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Employment Status Impact of Households for Catastrophic Health Expenditures in Pakistan

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Abstract: *The study examines the domestic health expenditure pattern in Pakistan for the year 2018-19. It investigates the determinants who affect domestic expenses on various health related conditions. Estimates of estimates indicate that disastrous health expenses vary greatly in homes depending on many factors, such as the type of disease, provincial location and employment status of members of the household. Additionally, the level of rising income is positively associated with an increase in health expenses. These factors collectively contribute to difficulties in domestic health expenses, either up or down. The analysis further states that effective policy recommendations for health financing should take into account these impressive factors, as they have significant implications for public health results in Pakistan. Each variable plays a different role in explaining how the government can allocate resources within the health sector. To estimate these relationships; the regression analysis was employed using the simple least sections (OLS) method suitable for models with a quantitative dependent variable. The insight obtained from this analysis provides a foundation to formulate targeted health policies that address the economic burden faced by families and improve the overall efficiency of health expenditure.*

Introduction

Though it is the fifth most populated country in the world, Pakistan faces challenges towards achieving a sound healthcare system because of inadequate infrastructure, lack of qualified medical personnel, and restricted access to high-quality care particularly in rural areas. This situation can be altered by investing more funds in the healthcare industry, which will enable better facilities, more qualified staff, and cutting-edge medical technology improving the health and well-being of millions of people. This provides a scenario where increasing investment in the healthcare industry will enable better facilities, more qualified staff, and cutting-edge medical technology improving the health and well-being of millions of people. Hospitals are overcrowded; there is a constant shortage of essential drugs; the equipment is old. The Sehat Sahulat Program, or in translation as the Health Facilities Plan gives free

health insurance to low-income households is a good start, but by itself it is not nearly enough. A stronger, more well-financed and better-managed healthcare system would help access to care equity across this country. In terms of closing some of the very critical gaps, private sector that includes diagnostic laboratories, hospitals, and pharm as works relatively better than public sector institutions. But then again, their services never reach most people due to high costs attached to private care. Therefore, investment-incentivized public-private partnerships (PPPs) lead to sustainability and access expansion on efficacy-equity-affordability balancing.

Other international contributions such as from the World Bank, WHO, and UNICEF—include additional financial support, immunization programs, and technical assistance. Raising standards and introducing novel therapies take place meanwhile through foreign direct investment in pharmaceuticals and medical research. Stable government and clear regulations are prerequisites to attract such investment and also to keep it. Health spending is an economic strategy; it forms part of much more than humanitarian objectives. Healthy population uplifts society and the economy through better productivity—not just lowering absenteeism but reducing the general health care costs that that entails. The only way long-term advantages such as better health, reduced poverty, and unleashed economic potential can be achieved is by a comprehensive approach involving not only continuous international investment but active private sector partners and increased public spending.

Long-Term Impact and Global Perspective

The future return of health investment is broad. Such investments not only improve health outcomes and economic output but also directly reduce poverty. Across the world, it is **out-of-pocket medical payments—the largest component being about 32% of total medical spending in 2015—**that throw approximately 100 million people into poverty every year, with a further 150 million suffering severe hardship (WHO, 2015). Medical expenses on households crossing certain predefined levels of either non-food or total consumption are termed catastrophic health expenditure. Governments that allocate somewhat near 6% of their GDP to public health lessen these burdens, according to a WHO evaluation in 2010. By contrast, Pakistan has averaged just 2.78% from 2000 to 2016 on health expenditure, going to as low as 2.36% in 2011 and as high as only 3.34% in 2007. In 2016, out-of-pocket expenditure constituted an alarming 65% of the cost on health; only2.8 % GDP was spent on public health with per capita spending around USD40.

Regional Health Indicators: Areas of Concern

Compared to its South Asian neighbors, Pakistan falls behind on the main indicators. It has the lowest life expectancy in that region with high infant mortality and fast population growth. A great percentage of infants in Pakistan survive not much more than their first year. Fertility here remains among the highest rates in this regional area to put even more pressure on health resources. Life expectancy is also lower than countries like India, Bangladesh, or Sri Lanka can boast. This is made even worse by low public health expenditure. Less than 2% of GDP going toward healthcare—significantly trailing regional neighbors such as India (3.2% or more)—means understaffed facilities, equipment shortages, and limited basic services particularly for rural areas.

