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Impact of Mother's Education on Child Immunization: A Comparative Study of India and Pakistan

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Abstract Immunization is a preventive measure that helps to prevent diseases before their occurrence. This paper aims to calculate the effect of mother's education on child immunization. Multilogistic regression is applied by using the data taken from DHS (Demographic and Health survey) for India and Pakistan. The mother's education, region, child gender and household head gender were taken as independent variables. Results showed that illiterate mothers immunize their children less than the highly educated mothers. People living in rural areas also immunize their children less than the people living in urban areas. It was suggested that the mothers should be provided comfortable atmosphere to get knowledge and awareness. People in rural areas should also provide knowledge and access to the immunization.

Keywords: *mother's education, rural area, immunization, gender of child, education*

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1. Introduction

As we know a famous saying 'Health is wealth'. Our children are our future so healthy and active children means healthy and progressive future. So to achieve this vital objective mother's education is important for better nourishment and health for children [1]. Healthy and active children can develop the economy of a country to the required level for example if we look at the health condition of children in developed countries as compared with the health condition of children in underdeveloped countries. The preventive measure at childhood stage is the child immunization which is the complete course of injections that are administered to the children soon after birth [2]. It produces the antibodies inside body against specific disease. These diseases take several precious lives all over the world especially in the third world countries like African and south Asian countries. There is a same schedule for all children arranged by the health department for the immunization of children [3]. Vaccines are provided by the EPI (Extended Program on Immunization) and the private companies [4]. Vaccines play a vital role in controlling these diseases.

Immunization program is more systemized in all developed countries [5]. But the situation is poor in the most populous South Asian developing countries like India and Pakistan where the education level is not up to the mark unlike developed countries [6]. Unfortunately despite of lots of efforts to eradicate such diseases like polio Pakistan is still not a polio free country where as most of the countries in the world are declared as polio free [7]. The main reason behind this is lack of public awareness about the importance of immunization and lack of education [8]. Due to all these factors, disease rate is high in the developing countries. Moreover, due to the less utilization of preventive measures like child immunization, the expenditures of developing nations on health are more than on other development processes [9].

Parent's education plays an important role in determining the health conditions for children. It helps the children to be mentally healthy and active. People are reluctant to allow their women to go out for education and other chores in Pakistan and India so literacy rate is very low in these countries having poor health system [10]. In rural areas the basic necessities of life are not available up to mark. They have to travel a long distance to get basic health facilities. The vaccination system is also not proper. The other dilemma rural areas are that the people have no access to the basic education at school level. Due to prejudice thinking people are reluctant to allow their females to get education. In India and Pakistan there exists a male dominant society. There are some families where the females are allocated the authority as the head of family. It is considered as a positive aspect because if a female is head then she has to see the other matters of family. She get a little time for the attention of her children. So there is need of study that can explore the relation between education and child immunization which can be important for policy maker to take different steps to increase child immunization in these two countries [11].

As far as education is concerned policy makers should concentrate on mother education as mothers are more attached and concerned about a child's health relating issues. So educating mothers about securing their children from these severe diseases through immunization will make sure the overall betterment of the national health issues [12]. As there is alarming rate of illiteracy in India and Pakistan especially in case of women education the situation is even worse. Along with this there are several other obstacles in the way of immunization of children for example religious, social and cultural misunderstandings. As mostly people are uneducated and underdeveloped they feel hesitant in case of child immunization [13]. So the need of the hour is to replace these misconceptions about immunization through proper knowledge and education. That's why mother education is so crucial for child immunization against these diseases. So this study aims to calculate and compare the effect of mother's education on child immunization in India and Pakistan [14].

2. Review of Literature

Patra (2006) [1] evaluated a positive relationship between mother's education and child immunization. In his study he found that the educated mothers had three times more chances of immunizing their child than the uneducated mothers of the country.

Odunsya et al. (2007) [7] examined the data collected from Nigeria and concluded that the females who completed their education up to secondary and higher has more likelihood to immunize their children as compared to the uneducated mothers. The uneducated mothers were less conscious about the immunization of their children as compared to the highly educated mothers.

