + \beta_1 Y_{pc} + \beta_2 EDU + \beta_3 D_r + \beta_4 S_{ac} + \beta_5 E_e + \varepsilon \qquad (1).$$

The symbol β is the intercept term while β_1, β_2, β_3, β_4 and β_5 are regression coefficients of independent variables, E = Education (1= if all 5-9 years Children in the family are going to school, 0 = otherwise), Y_{pc} = Per Capita income in Pakistani Rupees, EDU = Education of household head in years, D_r = Dependency Ratio (Number of dependent individuals in the family), S_{ac} = Access to School (Distance to school in Kms), E_e = Education Expenses in Pakistani rupees, ε = error term

3. RESULTS AND DISCUSSION

3.1 DESCRIPTION OF VARIABLES

The general description of important variables related to education is discussed.

3.1.1 LITERACY RATE

The literacy rate is one of the important socio-economic variables. It is very necessary to analyze the literacy rate of the slum population. In Pakistan, a person who can read and write a single line of Urdu is considered literate. This study analyzes the literacy rates of the sampled slum,

see Table 2. The results show that 37% of slum dwellers are literate while Pakistan's overall literacy rate is 58 % (The News, 2020). Low literacy rates in slums are apparent from many other studies (*See* Ahmed et.al, 2015; Ahmed and Mustafa, 2016 & Malaviya and Bhagat, 2013).

Table 2: Literacy Rate (Source: Authors' calculations).

Sr. No.	Selected slums	Literacy rate
1	Grass Bandar(South)	35
2	Nishterabad (Malir)	38
3	Akal Bonga (South)	40
4	Rehman Abad (Central)	40
5	Qasimabad, Extension (Malir)	37
6	Shireen Jinnah Colony(Clifton)	41
7	Jehangirabad, Extension (South)	39
8	Chonna Bhatti (South)	31
9	Sadiq Nagar, Extension (Central)	35
10	Siraj Colony (Central)	40
11	Jamal Goth (Landhi)	29
12	Allah Dad Colony, Extention (Landhi)	30
13	Chiragh Colony, Extention (Landhi)	31
14	Moosa Goth (Central)	35
15	Hijrat Colony (South)	35
16	Madina Colony, Extension (Karachi)	48
17	Wahid Colony, Extention (Nazimabad)	40
18	Mujahid Colony	45
19	Baloch Para (South)	30
20	Qayyumabad, Extension (Korangi)	35
	Average	37

3.1.2 EDUCATION OF UNEMPLOYED POPULATION

We tried to analyze the education of unemployed slum dwellers, see Table 3.

Table 3: Education of Unemployed Population (Source: Authors' calculations).

Education Level	% age of Unemployment Pop.
Uneducated	50.90
Primary	20.70
Middle	13.16
Matric	6.49
Intermediate	4.68
BA & Above	3.00
Other	1.07

The results show that the highest percentage of unemployment was found among uneducated (about 51%). The results are in line with the study of Wambugu (2011) who found that the greater the level of education, the lower will be the unemployment rate.

3.1.3 REASON FOR NOT ATTENDING SCHOOL

The reason for not attending school is one of the important socio-economic variables. We tried to explore the reason behind children not attending school. The results are given in Table 4.

Table 4: Reason for not Attending School (Source: Authors' calculations).

Reason	% age of children not attending the school
No school in the location	4.08
Children not willing in schooling	9.00
Engaged in work	20.17
Due to poverty	61.25
Others	5.5
Total	100.00 %

The major reason for not attending the school was found to be poverty (61.25%) followed by children who are engaged in some child labor (20.17%). The results are consistent with many other studies conducted on slum populations. Ahmed et.al (2015) analyze the socio-economic conditions of slum dwellers of Faisalabad. He found the majority of slum children are not attending school due to poverty.

3.1.4 PERCENTAGE OF SCHOOL AGED CHILDREN (BETWEEN 6-11 YEAR) WHO ARE NOT ATTENDING SCHOOL

The percentage of school-aged children between 6-11 years of age who are not attending school is shown in Table 5. This is a very high percentage (51%) when the world is trying to meet the challenges of SDGs. The results are in line with Ahmed & Mustafa (2016), and Ahmed et al. (2015).

Table 5: Percentage of school-aged children (Between 6 and 11 years of age) who are not attending school (Source: Authors' calculations).

