



Available Online

Journal of Education and Social Studies

ISSN: 2789-8075 (Online), 2789-8067 (Print)

<https://www.scienceimpactpub.com/jess>

FOCUSING ON ACCESS AND QUALITY OF HEALTH SERVICES: KHYBER PAKHTUNKHWA'S PROGRESSIVE HEALTHCARE REFORMS

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ABSTRACT

This research has analyzed the effects of the Government reforms on health service delivery in both public and private hospitals within Khyber Pakhtunkhwa. Khyber Pakhtunkhwa has undertaken significant strides in healthcare reform. Programs like Sehat Card Plus prioritized expanding access to quality care for residents. Initiatives like the Revamping Primary and Secondary Healthcare program have focused on improving the quality of care delivered. This is achieved by modernizing facilities and equipment, ensuring healthcare professionals have the necessary resources and training. This approach empowers individuals and promotes a more sustainable healthcare system overall. The study has used data from paneled hospitals where reforms were launched for health service delivery. The authors have used the ADF test and the Granger causality test. The study results showed that delivery was expanded and enhanced throughout the province due to all the improvements. Moreover, the Granger Causality test determined that there existed a causal relationship between OPD and HR, and there also existed a Granger Causal relationship between OPD and FR. The study suggested that Khyber Pakhtunkhwa should work towards a future where residents must receive effective treatment throughout the healthcare system. Moreover, there is a dire need for strict monitoring for the provision of quality care delivered to the people and universal health coverage in KP throughout the country.

Keywords: Health sector reforms; Health service delivery; Pakhtunkhwa; Pakistan.

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<https://doi.org/10.52223/jess.2024.5226>

Received: March 11, 2024; Revised: June 17, 2024; Accepted: June 25, 2024

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INTRODUCTION

Following the devolution of power through Pakistan's 18th Amendment in 2010, the Khyber Pakhtunkhwa government has implemented various health reforms. This amendment transferred responsibility for healthcare administration from the central government to individual provinces. Previously, the central government held both legislative and administrative authority over healthcare in all provinces. The 18th Amendment's devolution of power in 2010 presented a unique opportunity for Khyber Pakhtunkhwa. While the province already had its Health Sector Strategy (2010-2017) in place, decentralization spurred a wave of health reforms specifically targeted at the province's distinct healthcare challenges. This included strengthening the overall health system for improved service delivery.

The Khyber Pakhtunkhwa Health Sector Strategy (HSS) 2010-2017, along with the National Health Vision 2016-2025, forms the primary framework for health policy in the province. The provincial government extended the HSS 2010-2017 until June 2018 and subsequently revised it as the HSS 2018-2025. The Department of Health (DoH) is currently working on updating the strategy and ensuring alignment with operational plans, the midterm budgetary framework, and district-level health programs. Over the past twelve years, the Khyber Pakhtunkhwa government has implemented various reforms across different

sectors, including health. Notably, the DoH announced key health outcomes within its 2010-2017 policy, which were carried forward into the 2018-2025 policy.

I: Enhancing coverage and access to essential health services

II: Improving Human Resource Management, accountability, and quality assurance.

The first outcome of the health policy is directly related to the services given by the health department to its people, especially in the primary sector, and can be assessed with the data taken from the indicators of DHIS reports and data recorded by the Independent Monitoring unit Health Department. In addition, the qualitative aspect of the outcome could be assessed with patient interviews to see how much the patients are satisfied with the Government policies and their contribution to the labor market by making people healthy. The second outcome is a key policy term for hiring and managing the human resources working in the health department and its accountability can be again assessed with DHIS reports and data recorded by IMU Health (Government of Khyber Pakhtunkhwa, 2021).

Since 2011, the Khyber Pakhtunkhwa Provincial Assembly has enacted a substantial body of healthcare legislation, with over 23 acts and amendments passed. These measures address various aspects of healthcare policy, including service quality, accessibility, and delivery. Some acts represent entirely new initiatives, while others, primarily amendments, aim to modernize existing health laws. Keeping in view the above discussion, the researcher carried out the study with the following objective. We can analyze the Khyber Pakhtunkhwa healthcare reforms by considering service delivery principles. These principles stress the need for efficient and fair access to healthcare. For instance, a model emphasizes that elements like available resources, how care is delivered, and health service delivery improvements are all vital parts of service delivery. The reforms aim to ultimately improve patient health outcomes by expanding health insurance options (resources) and investing in facilities and training (care delivery). Furthermore, frameworks advocating for context-specific approaches are relevant. Here's how service delivery (OPD), dependent variable, and financial resources and human resources estimated as the independent variables could be fitted into the famous Donabedian Model of 1966 that focuses on resources, processes, and outcomes.

