

THE DEVELOPMENT OF HEALTH SECTOR AND POVERTY IN PAKISTAN

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***ABSTRACT-**In this research paper is to analyze relationship between development of health sector and poverty in Pakistan. For this purpose, time series data for the period 1991-2017 was collected from World Development Indicators, Pakistan Economic Surveys, World Bank, IMF and State Bank of Pakistan and relevant research papers and books. The variables included in the study were: absolute poverty, education, budgetary allocation for health, per capita income, unemployment rate and labour productivity. We used ADF test, Correlation Analysis, bound test and ARDL model to analyze the data. According to the results, there is significant change in dependent variable, Government spending as percentage of GDP, due to independent variables in both short run and long run.*

Keywords: Poverty, Education, Health expenditures, per capita income.

Type of study: **Original research paper**

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1.INTRODUCTION:

1.1. Background of study:

The development of health sector and poverty is in crucial stage in Pakistan. According to HDI (2015) As Pakistan ranked 147th out of 179 countries in the maternal mortality ratio index that shows bleak picture of health sector. Government cannot attain environmental security and human resources development without addressing basic issues of individual's health and nutrition. Health is the essential for human development. Pakistan will progress when it addresses its core issues which are health and poverty both are inter linked with education and economy. This inter link extremely effects the development of all social sectors of Pakistan. High rate of unemployment, low rate of per capita income that is \$1641 compare to USA \$47000, rising inflation, growing foreign debts, budget deficit, balance of payment, climate changing, terrorism and corruption etc. affect Pakistan's economy badly. As Pakistan is developing country and has a very small economy but, a huge amount of our budget is allocated to defense due to impending external threats.

The major issues of health sector in Pakistan are over-population, virus-related diseases, malnutrition, absolute poverty, illiteracy, unemployment, unhygienic and vulnerable conditions of living and contaminated food and water. As Pakistan has a large health infrastructure consisted of BHUs, RHCs, DHQs, MCHs, dispensaries, and hospitals but allocation of budget is inadequate. Heavy investment is needed to improve and make health sector efficient.

According to Pakistan Economic survey, 2017-18, total Rs.384.57 billion, which was 1.12 percent of GDP, was allocated in Fiscal year,2016-17 which was far less from six percent benchmark of World Health Organization.

The survey said that the overall number of registered doctors in the country had increased marginally from 195,896 in 2016 to 208,007 in 2017. This means that there was one doctor available for every 957 people in 2017, which is far from the WHO recommended ratio of 4.4 doctors for 1000 people. The number of dentists is only 20,463 in the country or a single dentist for 9,730 people. There are 103,777 nurses, while only one hospital bed is available for 1,580 people. Even though their numbers are increasing, the pace of it is too slow for a population which has grown to over 208 million. There is a dire need to expand services delivery and address the shortfall in health related human resources and making better use of technology,” stated the Economic Survey for the fiscal year 2017-18.

1.2. Main Research Problem:

The main research problem is to explore relations between development of health sector and level of poverty in Pakistan.

1.1. Objectives of the Study:

The objectives of study are outlined in the following: -

- To study the development of health sector and its impact on Pakistan economy.
- To investigate the effect of health sector on economic development.
- To determine short run relationship between poverty and health and its effects on economic growth.
- To analyze the long run causal relationship between the development of health sector and poverty in Pakistan.

1.2. Main Research Questions:

Main research questions of this study are stated as under: -

- a) What is the impact of poverty on the health sector in Pakistan?

- b) Does lack of resource is the key obstacle in the development of health sector?
- c) How can we improve health sector and reduce absolute poverty from Pakistan?

1.3. Scope of study:

The results of this study will be helpful for the policy makers to frame policies which do not only improve health sector but also reduce poverty in Pakistan. The results will also beneficial for new researchers to further conduct research on this topic.

2. LITERATURE REVIEW:

Carlo and Giovanni (2006) examined the vulnerable condition of the people living in the rural areas of Pakistan. They said that the high level of poverty affects the household consumption. The rural areas are facing the worst living conditions due to low level of incomes. They stated that one third population of Pakistan lived in vulnerable condition in rural areas and estimated vulnerable range was 47 to 67. Vulnerability is a big risk for the poor people.