Financial Burden on Households

Inadequate investment puts homes in a dangerous dependence on out-of-pocket payments, about 65% of the total health costs in Pakistan, above the global average of 18.5% (2015-2016). This trend covers large segments of the population from care, pushed into much poverty, delays treatment, and the result deteriorates. Financial difficulty affects inconsistently low -income families, deepens social inequality and contributes to systemic disabilities. Some better service is provided to urban areas, but the rural

population decreases, making healthcare division further widening.

Conclusion: A Road Ahead

The current study focuses on factors affecting domestic expenses on health. The researcher has made a unique contribution by identifying and analyzing the determinants of health related expenses which includes both food related and non-related expenses. These specific characteristics were chosen as the primary explanatory variable, because for the best of the researcher's knowledge, they have not been employed in similar studies before.

Objectives of the Study

1. To quantify the extent of household health expenditure in Pakistan, providing a comprehensive assessment of the financial burden borne by families for healthcare services.
2. To identify the key determinants influencing household health expenditure, including economic, demographic, and social factors.
3. To analyse household health expenditure patterns across different socio-demographic groups, such as income levels, education, urban-rural location, age, and gender.
4. To utilize empirical findings to inform policy recommendations, aiming at reforming Pakistan's health policies to ensure equitable access and financial protection in healthcare.

Background and Significance of the Study

Family spending and health are related in the current study. But the researcher thus flash has tried to figure out how household spending affects health. Both food-related and unrelated costs are included in this health expenditure. Since no other researcher has ever employed or utilized those features, the researcher chose them as the main determinant.

Literature Review

Bunyaminu et al. (2022) investigated the relationship between healthcare spending and life expectancy in low- and middle-income countries. Their analysis revealed that a 1.2% increase in health expenditure was associated with an additional year in life expectancy, with the effect being more prominent in more economically developed nations. They concluded that increased health investment could significantly improve population health outcomes in less affluent regions. Similarly, Onofrei et al. (2021), using a fixed-effects model, established a statistically significant relationship between higher public health spending and increased life expectancy at the 5% significance level, suggesting that rising public healthcare expenditures contribute to reducing mortality rates.

Rous and Hotchkiss (2002), utilizing the Nepal Living Standards Survey, explored the determinants of out-of-pocket (OOP) healthcare payments. Their study emphasized the challenges of accounting for endogenous factors such as health status and provider choice. By employing a multiple-equation model, they identified several unobserved variables significantly associated with healthcare costs, illnesses, and provider selection, which could introduce bias in empirical health expenditure studies if not properly addressed. Their findings indicated that income influences health spending both directly and indirectly, through pathways like the likelihood of illness and the choice of healthcare providers. Moreover, although urban residents tend to use costlier healthcare services, they often incur lower OOP expenses.

In a global context, Sharo et al., despite this progress, estimates indicate that about 48.1 million children under the age of five may die between 2020 and 2030 if the current trends remain. The study emphasizes the need for nations to assess the link between health investment and results. Reaching the SDG goals can lead to death of about 11 million children within the same period, underlining the importance of continuous improvement in child health. In addition, emerging global challenges such as Covid-19 have greatly affected health indicators, leading to an increase in maternal mortality and U5MR.

Shapira, D Volke and Freedman (2021) found that the average infant mortality (IMR) during the period of study was 85 and 61 for low and medium -income countries respectively. Their findings suggest a negative relationship between national income and IMR, possibly due to resource availability and improvement in healthcare access in rich countries. However, they warn that these are average values and do not reflect inter-groups or national inequalities.

In the context of catastrophic health expenditures (CHE), Mulaga et al. (2021) studied its prevalence and determinants in Malawi. CHE was defined using thresholds of 10% of total household spending and 40% of non-food spending. The results indicated that 1.37% of households faced CHE, with rural and central region residents being more vulnerable, particularly those with larger households, higher incomes, frequent hospital visits, and inpatient admissions. These findings are consistent with earlier research by Saksena et al. (2010) and Lara and Gómez (2011), who identified various risk factors for CHE, such as the socioeconomic status and demographic characteristics of the household head, the presence of elderly members, health insurance coverage, and the type and frequency of healthcare facility usage.

Material and Methods

1. Data Range and Data Source

This study aims to assess household expenditure on catastrophic health spending in Pakistan. The analysis is based on data obtained from the Pakistan Social and Living Standards Measurement (PSLM) Survey Round VII for the year 2018–2019. This nationally representative household survey includes data from all four provinces Khyber Pakhtunkhwa (KPK), Punjab, Sindh, and Balochistan. A cross-sectional survey design was employed, with a randomly selected sample size of 48,968 individuals. The data was collected at the household level, capturing information on catastrophic health expenditures and a range of socioeconomic characteristics, such as household income and employment status. Health expenditure data encompasses both food and non-food components related to medical needs. This comprehensive dataset allows for a detailed investigation into the economic burden of healthcare on households across Pakistan.