A number of institutions and researchers have done a handsome work on health sector across the globe. This section briefly discusses the work of different scholars across the globe who estimated the impact of health expenditures on labor productivity, investment in health and economic growth, human capital and the economic growth, different approaches towards health service delivery and critics to the human capital theory. Following is the review of their work done. Good health was undeniably a precious asset, enabling us to reach our full potential. Conversely, poor health or a lack of proper health development would lead to physical and emotional limitations, hindering people's lives. This relationship between health and income was well-documented in the Life cycle models (Lilliard & Weiss, 1997; Smith, 1999).

Enhancing living standard was a fundamental societal objective. A critical element of achieving this was the ability of the workforce to generate income and acquire goods and services. Income reflected the value of produced goods and services, as well as labor productivity, which referred to the efficiency of labor utilization in production. While living standards, income, and productivity are distinct concepts, they were intricately linked. The strong correlation between labor productivity and real wages, observed across countries and over time, highlights the critical role of productivity growth in elevating living standards. This connection has led economists and historians to focus extensively on understanding the factors that drive productivity increases. The recognition was growing that human capital, traditionally viewed solely through education and skills, played a crucial role in economic productivity. In recent years, health had increasingly gained attention as a vital form of human capital (Tomba, 2002).

Human capital theory emphasizes that education and health were essential building blocks for increased productivity and economic growth. Similar to other assets, health capital was deteriorated over time. Grossman (2000) highlights the importance of investing in nutrition, healthcare, and exercise. These

investments replenished health reserves and enabled individuals to maintain their capacity for economic participation. Studies consistently demonstrated a positive correlation between health and productivity for both skilled and unskilled workers. Healthy workers had a greater output capacity due to their ability to work longer hours. Conversely, poor health reduced productivity and diminished the size of the available workforce (Kumar & Kober, 2012).

A strong correlation existed between healthy populations and high levels of economic development. This recognition had led to a growing understanding of human capital, encompassing not just education and skills, but also health, as a key driver of national productivity and growth. Previously, human capital was primarily viewed through the lens of education and skills. However, recent studies emphasized health as a crucial component in explaining individual productivity. At the individual level, good health directly translates to increased output through enhanced physical and mental capacity. Healthy individuals contributed to higher overall labor productivity. Conversely, poor health led to decreased productivity and imposed financial burdens through out-of-pocket medical expenses. These expenses depleted current and future savings, pushing individuals towards poverty (Huq et al., 2014).

Education and health enhance economic growth. A nation's economic development hinges on two main pillars: health capital (the health of its workforce) and labor productivity. These factors were directly linked to economic growth. Individuals with a longer life expectancy tended to save more compared to those with poorer health. Higher national savings translate to greater national income, fostering increased investment opportunities and ultimately boosting the country's output. Conversely, a decline in life expectancy and poor health could hinder economic growth by diminishing the productivity of the labor force. The convergence hypothesis underscores the importance of a healthy and long-lived workforce (Ullah & Malik, 2019).

Grillos et al. (2021) have assessed the efficiency of collaboration among civil servants in decentralized and similar centrally administered municipal health systems in Honduras. The results showed that decentralized municipalities were less efficient at working at the same time as existing staff hardly worked with each other. Polin et al. (2021) highlighted health reform trends in 31 high-income economies before covid-19. There were found 81 reforms in 28 states in 2018 covering insurance coverage & resource generation, governance, healthcare purchasing & payment, and organization of hospital care. However, reforms regarding care and governance were also found. Schulmann et al. (2023) have focused on the development of new regional health structures in Ireland from 2018 to 2023, by a good health system reform programme by using a primary data. The results showed that that challenges would be addressed all the way through intensification governance arrangements and processes. Moreover, major health system reform was a complicated procedure and its governance showed diverse issues and chances for stakeholders. Udechukwu et al. (2023) also worked on health sector reforms implemented in Bangladesh from 1990 to 2023. It was stated that the primary health sector reform was shifted from a project-based method to financing the health sector to a sector-wide method. It was also found that implementing reform plans like increasing community clinics and a voucher scheme made better healthcare access, particularly for rural districts.

Objectives of the Study

The important objectives are given in the following.

1. To find the impact of health reforms on health service delivery in Khyber Pakhtunkhwa.
2. To check the impact of staff availability in terms of medical officers, LHV, Nurse on OPD (access to health services to the public).
3. To analyze how financial resources for medicines & equipment affect access to health services to the public.