Herani wasiyo and perwaiz (2008) they conducted research on the people living in the developing countries whose per capita income is \$ 500 per year. They lived in the worst and vulnerable living situations. The majority of the world population living in the developing countries in hostile environment where their survival is very difficult.

Own (2008) analyzed the availability of effective health care services in developing countries and found that people could not avail health services due to lack of resources and high level of poverty. They suggested that

governments of developing countries should focus on the development of health sector.

Monica and Johns (2011) analyzed high rate of fertility and its impact on economic development in developing countries. They contended that high population growth was exerting pressure on resources and increasing level of poverty and health problems. They urged to control population growth rate in order to reduce level of poverty and health problems.

Patrick and Rosemary (2013) stated that poverty is described all over the world in its different ways due to its multidimensional nature. The paper is about the analyses of evolution of poverty implementation of poverty reduction policies over the past five decades in developing countries. They argued that the developing countries should create stable political and economic environment and enhance budgetary allocation for health and safety net.

Shagufta and Faiza (2014) determines the impact of different variables on economic development in Pakistan. They conclude that health indicators positively affects per capita GDP in the long run and negatively affect in short run. They argued that there is significant relationship between health indicators and economic development.

Awan (2012) analyzed the role of policies of BRIC countries in eradicating poverty and income inequality. He disclosed that China, India, Brazil, Turkey and other emerging economies paid special attentions on framing pro-poor policies in order to reduce poverty level and to increase per capital income of lower section of society. In this way, they have not only been above to reduce health problem, increase per capita income but also significantly scaled down level of poverty.

G.M.Arif (2014) examined the role of income and consumption in the wellbeing of people. He used conceptual frame work which is based on the household utility maximizing model by specific house hold production function. He also analyzed the determinants of children's nutritional status in Pakistan. He concluded that economic growth could not reduce malnutrition for which specific programs should be launched to eradicate malnutrition in poverty-ridden areas.

Ahmad, Khalid and Hudaibia (2017) measure the direct effect of health care system on the economy of a country. They stated that Pakistan health sector divided into two sectors: public and private. Public sector serve 30 percent and Private sector serve 70 percent population of Pakistan. Pakistan ranked 65th among 102 countries according to HPI (human poverty index). The opportunity of decentralization brings a strong hope for the best change in primary health care system. A primary health sector must be restructured because the central level is not efficient for health sector than those of district level can be. We must decentralize from federal to district level to produce more capacity resources.

Fatima and Waqas (2018) This study analyzed the state of health sector in Pakistan and measured both positive and negative impact of health indicators on economy growth. They shed light on the poor policies for the public spending on health and education. Pakistan ranked riskiest country to the born according to united National recent report that raise a big question mark on the country's state of health and polices to develop the sector. They disclosed that in Humane development (HDI) ranking, Pakistan has dropped its position from the 119th to 147th, which indicated deterioration of health sector in Pakistan.

3. RESEARCH METHODOLOGY:

In this study the basic purpose is to examine the development of health sector and poverty in Pakistan. The data is used in this study is time series and time period of that data is 1991-2017.

3.2 Type of Data and sources:

The time series secondary data is used in this study for analysis and as such this study is quantitative in nature. The data was collected from World Development Indicators, Pakistan Economic Surveys, 2016-18, State Bank of Pakistan, World Bank, IMF and Asian Development Bank as well as relevant books and research papers.

3.3. Variables of study:

The variables of study and their description are given in table 1.

Table 1: Description of variables

Variables	Source
Government spending as % of GDP	Pakistan Economic Survey
Education spending	World Development Indicator
Per capita income	World Development indicator
Foreign investment	State Bank of Pakistan
Inflation	State Bank of Pakistan
Unemployment	Pakistan Economic survey
Labour productivity	Pakistan Economic Survey

3.4 Hypothesis of study:

Following hypothesis were formulated for this study.

H₀: The Government spending on the development of health and poverty has positive impact on economic growth of Pakistan.

H₁: The Government. spending on the development of health and poverty has negative impact on economic growth of Pakistan.

