



Socio-economic and demographic determinants of child health in punjab (pakistan)

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ABSTRACT

This study examines the relationship between socio economic and demographic factors on the child health status by employing Logistic Regression Model. For this the data from the Pakistan Demographic and Health Survey (PDHS) 2006-07 was utilized. Education affects the capacity and the behaviors of the people living in the various regions along with some other explanatory variables. It was found that child's health depends directly or indirectly on parental education and health acquiring activities. Parents with improved social status, protected source of water and access towards health services had better status of their child health. Death rate of child was found high among children of small aged mothers. Increase in birth space diminishes the chances of death and sickness of child. First order births faced great risk of death and sickness. Health care matter like maternal and fetal care in expecting period, delivery place and person who assisted during child birth also impact child physical condition. Research study suggested that Literacy rate should be enhanced to develop the understanding about reproductive health and to optimise the use of accessible health resources. Training and skills should provide to traditional birth attendants and enhance their contacts with professional health staff.

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Introduction

Health can be viewed as an investment in human capital (Becker, 2007). Children are the future builders of every nation and ensuring their healthy growth and development must be a prime concern of all societies. Child health is therefore, a fundamental indication of economic expansion (Todaro and Smith, 2005). Children's health can be best examined through child mortality level prevailing in the society. In Pakistan child (less than Five year age) Mortality Rate is 107, Infant Mortality Rate is 74.6, and Neonatal Mortality Rate (NMR) is 43.1. A wide provincial variation is seen in Infant Mortality Rates (IMR) with 71, 104, 77 and 79 per 1,000 live births reported for Sindh, Balochistan, Punjab and NWFP, respectively.

Infectious diseases contribute significantly to child mortality in Pakistan; estimates indicate that they account for approximately 38% of the total burden of disease within the country. Newborn death is also closely linked to mother's mortality. Both respond in a similar mode to the same social, economic and health determinants. The current Maternal Mortality Ratio stands at 350, which is one of the highest even by south Asian regional standards.

The outcome of parental education on infant and child health is noteworthy in different ways. Educated Parents have a direct impact on child health by developing awareness and perceptive of better health investments for themselves and their children. Parental education also affects child health indirectly. An increased level of education usually returns high earnings that can be invested in preventive measures for child health. Parental schooling also adds to the opportunity cost of having kids. Mother's education has a solid indirect effect, being

strongly linked with use of health care facilities in pregnancy period. Child health status is intricately related with some of the socio- economic and demographic factors. The factors that play an important role in the child health are education of parents, access to basic needs of life, occupational status of parents, etc. Demographic factors such as age of mother at child's birth, birth interval, birth order, induced birth and access to health facilities by mothers during pregnancy affected the child health.

The present study is designed to explore the socio-economic and demographic dimensions of child health status in Punjab. The main objective of this paper is to examine the relationship between parental education and child health by using Multinomial Logistic Regression Model.

Previous studies

The most relevant conceptual framework of the determinants of child health status as revealed by Todaro and Smith (2005) identified the child health as a main sign of economic development. They have also specified that at least four among the eight Millennium Development Goals (MDGs) are absolutely related to child health, thus highlighting its importance.

The influence of parental education on infant and child health and mortality is universally significant ... [Bicego and Boerma (1993); Caldwell, et al. (1990)]. According to Currie and Brigitte, 1999; Persico et al., 2004; Case et al., 2002, 2005; Behrman and Rosenzweig, 2004; etc, in addition to being a development indicator itself, child health is also closely associated with other development symbols, such as grown person health, educational achievement, efficiency, and earnings. The reaction of parental education on infant and child

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physical condition and death has proved to be universally noteworthy [Bicego and Boerma (1993); Caldwell, et al (1990)]. Siddiqui and Mahmood (1994) showed that Literacy was the most momentous factor affecting health status and it was important variable for all countries irrespective of their developmental phase. Urbanization also proved important indicator to effect health status but with limited effectiveness. GDP was also important variable which effected health status and its role was becoming important over time.