Research Objectives

This research has focused on the impact of health reforms on health service delivery in Khyber Pakhtunkhwa. A lot of reviewed studies have been indicating the provision of health services in the province, challenges in KP, and the progress of the Pakistani Government. An analysis has been done in Khyber Pakhtunkhwa province to highlight the impact of health reforms on health service delivery in Khyber Pakhtunkhwa. It is also suggested required intervention of the Government of Pakistan.

Research Questions

Major research questions are explained in the following.

- 1) How much is the staff availability in terms of medical officer, LHV, and Nurse on OPD?
- 2) What are the effects of health reforms on health service delivery in Khyber Pakhtunkhwa.
- 3) How do financial resources for medicines & equipment affect access to health services to the public in Khyber Pakhtunkhwa.

METHODOLOGY

We have used data to establish a relationship of service delivery (OPD of all Kind) as output variable with staff and resource availability as input variable in the hospitals of Khyber Pakhtunkhwa. Study was carried out for the health sector of the province. Monthly data for the variables of Sehat Card Program from its inception when the program was started in 2016, has been collected till 2022 from the SHPI & DHIS (District Health Information system) at Provincial Office. This initiative tackles financial barriers by promoting universal health coverage and strengthens primary care facilities, laying the groundwork for a more robust healthcare system.

Explanation of the variables used in the study

Out Patient Department (OPD)

It accounts for all kinds of OPD in all hospitals of this study and will be treated as the dependent variable for estimation. The main source of the data was the DHIS section of the DGHS Peshawar. The choice of this variable is done for the purpose of estimating the access of the general public to health services as the key indicator of KP Health Policies formulated over the period of time. It shows the impact of Government policies in health sector where people are provided with easy access to healthcare services. The choice is based on the work of Ullah et al. (2020)

Human Resource (HR)

It is the independent variable of the model and accounts for the number of technical staff available in the hospitals for health service delivery. The technical staff includes Medical Officers, Nurses and LHVs who are professionals in providing health care services to the masses. Availability of the HR in hospitals is one of the key variable which is aimed at providing health care services to the public. The source of the data was the Bureau of Statistics of Khyber Pakhtunkhwa. It has been the center of focus of the KP health policies formulated over time and again for bringing improvement in the health service delivery of the province.

Financial Resources (FR)

This is another key variable which plays pivotal role in the execution of the government policies in any sector. Talking about the Health Department of KP, during the last few years, it remains one of the top item in the agenda of the political government. The government at the time focused on the budget of the health department for the execution of the health policies along with launching the flagship program of the KP Government i.e, Sehat Sahulat Program. For this purpose the KP government allocated huge sum of money to provide free health care services to the general public. The source of the data was the Provincial SHPI office and Finance department of Khyber Pakhtunkhwa. The purpose behind this huge budget was to make

the health service deliver as easy as possible. The choice of this variable is directly related to the impact of the said program and is a key indicator in improving the OPD of the hospitals.

Model

For examining the impact of government reforms on service delivery in health sector, the following model was estimated through the lens of Donabedian model of 1966.

The econometric form of the equation is as:

$$OPD = \beta_0 + \beta_1 HR + \beta_2 FR + \epsilon \quad (1)$$

Where

OPD = OPD in Hospitals

HR = Staff availability in term of Medical Officer, LHV, Nurse

FR = Financial resources for Medicines, Equipment

RESULTS AND DISCUSSION

It is very much important to check the normality of a time series data before the application of an econometric model in any time series data. In this study the normality of the data has been computed through the descriptive analysis of the data and also through Jarque-Bera Tests for all the variables of the study. Table 1 below shows the descriptive statistics for model which determines the normality of the variables of model.

Table 1. JB Statistics of model.

Statistics	OPD	HR	FR
Mean	42899.14	4757.333	3.891857
Median	5585.000	4750.000	1.000000
Std. Dev.	33911.67	874.2246	3.747314
Jarque-Bera	42.84617	4.543798	22.43324
Probability	0.061031	0.103116	0.100313

Table 1 summarizes the descriptive statistics for model, including mean, median, standard deviation, and Jarque-Bera statistics. An examination of the Jarque-Bera test statistic in Table 1 reveals a p-value exceeding 0.05. This indicates that we fail to reject the null hypothesis of normality for the OPD data. In simpler terms, the distribution of OPD values appears to be in line with a normal distribution. This conclusion is further bolstered by the observation that the mean (42899.14) is greater than the standard deviation (33911.67). This characteristic is commonly observed in normally distributed data.

