

## Social and Economic Determinants of Child Health: The Case Study of Pakistan

Muhammad Rizwan yaseen<sup>1</sup>  
Email: rizwany2001@yahoo.com  
Imran Qaiser<sup>2</sup>  
Email: iq\_fspk@yahoo.com  
Sadia Abdul sattar<sup>3</sup>

### Abstract:

This study used cross sectional data from Pakistan demographic health survey (DHS) 2006- 2007 to determine the social and economic determinants of child health in Pakistan. The sample of children under five (0-4) years is taken. The DHS sample is taken from different regions of Pakistan which is divided into rural and urban areas. Logistic regression technique is used to measure the coefficients of the model. This study revealed that the male children are more likely to be indulged into diseases as compared to female children. Results showed that there are fewer chances for a child to become ill if the household head is male. The study indicated that child sex, household head gender, size of child at birth, region and place of residence affect child health in Pakistan. Whereas the variables like wealth status, mother education, twin children and source of drinking water do not affect the child health under five years. Measures should be taken to reduce the risk of child morbidity by reducing the pollution and by giving proper vaccination.

**Keywords:** Child health, Logistic regression technique, Pakistan demographic health survey, social and economic determinants.

**JEL classification Codes:** I1, I110.

### Introduction:

The Child health is formed within the family and is frequently achieved by the help of mothers. So, mothers' abilities play significant role in achieving good health of their children. Primary element for the case of child health is the family status and awareness about the hygienic measures. Parents with better education have greater chances to bring better health conditions as compare to the parents having no education. The health of child is measured as significant pointer of both economic development and the quality of life in emerging nations. This is watchfully linked to added growth pointers for instance health of mature human beings, learning achievement, salary, social and economic position, and professional efficiency (see, for instance, Behrman & Deolalikar, 1987; Case, Lubotsky, & Paxson, 2002; Chen & Li, 2006; Glewwe, 1999). Mahmood and Ali (2002) reported that malaria, fever as virus related diseases, breath and colonic problems mostly prevails among kids aged less than five years. Cebu (1992) reported that mothers' inappropriate breast-feeding practices, pollution produced through liquid or acquaintance to excreta, congested existing circumstances considerably raise the possibilities for a child constricting diarrhea, cough or fever. In Pakistan, masculinity inequalities continue as one of the major factor of child and women health. Pakistani women are often uneducated, possess low financial conditions and community rank (Patel, 1991). In many under developed states, more resources are allocated in larger proportions to boys as compared to the girls (Skoufias, 1998). Maternal features along with revenues generated by household have significant and meaningful effect for male children' health, however, female children have vital effects as far as public health is concerned and for programs which are designed to increase learning and financial status in countryside regions (Skoufias,1998). Evidence from many works in emerging nations demonstrates that advanced parental learning contributes as an important indicator for greater participation while taking family decisions and allocation of assets becomes vital with higher learning (Wachs, 2008). In emerging nations child malnutrition exists to a greater extent and Pakistan is also suffering from this serious problem. This incidence of underweight offspring stood higher as 33% in south-central Asia and 28% in eastern Africa (Black, 2008).

The most common diseases of the childhood in Pakistan are diarrhea, fever, cough, polio and malaria and these diseases are mostly prevailing in rural areas. Although in urban areas the child malnutrition is less severe than in rural areas (Smith, et al. 2005). The factors affecting malnutrition differ for the countryside zones and for city zones as city zones offer health services, possibility of employment opportunities and availability of food, water sanitation facility, electricity and housing arrangements. In Pakistan, during early 1980s, the infant mortality level had stagnated then infant mortality rate was very high till 1990s (Agha, 2000). The major proportion of

<sup>1</sup> Assistant professor in Department of economics in Government college University Faisalabad

<sup>2</sup> Lecturer in Department of economics in Government college University Faisalabad

<sup>3</sup> BS student in Department of economics in Government college University Faisalabad

child birth occurred to the parents (who were poor, uneducated and do not have access to the sanitary facilities) is more than the parents (rich, educated, have access to medical care centers and living in sanitary). Many studies (Kofoed, 2004; Afzal, U. 2012; Avan and Kirkwood, 2010) concluded that main reasons for child diseases are low socioeconomic status and uneducated mother.

This paper aims to analyze socio-economic determinants of child health in Pakistan and give suggestions in the light of results.

#### **Methodology:**

This research used cross sectional data from Demographic and Health Survey (DHS) 2006-7 of Pakistan (that is conducted in Punjab, Sindh, Khyber pakhtunkhwa and Balochistan). The data was categorized by different types of variables related to child health. The sample analyzed 8448 children under five years of age and interviewed by the female respondents who were usually the mothers of the children under five years age group. Only children under the age of five years age groups were included which was helpful to understand the child health status or morbidity.

The DHS data set was chosen for this analysis because it is one of the best sources of nationally representative data to determine the child health. The DHS data sets are from nationally representative surveys of household with at least one women of reproductive age, mostly mothers of the children (Smith, 2005).