4. DATA ANALYSIS:

4.1 Descriptive Statistics:

The descriptive statistics of selected variables are given in Table 2:

Table 2: Descriptive Analysis

	GSGDP	EDUS	FI	INF	PCI	LP	UNEMP
Mean	10.62	2.45	1.56	8.46	1.88	2.23	3.97
Median	10.52	2.56	0.92	7.92	2.16	2.11	3.93
Maximum	14.32	3.02	5.59	20.26	5.47	2.79	6.76
Minimum	7.78	1.84	0.26	2.53	-1.44	1.95	0.65
Std. Dev	1.64	0.33	1.48	4.26	4.06	0.24	1.63
Skewness	0.11	-0.44	1.56	0.58	0.17	0.85	-0.13
Kurtosis	2.58	2.17	4.61	3.26	2.37	2.37	2.56
Jarque-Bera	0.24	1.65	13.89	1.62	0.56	3.72	0.30
Probability	0.88	0.43	0.00	0.44	0.75	0.15	0.85

Source: Author(s) calculation

The descriptive analysis states that the average value of the GSGDP is 10.62 which lies between the 14.42 (maxi) and the 7.78 (mini) with a standard deviation of 1.64. Whereas, the average value of EDUS, FI, INF, PCI, PGRA and UNUEMP is 2.45, 1.56, 8.46, 1.88, 2.23 and 3.97 with a standard deviation of 0.33, 0.33, 1.48, 4.26, 1.83, 0.24 and 1.69 along with 1.84, 0.26, 2.56, -1.44, 1.95 and 0.65 (minimum) and maximum values are 3.02, 5.59, 20.26, 5.47, 2.79 and 6.76, respectively.

The trend of the variables is presented in the figure 1.

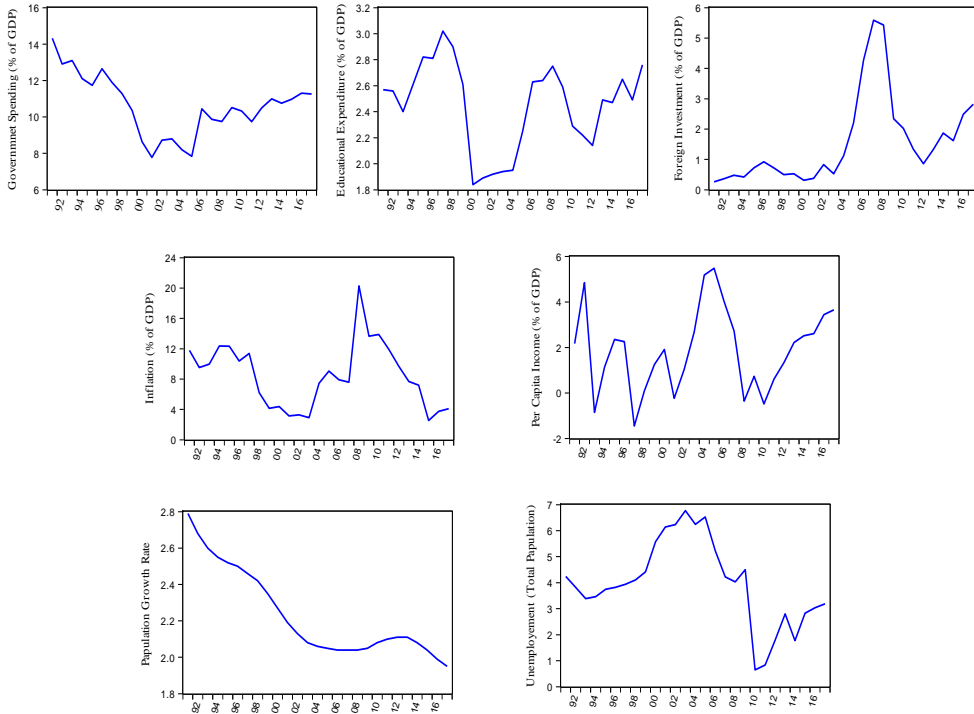


Fig.1 Trend of the Variables

4.2. ADF Test:

The results of the ADF test are shown in the table 3, which elaborates that some variables are stationary at level and some are at difference. It concludes that the variables are at different level of 1(0) and 1(I). Therefore, we can ARDL model for this study.