2. Econometric Model

Before starting estimates and data analysis, it is necessary to define the composition of the model and clearly identify its variable. The model indulges the type and nature of the variable, providing the basis for an ideological structure and selected projection techniques. In this study, a number of linear regression models are employed and can be shown as follows:

Health Expenditure = C + + B1 (Employment Status) + + B2 (Income) + e

Health Expenditure	=	=	Y
Constant		=	C
X1		=	Employment Status
X2		=	Income of the households
e		=	Error Term

Results and Discussion

1. Model Estimation Results

The equation was estimated using the Ordinary Least Squares (OLS) method within a linear regression framework. The selection of the estimation technique was based on the nature of the dependent variable. In this case, the OLS method and regression analysis were deemed appropriate because the

dependent variable was quantitative. However, if the dependent variable were qualitative, an alternative estimation method, such as a logit or probit model, would be required. The regression model not only estimates the relationships among variables but also provides statistical measures for explanatory variables to assess their reliability and impact. A variable is considered statistically significant if its p-value is less than 5% (0.05) or 10% (0.10). Otherwise, it is considered statistically insignificant and may not have a meaningful impact on the dependent variable.

2. Model Summary

Table 4.1 Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.723	0.522	0.522	0.560

(Researcher's own contribution, PSLM 2018-19)

Table 4.1 presents the R-squared and Adjusted R-squared values, which indicate the extent to which the explanatory variables account for variations in the dependent variable. In the regression model, these values reflect the variation in education expenditure explained by the set of independent variables. Specifically, the model shows that the independent variables collectively explain approximately 52.2% of the variation in education expenditure, suggesting a moderately strong relationship between the predictors and the outcome variable.

3. ANOVA Summary

Table 4.2 AOVA Summary

ANOVA						
Model		Sum of Squares	df	Mean Square	F	P-Value
	Regression	16276.646	64	254.323	812.384	0.000
	Residual	14878.666	47527	0.313		
	Total	31155.312	47591			

(Researcher's own contribution, PSLM 2018-19)

Table 4.2 summarizes the F-test statistic, which assesses the collective strength and explanatory power of the independent variables in relation to the dependent variable. F-statistics reported a P-Value of 0.000, which reflects high statistical importance and confirms that the overall regression model is valid. This result implies that the R-differs value is quite different from zero, confirming the explanatory relevance of the model. The F-Test thus acts as an indicator of the fit of overall goodness of the model. While earlier sections covered the Model Summary and ANOVA table, which focused on the general performance and reliability of the regression model, the current analysis turns toward interpreting the individual effects of each variable on household health expenditure. This step is crucial for understanding how each independent variable contributes to the total health-related spending. To provide deep insights in the role of each factor, the next section will analyze the coefficient, compare the table, the magnitude of the effect of each variable in terms of domestic health costs, and shed light to the direction.

4. Health Mean Expenditure

Table 4.3 Health Mean Expenditure

HEALTH EXPENDITURE			
ILLNESS	Mean	N	Std. Deviation
LIVER DISEASE	4438.70	1486	9758.109
ROAD ACCIDENT	9538.65	440	28937.912
FRACTURES	6065.82	386	13421.599
DIARRHEAL DISORDER	1108.19	2175	2839.639
PNEUMONIA	3083.41	205	3558.030
FEVER	555.42	20637	1210.279
MALARIA	2592.38	1992	2828.314
TYPHOID	3344.48	841	4602.456
CHEST INFECTION	2190.75	1020	6185.740
ASTHMA	2950.57	763	2887.986
LIVER/KIDNEY DISEASES	6603.80	1271	15836.594
MEASLES, POLIO	2292.97	238	5777.237
STROKE/PARALYSES	7762.93	274	12486.781
MUSCULAR PAIN	2481.32	3401	6163.183
DEPRESSION	4917.18	388	5674.610
EYE INFECTION/DISORDER	4258.92	559	8913.710
ULCER DISEASE	3215.33	790	5368.542
HEPATITIS INFECTION	6367.23	835	10636.218
TUBERCULOSIS	4689.30	305	6930.515
DIABETES	2968.67	2644	4870.299
HEART DISEASE	10884.47	1044	60215.636
HIGH BP	2259.98	2007	3509.145
GUYENNE ISSUE	6698.61	850	11651.124
DOG BITES/SNAKE	5895.00	15	11173.589