#### **Measuring variable**

The variables (determinants) of child health examined in the paper are Child health, wealth index, size of child at birth, source of drinking water, household head gender, twins, mother education, region, place of residence and sex of child. These variables are fundamental to a child's dietary intake and nutritional status, which are immediately related to the child health status (Smith, 2005).

The variables were sex of child, twin children, size of child at birth, region and household head gender. The socio-economic determinants were maternal education, access to safe drinking water, place of residence and economic status of the family of child.

Child health was taken as the dependent variable in the study categorized by three health diseases Diarrhea, Fever and Cough. Value 0 was assigned for the child with no disease and 1 for child with no disease.

The mother education was the education level of mothers of the children and was characterized by 0 for no education, 1 for primary education and 3 for higher education.

The place of residence was categorized as rural and urban areas in the paper. It might be expected to find rural urban differences because there are strong differences in environment, food security and individual opportunities between urban and rural areas that may alter the importance of various determinants (Smith, 2005).

The region was characterized by 1 for Punjab, 2 for Sindh, 3 for KPK and 4 for Balochistan. If the gender of household head is male then he has best capacity to improve his family or living standard better as compare to female.

The water source was the source of drinking water for the children used to determine whether the source of drinking water is safe or not? The value 1 is given to the safe drinking water, 2 for unsafe water and 3 for less safe water which is the reference category in our results.

Wealth index shows the livelihood of a house. This variable used to determine whether the house hold has strong or better living standard or has poor? The value 1 was given to the poor family, 2 for middle and 3 for the rich family. Last is reference category in the results.

The child size was for the size of child at birth. Value 1 was given if the child has the average or normal size at birth, value 2 was assigned if the child has smaller size at birth, and value 3 was given if the child size is large. The last was the reference category in our results.

The twins show either the child is single or twins. This indicates the impact of being single or twins on the child health. Value 1 is given for the single and 2 for twins. Child sex shows the gender of the child under five year age. Value 1 is for male and 2 is for female.

#### **The model**

The dependent variable is dichotomous and is coded as (0, 1) i.e. 0 is for healthy child and 1 is for child having disease. As in the log linear model, we assumed that some sets of X variables were useful for predicting the Y value, and in our model we have coded dependent variables as (0,1) we are claiming that this set predict probability that Y=1. And this function is called the Logistic Regression Model. Because of binary dependent variable, OLS cannot be applied. If the OLS is applied then that model would be the LPM. The LPM is not good fit so that to avoid this problem, the Binary Logistic Model was applied in the study.

This function guarantees the probability ranging from 0 to 1 as the regression equation value predicts that values are from the negative infinity to positive infinity. There is another name of logistic that is log-odd. Our model is likely to be the log-odd.

$$\rho(y = 1) = \alpha + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 \dots \dots \dots \beta_9x_9$$

Here  $\rho(y = 1)$  = Child health

$x_1$  = Gender of household head

- $x_2$  = Child gender
- $x_3$  = Size of child at birth
- $x_4$  = Wealth index
- $x_5$  = Source of drinking water
- $x_6$  = Region
- $x_7$  = Education of mother
- $x_8$  = Place of residence
- $x_9$  = Twin children

Here  $\rho$  represents child health as the dependent variable. The estimated coefficients are  $\beta_1, \beta_2, \beta_3, \beta_4 \dots \dots \beta_9$  and  $\alpha$  is the intercept. The back ground characteristics consisting of child's gender, his/her mother's educational attainment, source of drinking water, region, residential area, wealth index, size of child at birth, gender of household head, and twins are used to achieve main objective of the study to determine the socio-economic determinants of child health in Pakistan.

#### **RESULTS AND DISCUSSIONS:**

The water source is insignificant as because of data was collected for disease happenings from last 24 hours to last two week, there are more chances that the child may not suffer from these diseases through last two weeks. But after this time, the baby may suffer from the disease included in the study. Because the dependent variable subject to the respondents who are having disease or not in last two weeks so it is quite short time period to conclude that source of drinking water affects the child health. Because there is possibility that child may not get prey to any disease for drinking unsafe or less safe water for such a short time period.

The results show that child sex has significant impact on child health. This variable is significant at 1%, 5% and 10% level of significance. According to result, there are 0.174 more chances that the child will not be healthy if the child is the boy, because under the age of five years, girls are more likely to be healthy and grow more rapidly than boys. Our results match with those of Arif and Arif (2012). They reported that the male children are more likely to become ill than females under the age of 5 years, however, as the child age increases, the morbidity risk tends to decrease.

The wealth standard is insignificant at all the levels of significance, so it does not determine the child health according to our study. Wealth turned out to be insignificant because the free of cost availability of child vaccination under five years of age in Pakistan makes the variable wealth insignificant. So the health facilities are equally available for rich and poor families. That is the reason that the wealth factor is not affecting the health of child under the age of five years.