Table 3: Results of ADF

Variables	Level		1 st difference		Conclusion
	Trend	Trend & Intercept	Trend	Trend & Intercept	
GSGDP	-2.46 0.13	-1.83 0.65	-5.14* 0.00	-5.46 0.00	I(1)
EDUS	-2.88 0.06	-2.82 0.20	-3.83* 0.03	-3.80 0.03	I(1)
FI	-2.38 0.15	-2.83 0.19	-3.31* 0.02	-3.24 0.09	I(1)
INF	-2.16 0.22	-4.39 0.01	-6.23* 0.00	-6.12 0.00	I(1)
PCI	-2.98* 0.04	-3.02 0.14	-6.34 0.00	-6.39 0.00	I(0)
LP	-3.34* 0.02	-1.95 0.59	-2.16 0.22	-3.36 0.08	I(0)
UNEMP	-1.50 0.51	-1.67 0.73	-5.05* 0.00	-4.96 0.00	I(1)

Source: Author(s) calculation

The results of ADF reveals that GSGDP, Education spending, Foreign Investment, Inflation, Unemployment are stationary at 1st difference and PCI and labour productivity are at level. The next important thing is to determine the strength of the relationship among the variables.

4.3. Correlation Analysis:

For this purpose, correlation analysis was employed, the results are shown in Table 4.

Table 4: Results of Correlation Analysis

Variables							
GSGDP	1	0.67	-0.19	0.30	-0.13	0.69	-0.46
EDUS	0.67	1	0.27	0.37	-0.12	0.30	-0.34
FI	-0.19	0.27	1	0.27	0.15	0.59	-0.06
INF	0.30	0.37	0.27	1	-0.32	0.23	-0.34
PCI	-0.13	0.12	0.15	-0.32	1	0.20	0.29
LP	0.69	0.30	-0.59	0.23	-0.20	1	0.00
UNEMP	-0.46	0.34	-0.06	-0.34	0.29	0.00	1

Source: Author(s) calculation

The general range of correlation matrix between -1 and +1 that show the direction and the strength of the association. 0 value means no correlation between variables. The positive correlation between the variables show the higher level of association and negative show higher level of one variable association with low level of another variable. All the variables are significantly correlated in our study. Therefore, the foreign investment, per capita income and unemployment are negatively correlated with government spending on health that indicates the weak association. While education, inflation and labour productivity are a positively significant correlated with government spending. It indicates the strong and higher level of association between these variables.

4.4. ARDL Model:

The results of ARDL model is represented in the Table 5:

Table 5: Results of ARDL Model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	7.27	2.34	3.10	0.01
GSGDP(-1)	-0.57	0.23	-2.45	0.03
GSPGDP(-2)	-1.06	0.29	-3.59	0.00
EDUS	3.21	0.69	4.61	0.00
FI	-0.58	0.22	-2.59	0.02
INF	0.15	0.06	2.24	0.05
PCI	0.09	0.08	1.12	0.28
LP	8.06	11.53	0.69	0.50
UNEMP	-0.63	0.17	-3.55	0.00
R²	0.96		DW	2.49
Adj R²	0.90		F-statistic	16.50
S.E of Regression	0.44		Prob (F- statistic)	0.00

Source: Author(s) calculation

The data in table 5 shows that the value of R^2 is 0.96 that means there is 96% variation in the dependent variable GDP) due to the independent variables. Foreign investment and unemployment have negative coefficient values that indicate negative effect of government spending on GDP. Education spending, inflation, per capita income and population growth rate all have the positive coefficient values that show the effect of all these variables is positive on GDP growth rate. The coefficient value of education spending is 3.21 that means

one unit increased in education spending will increase 3% in GDP. It means government spending on education has positive and significant effect on GDP. Similarly, one-unit increase in government spending will enhance 8 percent in labour productivity. The coefficient value of per capita income shows that one-unit increase in government spending will cause increase there 0.9 percent in per capita income. The value of D-W is 2.49 that means there is negative auto correlation.

4.5 Bound Test Results:

Table.6: ARDL Bound Test Results

Test Statistic	Value	Significant	I(0)	I(1)
F-Statistic K	3.29	10%	1.99	2.94
		5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

Source: Author(s) calculation

The table 6 shows the critical value of F-statistic that is 3.29 which is more than the significant value of 5 %, upper bound value that is 3.28 and lower bound value 2.27. We know that for long run relationship, calculated value of f statistics must be greater than 5% of critical value of upper bound. If the value of F-statistic lies between upper and lower bound values, it is the case of inconclusive evidence about the long run relationship. The results show that the value of f statistic is greater than the upper bound value and according to Pesarn *et.al.*, (2001) and Naryan *et.al.*, (2004) the null hypothesis of co-integrated is rejected due to the calculated value of f statistic that is greater than the critical value of upper bound.