Galloway et al, (1988); Hobb-craft et al.(1984) found that children born to very young and older mothers, especially after 35, having repeated births with short intervals were having more threat of death. Maternal factors such as the age of mother at the time of childbirth, birth position and birth space [Forste (1994); Rutstein (1984)], had significant effects on child endurance. Newborn and child mortality were also affected by the sex of the child, and infants born to mothers who had lost a child were at greater risk of dying during infancy [Cleland and Ginneken (1988)].

Maternal education is noted to have a strong net effect on child survival because it inculcates modern health knowledge, improves the effectiveness of health behavior (through better child care and feeding practices); and changes the mother's role within the family including use of modern health services [Cleland and Ginneken (1988); Bicego and Boerma (1991)]. Education of father and mother and their job status each have autonomous effects upon child survival in developing countries [Sandiford, et al. (1995); Forste (1994); Caldwell, et al. (1983)].

Kaestner and Grossman (1997) and Grossman (2000, 2006), confirmed that parents' schooling, above all mother's schooling, was the most important link of child health irrespective of any value used for computing health levels and also apart from of whether the units of study are individuals or groups. Several studies established the inverse relationship between socio-economic variables of the parents and infant and child mortality ... Forste (1994); Hobcraft, et al. (1984); Caldwell (1979)]

Child survival in developing countries is independently effected by both the father's education and the mother's education and their work status ... [Sandiford, et al. (1995); Forste (1994); Caldwell, et al. (1983)]. Maitra et. al. (2005) used an ordered probit model and found that although parental education did not have a significant direct effect on child health. It not only affected mothers behavior during pregnancy but also influenced the use of health inputs, indirectly impacting the health of children.

Toor and Butt (2005) concluded that socio-economic factors play an important role in determining the health care expenditure in Pakistan. The share of health expenditure in total public sector expenditure was the most significant variable affecting health status in a country. Moreover, literacy rate and GDP growth were also essential variables, which illustrated a positive relationship with health care expenditure.

Data, Methodology and Variables Used

Using the *Pakistan Demographic and Health Survey (PDHS) - 2006-07* which includes topics connected to fertility levels and determinants, family planning, productivity preferences, infant, child and maternal death and their reasons, Mother and youngster health, vaccination and dietetic status of mothers and children, awareness of HIV/AIDS, and malaria. To examine the health status of children under five years of age in relation to selected socio economic and demographic variables,

Multinomial Logistic Regression was used. A Child's Health status (Dependent Variable) is defined as categorical variable. Health status =0 for the child dead after birth, Health status=1 if Sick, and Health status=2 if child is healthy. Health status Sick is an index variable it is calculated against diseases diarrhea, fever, cough, short & rapid breathing if child faces any of these disease he/she is consider as sick. if child is not suffering above mention diseases he/she is consider as healthy.

The independent variables distributed into three main categories i.e. Socio-economic factors, Demographic factors and Access to Health facilities. Socioeconomic variables include dummies for the levels of education attained by the mother and the father, father and mother occupation, social status, total household members, province, region of residence, access to health facility, Source of drinking water and electricity. Demographic factors include dummies for the age of the mother at the time of birth, the sex of the child (CHSEX), number of children born to the mother that have died (NESD), Immunization of child, birth order of the child (BO), birth interval(BI). To analyze the relationship between parental education and its impact on access to health facilities includes dummies for, place of birth, prenatal care, antenatal care, delivery attendant. Each variable is explained hereunder:

Results and Discussions

The survival and health status of children are considered as one of the key indicator of social well being. This indicator has become an issue of great apprehension in all over the world. Child health has vital effect on learning; on labor productivity (as adults) and more radically on child survival and mortality. Following are indicative frequency distributions, showing the child health and survival status in Punjab.

Table 1 elaborated that in Punjab 6.1 % child were dead after birth, 29.6 % having status sick and 64.2 percent children were found healthy. Illiteracy rate of mothers was 59.3 percent and 32.5 percent of fathers were illiterate. It was elaborated that in Punjab 92.0 % of population having treated source of water, 88.5 % has electricity facility and 84.4% of population having own house. In Punjab only 2.8 % of fathers were found unemployed while 68.9 % of mothers were not working. It was illustrated that 30.7 % of population belonged to poor social status, 21.7 % to middle class and 47.7 % were rich. It was found that immunization coverage in Punjab was 80.0 %.