Unit Root Test

Regression model has the assumption of non-stationarity while estimating a time series data. There are a number of unit root tests developed in econometrics like Correlogram test, Phillip-Peron test and Augmented-Ducky Fuller (ADF) test, this study has applied the ADF test for finding the unit root in the model of this study. The following table concludes results of ADF test for the model that shows the stationarity of the data at first difference.

The results recorded in Table 2 are estimated at first difference with two sets of equations, with intercept and with trend and intercept. The critical value for significance level is kept at 5 %. The ADF t-statistics are calculated to be less than the critical value at 5 % in all the equations and concluded that all the variables in model are stationary at first difference.

Table 2. ADF test results ($\alpha = 0.05$).

Variable	Test Equation	ADF t statistics	Critical Value at 5 %	Result
OPD	with intercept	-5.670459	-2.871507	Stationary
	with trend & Intercept	-5.780754	-2.811507	
HR	with intercept	-5.451234	-2.872499	Stationary
	with trend & Intercept	-5.561345	-2.871507	
FR	with intercept	-5.562345	-2.872307	Stationary
	with trend & Intercept	-5.673456	-2.821507	

Lag Length Selection Criteria

Selecting the appropriate lag length is crucial in cointegration analysis. An optimal lag length ensures the model is well-specified and yields reliable results. A lag length that's too short may miss important dynamic relationships between the variables. Conversely, an excessively long lag length can lead to overparameterization of the model, potentially causing spurious results. Table 3 presents the values of VAR lag order selection criteria employed in this study to determine the optimal lag length.

Table 3. Lag order selection criteria.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-31.24	---	0.063	6.48	6.48	6.65
1	-30.93	61.87	0.061	6.26	6.32	6.49
2	-30.51	8.72	0.058	6.18	6.23	6.56
3	-30.22	6.68	0.057*	6.11*	6.17*	6.53*
4	-30.03	9.38	0.057	6.14	6.19	6.69
5	-29.92	10.22	0.057	6.17	6.23	6.8

In the Table 3, all the criterion has the lowest values at lag order 3, therefore lag order 3 for Granger model is selected on the basis of FPE, AIC, SC and HQ criteria.

Granger Causality Test

The test for Granger Causality was applied to the model of the study as the data was found to be normally distributed and stationary. The objective of the model was to assess the impact of Government program on health service delivery in private and public hospitals of Khyber Pakhtunkhwa. The test has found a Granger Causal relationship for OPD between HR and FR. We can conclude that HR and FR does Granger Cause OPD and the Government has achieved its Objective of enhancing health access to the masses. The following table shows the results.

The results of Table 4 shows the potential causal relationships between the variables. Notably, the p-values associated with the F-statistics for both HR (Human Resource) and FR (Financial resource) are lower than 0.05. This suggests that we can reject the null hypothesis of 'no Granger causality' for both HR and FR in their relationships with OPD (Outpatient Department visits). In simpler terms, the findings indicate a statistically significant Granger causal relationship between HR and FR, and OPD visits in Khyber Pakhtunkhwa. This implies that changes in HR and FR may precede and influence subsequent changes in OPD. It's important to note that Granger causality does not necessarily imply direct causation, but rather a predictive power of past HR and FR on future OPD. These results, taken in the context of the government's health policy implemented in 2009 and 2016, suggest a possible link between the policy and the observed relationships. Further investigation would be necessary to establish a more definitive causal link between the policy and the changes in HR, FR, and OPD."

Table 4. Granger Causality test.

Null Hypothesis:	F-Statistic	Prob.	Result
HR does not Granger Cause OPD	0.80879	0.4491	Null Rejected
OPD does not Granger Cause HR	0.48069	0.6202	
FR does not Granger Cause OPD	0.89958	0.411	Null Rejected
OPD does not Granger Cause FR	0.81270	0.4474	
HR does not Granger Cause LOPD	2.53033	0.0862	Null Rejected
LOPD does not Granger Cause HR	0.29840	0.7429	
FR does not Granger Cause LOPD	1.22045	0.3007	Null Rejected
LOPD does not Granger Cause FR	0.38857	0.6793	

The Figure 1 shows that there exists a positive relation between health service delivery and independent variables of the first model.