Ibnof et al. (2007) [6] examined a significant relationship between child immunization and mother's education. He further explained that the educated mothers were more conscious about the immunization of their children. It showed their basic concern to the health of their children. The result of this study showed that the educated mothers had two times more chances to immunize their children compared to the uneducated mothers.

Munthali (2007) [13] worked in Mulawi and found a positive relationship between mother's education and child immunization. Education had a significant relationship with child immunization. The improvement in education will increase the child immunization.

Bandhare, et al. [2] (2006) worked in Nepal and found that there were a significant relationship between mother's education and child immunization. Uneducated mothers were less conscious about the immunization of their children as compared to the mothers who were highly educated.

Pearce, et al. (2008) [4] collected data from UK and found that the mother's education had non-significant relationship between mother's education and child immunization in case of MMR vaccination.

Munshi and Sang- Hyop. (2006) found that more than 45 % children who got fully vaccination were of the mothers who were highly educated. More than 25% children were belong to uneducated mothers.

Antai (2009) [5] evaluated data collected from Austria and found positive and significant relationship between child immunization and mother's education.

Siddique et al. (2011) [11] observed a positive relationship between mother's education and child immunization. The likelihood of educated mothers to immunize their children was more than the mothers who were illiterate.

Amin, et al. (2010) [3] evaluated the results of data collected from Bangladesh. The data revealed that the mother's education had a significant relationship with child immunization.

3. Materials and Methods

Multilogistic model was applied by using data from DHS (Demographic and health survey) of India and Pakistan from year 2006-2007. The dependent variable is in categorical form and has three categories 1. Fully immunized 2. Partially immunized 3. Not immunized. There were four independent variables: Mother's education, Region, Sex of household head, Sex of a child. All independent variables were in categorical forms. Mother's education: 1. Uneducated 2. Primary 3. Secondary 4. Higher. Region: 1. Rural 2. Urban. Sex of household head: 1. Male 2. Female. Sex of a child: 1. Male 2. Female

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Y = Child Immunization
X_1= Mother's education
X_2= Region
X_3= Sex of household head
X_4=Sex of a child

The equation for multilogistic regression analysis is given below:

$$Y_{(a,b)i} = \ln \frac{\Pr(Y = a,b)}{\Pr(Y = c)} = \alpha_{a,b} + \sum_{j=1}^{J} \beta_{(a,b)j} (Z)_{ij}.$$

4. Results and Discussions

Frequency of all independent variables was checked by using SPSS 20.0. The detail of frequency is given below.

Table 1. Frequency of all independent variables

Variables	Categories	Percentages Pakistan	Percentages India
Mother's Education	Uneducated	65.7	25.7
	Primary	14.9	32.4
	Secondary	14.3	35.4
	Higher	5.1	6.5
Area	Rural	64.3	60.6
	Urban	35.7	39.4
Sex of a child	Male	53.1	51
	Female	46.9	49
Sex of household head	Male	92.3	88.3
	Female	7.7	11.7

Percentages of independent variables are explained in Table 1. According to their frequency distribution, the uneducated mothers in Pakistan were 65.7% while in India they were about 25.7 %.The mothers who got primary

education were about 14.9% in Pakistan and 32.4% in India. The percentages of highly educated females were low in both countries. In Pakistan they were about 6.5% while in India they were about 5.1%. In Pakistan about 64.3% were residing in villages and in India they were about 60.6%. In both countries less people were residing in the cities. The number of male children was more than the female children in both countries. Both countries were male dominant and the number of male household heads was more than the female household heads.

Table 2. Regression Analysis for Partial Child Immunization in Pakistan and India

Variables	Categories	Pakistan			India		
		Coefficient	Sig	Odd ratio	Coefficient	Sig	Odd ratio
Mother's education	Uneducated	-.961	.001	.378	-1.061	.000	.331
	Primary	-.432	.172	.642	-.992	.000	.363
	Secondary	-.342	.280	.704	-.722	.000	.472
	Higher	0			0		
Region	Rural	-.431	.017	.647	-.046	.307	.944
	Urban	0			0		
Sex of a child	Female	-.021	.681	.969	-.080	.008	.923
	Male	0			0		
Sex of household head	Female	-.422	.007	.645	.128	.019	1.140
	Male	0			0		

Table 2 explained the partial child immunization in two developing countries India and Pakistan.