The trend towards place of delivery was found that 62.2 % of population prefer to deliver at home while 10.7 % at govt. hospital and 26.9 % in private hospital.

Trend of population for taking assistance by doctor during Delivery in Punjab was 35.7 % , by nurse/midwife/LHV was 14.2 % and highest 56.9 % by traditional birth attendant(Dai). The trend for taking Prenatal care by doctor during pregnancy was found 56.6%, by nurse/midwife/LHV was 8.7 % and 5.7 % trend was found for taking prenatal care by traditional birth attendant(Dai).

It was found that in Punjab 2.0 % of the mothers at child birth were less then twenty years. While 49.8 % of the mothers at child birth were greater then twenty and less then Thirty-five years old and 48.2 % were of greater then 35 years old..Child having small birth size were 57.3 % of the newborn children while average and large size were 31.6 and 11.1 per cent respectively. In all over Punjab 55.2 % children were male and 44.8% were female. Induced birth cases in Punjab were 65.1%, Trend of birth interval generally greater then 18 and less then 36 months. In Punjab percentage of population having 1st birth

order was 12.9 %, 2nd to 4th child (44.4%) and more than 4 child ranking was about (42.7%). Percentage of population having their elder sibling died was 30.2%.

The results for child health status were presented for sick category in (Table 3) whereas the healthy category was taken as reference. It was found that higher level of mother education increase the probability of a child sickness. While increase in level of father education reduced the risk of his child sickness. The results were consistent with Breierova and Duflo (2004) and Siddiqui and Mahmood (1994).

On considering the occupational status of parents it was evident from the results that If father was working it further reduced the chances of a child bad health. On contrary an astonishing result was found that when mother was working it increased the probability of child disease. Type of region urban increased the probability of sickness. It was further found that Treated source of water reduced the probability of illness about 0.627 times. The odd ratio of having no electricity facility Increased the likelihood of child's disease about 1.33 times. Status of house (no) Increased the probability of illness. Number of household member less than 10 reduced the probability of sickness and NOHM >10 & <20 also decrease the probability of illness of child. Social status poor decrease the probability of sickness and Social status Middle increase it. Access to health facility reduced the probability of bad health.

Results of a multinomial estimation, for the socioeconomic factors against the child health status healthy with reference category taken as sick are explained in table 4. Higher level of mother education reduced the probability of healthy child as with higher education mothers get engage with work and then she have limited time for better look after of her child. And increased in level of father education increase the probability of child good health. Father working increase the chances of healthy status of child while mother working have bad effect on child health. Type of residence urban reduced the probability of good health of child as compared to rural type of resident. Treated source of water increase the chances of good health status of baby. Status of house (no) reduced the probability of better health about .914 times. Greater the number of household member higher the chances of better child health. Social status poor Increased the probability of good health while belonging to middle class chances of catching more diseases. Access to health facility increased the chances of good health.

It was demonstrated in table 5 that if Mother at child's birth was younger than 20 years it Increased the probability of child death after his birth. Mothers older than 20 years and less than 35 years, had the less probability of their child to die. The smaller gap between births (less than 18 months) increased the risk of child death and vice versa. Birth order 2 (2nd to 4th child) reduced the probability of death after birth. Child sex male Increased the probability of death after birth. Child size small Increased the probability of death after birth and medium decreased the probability of death after birth. No induced birth reduced the likelihood of death after birth. No elder sibling died have a very little effect to reduce death after birth.

Results of a multinomial estimation, for the demographic factors against the child health status sick with reference category taken as healthy are shown in Table 6. It was confirmed from the results that if Mother age at child was less than 20 Increased the probability of Sickness and mothers of older age >20 & <35 reduced the probability of Sickness. Birth interval <18 months Increased the probability of Sickness and

Birth interval >18 & <36 months reduced the probability of Sickness. Birth order 2 (2nd to 4th child) reduced the probability of Sickness. Child sex male Increased the probability of Sickness. Child size small Increased the probability of Sickness and medium decreased the chances of Sickness. No induced birth reduced the probability of Sickness.