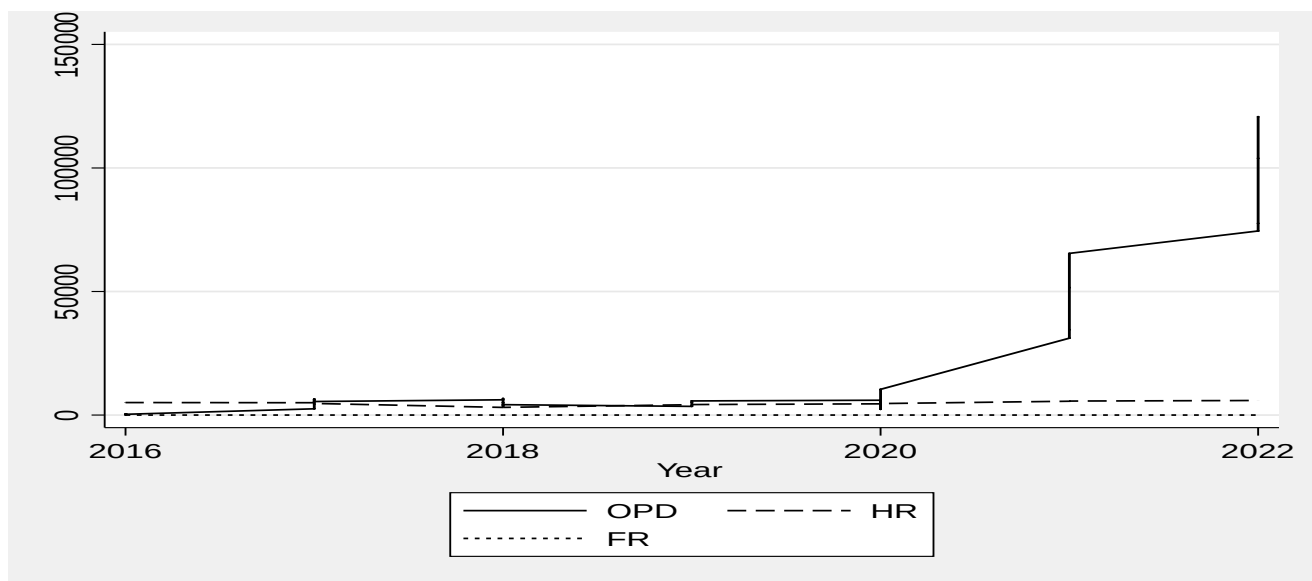


Figure 1. OPD vs HR and FR for first model.

CONCLUSIONS AND RECOMMENDATIONS

This study has assessed the influence of Government reforms on health service delivery in both public and private hospitals within KP. The reforms program was launched in 2009 and accelerated in 2016 with the flagship program of SSP of the KP Government. Data for the model's variables was gathered from various sources, including the Provincial SHPI office, the KP Bureau of Statistics (BoS), the Directorate General of Health Services (DGHS), the KP Finance Department, and the Economic Survey of Pakistan. Initial checks using descriptive statistics and the Jarque-Bera test confirmed that the data exhibited normality. Furthermore, the Augmented Dickey-Fuller (ADF) test was employed to assess the stationarity of the data. The results indicated that the data series achieved stationarity after taking the first difference, implying the removal of any trends or seasonal patterns. The Granger Causality test determined that there existed a causal relationship between OPD and HR. Similarly, the test also confirmed that there was also found a Granger Causal relationship between OPD and FR. This means that HR and FR do cause OPD. In short words, both HR and FR can predict OPD as the p-value was significant for the test. Results show that the government succeeded in giving access to health service delivery to the masses. New opportunities were created for the private sector to compete in delivering quality health care. This achievement can be considered a milestone towards universal health coverage only in KP throughout the country.

On the basis of the results, it was suggested that the government of KP must enhance health coverage initiatives. The health coverage at zero cost and through Sehat Sahulat Program has achieved Universal

Health Coverage and it carried the notion that policy of the KP Government .00...has achieved the target of enhancing the health services even in far-flung areas. There was a need for the transparent cost-benefit effect of this achievement by the policy makers. It is strongly recommended that such programs must provide health coverage by some mandatory contribution to sustain the economic credibility of the program. The results of this study are purely based on the collected data from hospitals and do not carry any personal view or opinion. Effort was made to portray the real picture of the government health policies through econometric lenses. There were other many observations which need to be further investigated by researchers that include services availed by foreigners who are the citizens of this country and the most important is the services offered by the private sector of the province which are very less in numbers but produced maximum OPD than public hospitals, is a serious question mark on the face of the administration of the KP government in its public hospitals. Also, the model of mandatory contribution or some health insurance programs needs to be introduced to overcome the budget and financing issues for SSP.

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