4.7. Long Run Relationship:

In the tables 7, results are shown about the long run relationship between dependent and independent variables through ARDL model.

Table 7: Long Run Relationship between Variables

Variables	Co-efficient	Std. Error	t-statistic	Prob.
C	2.74	0.71	3.85	0.00
EDUS	2.30	0.19	11.58	0.00
FI	-0.22	0.07	3.16	0.01
INF	0.05	0.01	2.97	0.01
PCI	0.17	0.04	3.51	0.00
LP	1.45	0.46	3.14	0.01
UNEMP	-0.52	0.03	17.01	0.00

Source: Author(s) calculation

According to results, the co-efficient value of the foreign investment and unemployment have negative signs that show their negative relationship with dependent variable, government spending. The co efficient value of education spending is 2.30 that means one-unit increase in level of education spending will increase in GDP by 2.3 percent. The co-efficient value of inflation is 0.05 that means a unit increase in a level of inflation will increase 0.5 percent in GDP. The co efficient value of per capita income is 0.17, it means that one unit increases in government spending will cause 17 percent increase in GDP. The co efficient value of population growth rate is 1.45 that means one-unit increase in Government spending will increase labour productivity by 1.45 percent.

4.9. Error Correction Model-Short-Run Relationship:

The results of error correction model are shown in Table 8:

Table 8: Short Run relationship between Variables

Variables	Co-efficient	Std. error	t-statistic	Prob.
D(GSGDP(-1))	1.06	0.18	5.77	0.00
D(EDUS)	3.26	0.44	7.34	0.00
D(FI)	-0.61	0.14	-4.16	0.00
D(INF)	0.14	0.03	4.02	0.00
D(PCI)	0.09	0.04	1.96	0.08
D(LP)	7.90	5.86	1.34	0.21
D(UNEMP)	-0.64	0.12	-5.24	0.00
Coint. Eq(-1)	-2.62	0.31	-8.23	0.00

Source: Author(s) calculation

Table 8 shows the short run relationship between the dependent and independent variables. The results are calculated through Error Correction Model (ECM). According to the result, the co-efficient value of ECM is -2.62. The value of ECM equation shows the speed of adjustment that state the economy will converge towards long run equilibrium at a speed of 2.62 annually. The probability of all variables is significant.

The overall effect of explanatory variables is statistically significant. The value R^2 is 0.96 and adjusted value of R^2 is 0.90 that means there is 90% variation in the dependent variable due the independent variables of the model. The value of D.W is 2.49 that mean there is negative auto correlation. Probability of F-statistic is 0.000 that is significant. The rate of Govt. spending on the development of health sector and reduction for the poverty in very important for the sustainable economic development.

5. CONCLUSIONS:

The objective of this research study was to analyze the relationship between the development of health sector and poverty in Pakistan. The key variables of this study were: government spending as percentage of GDP, education spending, foreign investment, per capita income, inflation, annual population growth rate and unemployment. According to our results foreign investment and unemployment are negatively related with GDP growth rate. Whereas education spending, inflation rate, labour productivity and per capita income have positive relationship with GDP. We conclude from the results that government should allocate resources to education sector, encourage foreign direct investment, enhance per capita income and reduce unemployment.

6. RECOMMENDATIONS:

We would like to make the following policy recommendations: -

1. Allocation of budget for health must be increased from to 6 percent of GDP as recommended by World Health Organization.
2. More programs like Benazir Income support program and Ehsas Card programs may be launched to reduced level of poverty.
3. Foreign direct investment may be attracted to health and education sectors.
4. Proper policy initiatives should be taken to reduce unemployment rate which will automatically reduce the level of poverty from the country.

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CONTRIBUTION OF AUTHORS AND CONFLICT OF INTEREST

This research work was carried between collaboration of two authors.

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Both authors read the manuscript carefully and declared no conflict of interest with any person or institution.