Conclusions and Discussion

The research study explored the relationship between socioeconomic and demographic factors and health status of children under five years of age. Overall results showed that increase in the level of parental education reduced the likelihood of child's death and as well sickness after birth. Number of household member less than 10 increased the probability of death after birth and >10 & <20 reduced the probability of death after birth. Large family size may be expressed as it facilitated mother for household work and provided her with better care during pregnancy. While number of household members less than 10 reduced the probability of sickness and >10 & <20 increased the probability of sickness. The reason behind this can be explained as in large family size usually intra household allocations of resources were biased towards children and they were some times at bad end to get better attention and diet. Treated source of water and Electricity reduced both the probability of death and chances of sickness. Results showed that if father was working it reduced the probability of child's death after birth.

On contrary to this an amazing result was found that for working mother the possibility of child's death after birth was higher. Reason being that Mothers working during pregnancy had less time to care for herself and get health facilities for her sibling. Mother's age at child's birth <20 Increased the probability of death after birth and sickness of child. Mothers of older age (>20 & <35) reduced the chances of death after birth and sickness. Less than 18 months Birth interval increased the probability of death after birth and sickness and vice versa. Birth order for 2nd to 4th child reduced the probability of child's death after birth and sickness as compared to 1st child birth and more than fourth birth order. Small child size increased the probability of death after birth and sickness while medium decreased the probability. No induced birth reduced the probability of death after birth and sickness. Increase in the level of parental education reduced their trend to deliver at home, whereas it increased their trend to deliver at government hospital.

Recommendations

1. Availability of facilities, increased birth interval and employment of father helped to reduce the death rate and sickness of children in Punjab.
2. Small mother age was also key factor and media can play role in creating awareness about dreadful results of small age marriages of girls and their motherhood.
3. Further media and health institutions can promote awareness about the importance of provision health facilities during pregnancy to avoid the negative effects.
4. Establishment of day care centers should be ensured for care of children near female work places that will facilitate working mothers and impart better child health.

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Table 1: Frequency Distribution of Socio economic Factors in Punjab

Parental Education Level	Frequency in Punjab (%)
Mother education no	59.3
Primary	17.2
Secondary	7.5
Higher	16.1
Father education no	32.5
Primary	17.3
Secondary	36.7
Higher	13.5
Type of Region Urban	38.0
Rural	62.0
Source of water treated water	92.0
Untreated water	8.0
Electricity no	11.5
Yes	88.5
own house yes	84.4
other wise	15.6
Father occupation not working	2.8
permanent/salaried	53.0
casual/inconsistent	44.2
Mother occupation not working	68.9
permanent/salaried	14.7
casual/inconsistent	16.4
Social status poor	30.7
middle	21.7
rich	47.7
No of household <=10	78.3
>10 & <20	19.4
>20	2.3
Access to health facility	95.1
yes no access	4.9
Child Health Status	6.1
Dead after birth	
Sick	29.6
healthy	64.2

Table 2: Frequency Distribution of Demographic Factors determining child health status in Punjab

Variables	Punjab
Mother age at birth <20	2.0
>20 & <35	49.8
>35 years	48.2
Child size small	57.3
Average	31.6
Large	11.1
Child Sex male	55.2
Female	44.8
Induced birth no	34.9
yes	65.1
Birth interval <18 months	15.3
> 18 & <36 months	45.9
> 36 months	38.8
Birth order 1st child	12.9
2nd to 4th child	44.4
more than 4 child	42.7
Elder sibling died no	69.8

Table 3 Socio economic factors and Child Health status (Sick) in Punjab (Multinomial Logit Estimation)