Sr. No.	Selected slums	Percentage
1	Grass Bandar (South)	57
2	Nishterabad (Malir)	57
3	Akal Bonga (South)	59
4	Rehman Abad (Central)	47
5	Qasimabad, Extension (Malir)	50
6	Shireen Jinnah Colony(Clifton)	51
7	Jehangirabad, Extension (South)	50
8	Chonna Bhatti (South)	58
9	Sadiq Nagar, Extension (Central)	55
10	Siraj Colony (Central)	51
11	Jamal Goth (Landhi)	55
12	Allah Dad Colony, Extention (Landhi)	52
13	Chiragh Colony, Extension (Landhi)	53
14	Moosa Goth (Central)	55
15	Hijrat Colony (South)	39
16	Madina Colony, Extension (Malir)	35
17	Wahid Colony, Extension (Nazimabad)	43
18	Mujahid Colony	45
19	Baloch Para (South)	57
20	Qayyumabad, Extension (Korangi)	45
Average		51

3.2 RESULT OF REGRESSION MODEL

From the result of the regression model, the estimates of determinants of education are given in Table 6.

Table 6: Logistic Estimates of Determinants of Education

Explanatory variables	dy/dx	S.E	P- value
Per capita income	0.00475*	0.00215	0.005
Edu of family head	0.00850*	0.003960	0.001
Dependency ratio	-0.0555*	0.02111	0.000
Access to school	-0.0428*	0.01520	0.000
Edu Expenses	-0.7500*	0.31495	0.0015

* denotes statistically significant at the 5% level

The results show that per capita family income and education of household heads have a significant positive impact on the education of the family. The marginal value shows that the probability of 1 unit positive change in per capita income of the family brings 0.00475 units positive change in education. The finding is consistent with many other studies (Behrman, 1999;

Dearden et al., 1997: Krueger, 2004; Black and Devereux, 2011). It has also been found from the results that 1 unit positive change in the education of household head is expected to bring 0.00850 units positive change in education. The available literature also supports this finding of the study (Baluch and Shahid, 2008 and Björklund and Salvanes, 2011).

Table 6, the number of dependent in the family, a distance of home from the school and education expenses have a significant negative impact on education. The probability of one unit increase in the number of dependent in the family brings 0.0555 units negative change in the education of the family. The finding is consistent with existing literature (Black et al., 2005; Lee, 2008; Baluch and Shahid, 2008 and Qian, 2013). Similarly, the probability of one unit increase in distance of the school from home brings 0.0428 units negative change in education. This finding is also in line with many other studies (Baluch and Shahid, 2008). Interestingly, the probability of one unit increase in education expenses brings 0.7500 units negative change in education. The finding is also supported by the literature (Baluch and Shahid, 2008).

The correlation matrix shows no clue of multicollinearity. There are no chances of autocorrelation because there are no lag values in the data. Also, no clue of heteroscedasticity was observed. Thus, data was found to fit the regression.

4. CONCLUSION

Slums are the most neglected residential areas of the world. Education is one of the important socio-economic variables which might be focused to attain the targets of SDGs. This study is especially devised to analyze the status of education in the slums of Karachi, Pakistan. Karachi is the most populous city in Pakistan. About 50 percent of the population of Karachi is living in slums. A sample of 380 households from 20 sampled slums was selected for this study. The descriptive analysis of important variables related to education is presented. The literacy rate was found 37 percent that is far less than the national level. It was also found that poverty was the major reason for children not attending school. The major reason for unemployment was also a lack of education. About 51 percent of the school-aged children (between 6 and 11 years of age) are not attending school.

Other factors include the impact of Per capita income, education of family head, the dependency ratio (number of dependent individuals in the family), access to school (Distance to school in Km), and education expenses on the educational attainment of the family is analyzed. This study found a positive relationship between family income and the education of the family. It is also found that greater the distance from school lesser will be an educational achievement. We further explored that the education of the family head has a positive impact on the educational attainment of the family. The results also confirm that the greater the dependency ratio lesser will be the educational attainment. Also, there is a negative association between the education of the family and educational expenses. Strong policy measures are suggested to improve the level of education in slums. Government and other concerned institutions may take steps in this regard. Steps might be taken to improve family income as it affects education positively. For this purpose, the government might launch small business schemes for poor slum dwellers. As the distance of school affects education negatively, therefore the Government might open a school at easy access to every slum dweller. Education expenses have also a negative impact on the education of the family.

Free education for slum populations is suggested to improve the literacy rate.

5. DATA AVAILABILITY

Relevant information is available by contacting the corresponding author.

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