The uneducated mothers had no knowledge about immunization so they immunize their children less than the educated mothers. The probability of immunizing the children by uneducated mothers was .378 times less than the educated mothers. The mothers who completed their 5 years of education had .642 less probability to immunize their children. The mothers who completed their secondary education had .704 less likelihood to immunize their children as compared to the highly educated mothers. The situation existing in India was not much different from Pakistan. The uneducated mothers had .331 less chances to immunize their children as compared to highly educated mothers. The mothers who completed their 5 years of education had .363 less chances to immunize their children compared to highly educated mothers. The mothers who got secondary years of education had .472 less chances to immunize their children compared to highly educated mothers. In another study the similar situation was found in Bangladesh the educated mothers had a positive impact on child immunization than the illiterate mothers [15]. With contrast to that another study evaluated a negative relationship between mother's education and child immunization [16]. In developing countries the major issue was the access to medical facilities. So, the dilemma was that the rural based people were always deprived of their basic rights. In Pakistan the rural based people had .647 less chances to immunize their children compared to the urban based people of the country. Similarly in India the people living in rural areas had .944 less probability to immunize their children compared to the urban based people of the society. With contrast to it another study in Taiwan found that there was no regional biasness. The facilities were available properly both in rural and urban areas of the society. In Pakistan the female children had .944 less probability to get immunization compared to the male children of the country. In India the female children had .923 less chances to immunize their children compared to the male children of the country. It was also found that the boys were given more favor than the girls in UK [4]. In Pakistan the families in which the head of the families were females had .645 less chances to immunize their children compared to the male heads of family. In India the situation was different as the female heads had 1.140 more likelihood to immunize their children compared to male heads of the family. Sex of household head was found as a significant predictor of child immunization as observed by Babalola in one of his studies [17].

Table 3. Regression Analysis for Full Child Immunization in Pakistan and India:

Variables	Categories	Pakistan			India		
		Coefficient	Sig	Odd ratio	Coefficient	Sig	Odd ratio
Mother's education	Uneducated	-1.404	.000	.211	-2.075	.000	.134
	Primary	-.843	.011	.420	-1.251	.000	.245
	Secondary	-.616	.051	.523	-.854	.000	.411
	Higher	0			0		
Region	Rural	-.228	.033	.703	-.002	.331	.847
	Urban	0			0		
Sex of a child	Female	-.072	.314	.911	-.120	.949	1.002
	Male	0			0		
Sex of household head	Female	-.471	.011	.627	.188	.008	1.210
	Male	0			0		

Table 3 explained the results obtained from multilogistic regression analysis by applying SPSS.20. In Pakistan the uneducated mothers had .211 less chances to immunize their children. In India same situation is prevailing the uneducated mothers had .134 less probability to immunize their children as compared to the highly educated mothers. In another study it was found that the mother's education has positive impact on the child immunization [1]. Another study concluded same positive relationship between mother's education and

child immunization [7]. In Nigeria, Antai (2009) found that the uneducated mothers have less likelihood to immunize their children as compared to the educated mothers [5]. Another study done in Nigeria found that the highly educated mothers vaccinate their children more than the uneducated mothers [7]. Similarly a study in Multan Pakistan found positive relationship between mother's education and vaccination [14]. People living in rural areas had .228 less likelihood to immunize their children and in India rural people had .002 less probability to immunize their children. Another study in India explained that there were a significant relationship between mother's education and adoption of child immunization program [18]. The female children had less chance to get immunization than male children in both countries India and Pakistan. The male household heads had .471 less likelihood to immunize their children while the situation was opposite in India where the males had 1.210 more chances to immunize their children compared to the female household heads. In Nepal, Bhandari, et al. (2008) found that the male head of family had less likelihood to immunize their children as compared to the female head of the family [2].

5. Conclusion and Recommendations

It was concluded that the uneducated females living in villages immunized their children less than the highly educated mothers living in cities. The male head of family also immunized their children less than the female heads of the family. It was recommended that the females should be provided education to get awareness about the basic issues of practical life. Awareness campaign should be started at rural areas so that people can immunize their children to prevent their children from disease. Male head of family should also take care of children and help their females.

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