Independent variables	Coefficients	Std. Error	Sig.	Odd Ratio's
constant	2.198	.079	0	
[MNEDU]	.129	.032	.000	1.138
[MPEDU]	.111	.034	.001	1.118
[MSEDU]	.474	.041	.000	1.607
[FNEDU]	-.393	.033	.000	.675
[FPEDU]	-.466	.034	.000	.628
[FSEDU]	-.567	.032	.000	.567
[FOCCPN=0]	.325	.055	.000	1.384
[FOCCPN=1]	.245	.016	.000	1.277
[MOCCPN=0]	-.346	.020	.000	.708
[MOCCPN=1]	.177	.027	.000	1.194
[TRGN=1]	.127	.018	.000	1.136
[SWTR=1]	-.627	.034	.000	.534
[ELEC=0]	.033	.024	.171	1.033
[SoH=0]	.090	.024	.000	1.095
[NoHHM=1]	-.412	.049	.000	.663
[NoHHM=2]	-.595	.051	.000	.551
[SS=1]	-.005	.022	.811	.995
[SS=2]	.042	.021	.045	1.043
[HF]	-.892	.036	.000	.410

Dependent Variable: child health status dummy sick=1 Reference category: healthy =2

Table 4 Socio economic factors and Child Health status (healthy) in Punjab (Multinomial Logit Estimation)

Independent variables	Coefficients	Std. Error	Sig.	Odd Ratio's
Intercept	-2.198	.079	.000	
[MNEDU]	-.129	.032	.000	.879
[MPEDU]	-.111	.034	.001	.895
[MSEDU]	-.474	.041	.000	.622
[FNEDU]	.393	.033	.000	1.482
[FPEDU]	.466	.034	.000	1.593
[FSEDU]	.567	.032	.000	1.762
[FOCCPN=0]	-.325	.055	.000	.723
[FOCCPN=1]	-.245	.016	.000	.783
[MOCCPN=0]	.346	.020	.000	1.413
[MOCCPN=1]	-.177	.027	.000	.838
[TRGN=1]	-.127	.018	.000	.881
[SWTR=1]	.627	.034	.000	1.872
[ELEC=0]	-.033	.024	.171	.968
[SoH=0]	-.090	.024	.000	.914
[NoHHM=1]	.412	.049	.000	1.509
[NoHHM=2]	.595	.051	.000	1.813
[SS=1]	.005	.022	.811	1.005
[SS=2]	-.042	.021	.045	.959
[HF]	.892	.036	.000	2.439

Dependent Variable: child health status dummy healthy =2
Reference category: sick =1

**Table 5 Demographic factors and Child Health status (dead after birth) in Punjab
(Multinomial Logit Estimation)**

Independent variables	Coefficients	Std. Error	Sig.	Odd Ratio's
Intercept	-.756	.042	.000	
[MAGE=1]	1.225	.174	.000	3.404
[MAGE=2]	.118	.034	.000	1.125
[BI=1]	-.433	.044	.000	.649
[BI=2]	-.079	.032	.014	.924
[BO=2]	.920	.031	.000	2.509
[CHSEX=1]	.205	.029	.000	1.227
[CHSIZE=0]	-.125	.037	.001	.882
[CHSIZE=1]	-1.174	.038	.000	.309
[IB]	.393	.029	.000	1.482
[ELDSD]	-27.029	4299.561	.995	1.826E-12

Dependent Variable: child health status dummy dead after birth=0 Reference category: healthy =2

**Table 6 Demographic Factors and Child Health Status (sick) in Punjab
(Multinomial Logit Estimation)**

Independent variables	Coefficients	Std. Error	Sig.	Odd Ratio's
Intercept	.055	.022	.014	
[MAGE=1]	1.363	.075	.000	3.910
[MAGE=2]	.184	.015	.000	1.203
[BI=1]	-.125	.019	.000	.882
[BI=2]	-.199	.013	.000	.819
[BO=2]	-.011	.014	.437	.989
[CHSEX=1]	.158	.012	.000	1.171
[CHSIZE=0]	.107	.018	.000	1.113
[CHSIZE=1]	-.093	.017	.000	.911
[IB]	.049	.013	.000	1.050
[ELDSD]	-.161	.015	.000	.852

Dependent Variable: child health status dummy sick=1,Reference category: healthy =2