**Table 1: Main results from our model**

	B	S.E.	Wald	D.f.	Sig.	Exp(B)
watersource			.693	2	.707	
watersource(1)	-.221	.376	.345	1	.557	.802
watersource(2)	.030	.053	.324	1	.569	1.031
childsex(1)	.164	.045	13.389	1	.000	1.178
Wealth standard			1.120	2	.571	
Wealth standard (1)	.054	.067	.654	1	.419	1.056
wealth standard (2)	-.007	.068	.011	1	.916	.993
House hold head gender(1)	-.233	.090	6.733	1	.009	.792
Mother education			3.932	2	.140	
Mother education (1)	-.052	.068	.574	1	.449	.950
Mother education (2)	.085	.081	1.111	1	.292	1.089
Child size			32.531	2	.000	
Child size (1)	.014	.058	.060	1	.806	1.014
Child size (2)	.284	.061	21.953	1	.000	1.329
twins(1)	.269	.170	2.506	1	.113	1.308
region			194.307	3	.000	
region(1)	.793	.084	88.681	1	.000	2.210
region(2)	1.139	.085	177.919	1	.000	3.122
region(3)	1.025	.090	130.184	1	.000	2.788
urban(1)	.128	.056	5.308	1	.021	1.137
Constant	-1.240	.217	32.744	1	.000	.289

Variable(s) entered on step 1: water source, child sex, wealth standard, House hold head gender, Mother education, child size, twins, region, urban. **Source: own calculation**

The household head gender has significant impact on the health of child. It is significant at 5% and 10% level of significance. The result shows that there are 0.171 less chances that the child will not be healthy if the household head is male. The house hold gender also kept importance to reduce child morbidity in the sense if there is male who is running his family he has best capacity to improve his family or living standard better then female on the other hand if a woman running her family then she can't pay more attention towards her child health because she spend half time on her job and half at her home so the child being neglecting at that time which she spend at her job.

The mother education has insignificant impact on the child health according to the regression results. The regression results show that the size of child is statistically significant at 5% 10% and 1%. If the size of child is normal at birth then it will not affect the child health, however, if the size of child is smaller than normal, it will affect the child health. The results of the study indicate that if the size of child is smaller than normal there are 0.014 more chances that the child will not be healthy as compare to the large size of child at birth.

The impact of being twin is insignificant according to the regression results because children are given equal care whether child is single or twin under the age of five years. It is common perception that the children will be neglected if they are twin, this thinking provokes the parents to take greater care of two offspring, and hence the twin children do not suffer from poor health.

According to results, region has significant impact on child health. The variable region is significant at 1%, 5% and 10% level of significance. The results show that there is 1.176 more probability that the child will not be healthy if the child is living in Punjab as compare to Balochistan. If the child lives in Sindh, there are 2.113 more chances that the child will not be healthy as compared to Balochistan. The regression results indicate that there is 1.71 more probability that the child will not be healthy if living in Khyber Pakhtoon Khwa as compare to Balochistan.

The results of the regression analysis indicate that the place of child residence has significant effect on the health of child. It is statistically significant at 5% and 10% level of significance. The results indicate that if the child is living in urban area there is 0.126 more probability that the child will not be healthy. So there is less probability

for a child to be not healthy if the child is living in rural area because the ownership of land and livestock are the means of livelihood for the people of the rural areas, which contribute to better child health by increasing income of household Arif and Arif (2012). Further rural climate is fresh and provide pure food and milk to children that's why there are less chances for children to get prey to diseases.

#### **Conclusion:**

This study revealed that sex of child, gender of household head is important determinants of child health. Under age of five years, boys are more likely to get prey to illness or diseases as compared to girls. Families headed by males have less chances of illness for their children under age of five years.

According to this study, child size at birth also determines the health of child. Normal size at birth will not affect the health of child as it is an indicator of good health. The findings of the study suggest that smaller than average size of child causes the child to be involved into diseases and physical disorder than the larger size of child at birth. So women should be given proper care and awareness about nutrition and health facilities during pregnancy

Children have greater chances to be caught by disease in Sindh, following by Punjab and KPK when compared with Balochistan. In Balochistan, the children have less chances of disease because it is less populated. Because of the less population there are fewer chances for children to be kept by diseases.

The fresh climate is another reason for fewer chances of child health disorder in Balochistan. The study shows that the children living in rural areas have good health than those of living in urban areas because of availability of pure food and milk in rural areas. So pollution and milk adulteration should be controlled by taking serious steps by government.

The study indicated that the variables like child sex, household head gender, size of child at birth, region and place of residence are important indicators of child health in Pakistan. Whereas the wealth status, mother education, twin children and source of drinking water do not affect the child health under five years age.

#### **Suggestions:**

- Measures should be taken to reduce the risk of child morbidity by reducing the pollution in urban areas and providing the children with pure food.
- Male children should be given proper vaccination in order to save from diseases when they are less than five years of age.
- Females should be given proper diet, supplements and care during pregnancy so that new born may have normal size at birth.

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