DENTAL CARE	1992.47	232	4233.100
BURNS	4652.79	24	5389.061
BRAIN HEMORRHAGE	12863.29	63	14136.881
AIDS	6420.00	5	8425.188
CANCER	53695.33	99	136132.440
DON'T KNOW	2482.96	104	3289.326
OTHERS, SPECIFY	4017.59	3875	13880.834

(Researcher's own contribution, PSLM 2018-19)

Table 4.3 presents a detailed summary of the average health expenditure incurred by households for various diseases. The table clearly lists thirty-thirty different diseases, as well as with their related average expenditure, number of comments and standard deviations for each disease. This broad presentation allows for the intensive understanding of domestic spending behavior based on the type of disease type of disease and healthcare needs. The table begins with liver disease and ends "other (specified)" diseases with a range of labels. In particular, average annual expenditure on liver disease is Rs. 4,439 per house, reflects an important level of financial commitment. Similar insight can be prepared for other diseases listed in the table, which collectively reveal patterns in health -related expenses and indicate how home disease preference, frequency and possibly prioritizing healthcare expenses based on socio -economic factors. Data in Table 4.3 not only helps identify spending trends, but also contributes to understanding the financial burden associated with various health conditions. By checking these patterns, we can better assess the determinants of domestic health expenditure and make meaningful conclusions for policy recommendations.

5. Estimation Results

The estimate results highlight that each factor contributes to domestic health expenses in various diseases. Table 4.4 presents a detailed breakdown of these spending components, showing how different variables influence families' health-related financial decisions.

Table 4.4 Estimation Results

Model		Unstandardized Coefficients		Standardized Coefficients	T-Values	P-Values
		B	Std. Error	Beta		
1	(Constant)	2.942	.060		48.658	0.000
	employer, employing less than 10 person	0.068	0.050	0.004	1.361	0.174
	employer, employing 10 or more persons	0.039	0.031	0.004	1.264	0.206
	self-employed non agriculture	0.004	0.003	0.004	1.367	0.172

Contributing family worker	-0.006	0.002	-0.012	-3.678	0.000
own cultivator	-0.002	0.002	-0.003	-1.057	0.291
share cropper	0.005	0.005	0.003	.928	0.354
contract cultivator	0.002	0.005	0.001	.413	0.680
livestock (only)	-0.005	0.003	-0.005	-1.558	0.119
Income	-0.029	0.011	-0.010	-2.768	0.006

(Researcher's own contribution, PSLM 2018-19)

This section presents the full specification and implementation of the model. It aims to determine the significance of each factor influencing health expenditure. By referring to Table 4.4, we can better understand each variable, its magnitude, and its impact on the dependent variable.

6. Employment Status of households

The employment status of a household member is another important factor influencing the family's healthcare spending. This variable significantly affects how households across various occupational groups allocate resources for medical treatment. In this analysis, the category of "paid employees" is used as the reference group to compare health expenditures across different employment subgroups. These subcategories include employers with fewer than ten employees, employers with ten or more employees, and self-employed individuals in non-agricultural sectors. According to the results presented in Table 4.4, there is no statistically significant difference in healthcare spending between paid employees and the first two employment categories mentioned. This is supported by probability values exceeding the 5% significance threshold. However, the category of "family contributing workers" shows a statistically significant difference. Members of this group spend approximately 0.012 units less on healthcare compared to paid employees, indicating a notable disparity in expenditure. For the remaining employment categories listed in Table 4.4, no significant difference in healthcare spending is observed relative to the reference group, again due to p-values exceeding the 5% significance level.

7. Income of the households

This key factor highlights the trends and variations in household health expenditures based on annual household income. Table 4.4 indicates that, on average, health spending by family members on various diseases decreases by 0.010 units with every one-unit increase in household income. The result is statistically significant, as the p-value associated with income is less than 5%, as shown in the table. These findings suggest that income is a critical determinant in shaping household healthcare expenditures

Conclusion

This study focuses on household spending related to various health conditions. In this chapter, the researcher explored multiple socioeconomic and demographic variables to assess their influence on family health expenditures. The findings suggest that an increase in household income leads to a reduction in health-related spending, highlighting the need for the government to implement effective strategies to enhance the financial well-being of Pakistani citizens. Households led by paid employees tend to spend less compared to those involved in agricultural or non-agricultural self-employment, as shown in Table 4.3. This implies varying needs and priorities based on occupational sectors, and underscore the importance of policy attention toward both agriculture and non-agriculture-based

households. Overall, this analysis provides valuable insights into how different social and economic factors shape health-spending patterns among households residing in Pakistan.

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