

# Health services utilization and out-of-pocket (OOP) expenditures in public and private facilities in Pakistan: An empirical analysis of 2013-14 OOP Health Expenditure Survey

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## Research article

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# Abstract

## Background

As low- and middle-income countries (LMICs) progress towards achieving Universal Health Coverage (UHC), there is an increasing focus on measuring both out-of-pocket (OOP) expenditure and health services utilization within countries.

While there have been several reforms to improve health services coverage and financial protection in Pakistan, there is limited empirical research comparing OOP expenditure and health services utilization between public and private facilities and exploring their determinants. In this paper, we have addressed this gap by using the 2013-2014 OOP Expenditure Survey

## Methods

Our study is based on data from nationally representative household survey that includes 7,969 encounters from 4,293 households. In our analysis, we examined factors associated with two outcome variables; the sector where care was sought (public or private) and OOP expenditures. To investigate factors associated with the sector where care was sought, we fitted multivariate models stratified by type of care (i.e., inpatient and outpatient). Next, we fitted multivariate linear regression models to identify determinants of OOP expenditures stratified by type of care.

## Results

Our bivariate analysis shows that most encounters (82.5%) were in the private sector, and 85% of encounters were for outpatient visits. Expenditures on medicines and vaccines account for the largest proportion of OOP expenditures, followed by diagnostic tests and transportation.

We found that the probability of seeking outpatient care in the private sector was higher for men, richer individuals, residents of Punjab and Sindh provinces, and households of smaller sizes. For inpatient care, we found that rural households and females with reproductive health concerns were more likely to seek private sector care.

Importantly, our study found no significant difference in OOP expenditures between public and private facilities for both inpatient and outpatient visits. However, there were differences in OOP expenditures by sociodemographic factors.

## Conclusions

This is the first study that has comprehensively investigated how healthcare utilization and OOP expenditures vary by sector, type of care, and socio-economic characteristics in Pakistan. Its findings will be useful for federal and provincial health ministries in planning and monitoring the impact of the next phase of their social health protection programs and supply side reforms.

## Introduction

As countries progress towards achieving Universal Health Coverage (UHC), there is an increasing focus on measuring and comparing both out-of-pocket (OOP) expenditure and health services utilization in low- and middle-income countries (LMICs)(1, 2). Both utilization and OOP expenditure have strong links to coverage of essential health services and financial protection, the two types of indicators being used to track the progress towards UHC (3). Current global evidence shows that the share of total health expenditure that comes in the form of household OOP payments is relatively high across LMICs (over 50% on average) (4). Similarly, research on health services utilization shows that private sector utilization is also relatively higher in LMICs compared to high-income countries, with over 50% of health services utilization in LMICs at private facilities. However, further analysis of both OOP expenditure and utilization within countries and regions shows that there is also significant variation in these results between different socio-economic groups (5, 6). The recent global health report acknowledges that there are variations in progress towards UHC within countries and encourages more in-depth country level analysis (3).

In Pakistan, a LMIC in South Asia and the sixth most populous country in the world, 66% of its total current health expenditure is in the form of OOP expenditure (7, 8). A breakdown of the total OOP expenditure shows that 81% was spent in the private sector and 19% was incurred by users of public health facilities (9). Pakistan has historically been a chronic under spender on healthcare; public spending on health makes less than 1% of its GDP and less than 5% of government expenditure is spent on health (9). The most recent National Health Accounts (NHA) report shows that Pakistan has one of the highest private sector utilization, with approximately 85% of total health expenditure being incurred at private facilities (9).

## Background

In the last two decades, the federal and provincial health departments in Pakistan have undertaken several initiatives to improve service delivery and reduce OOP expenditure at both public and private facilities. For example, since 2015, the federal government and provincial governments of Khyber Pakhtunkhwa (KP) and Gilgit Baltistan have established three major social health protection programs that provide fully subsidized health insurance coverage to citizens living below the poverty line for illnesses requiring hospitalization. Each program has empaneled a selected list of public and private hospitals to provide the services (10, 11); further details are presented in Annex 1.

A popular supply-side health services delivery reform has been contracting in public sector primary healthcare facilities to private sector managers; this approach is particularly dominant in the province of Sindh, which has contracted in almost all public sector primary care facilities (12). Other reforms by the health departments across the provinces include implementation of revised purchasing mechanisms for large tertiary care public sector hospitals, and increase in healthcare budgets (16, 17).

While there have been several reforms to improve health services coverage and financial protection in Pakistan, there is limited empirical research comparing OOP expenditure and health services utilization between public and private facilities and exploring their determinants. The National Health Accounts (NHA) provides an overall percentage of private and public health utilization, but does not provide disaggregation of utilization and OOP by type of provider and care accessed, disease categories, and socio-economic status (9, 18). Other studies have explored the determinants of public versus private utilization in Pakistan but focused on a specific region or health issues (19–22). There have been no nationally representative studies comparing OOP expenditure and health care utilization across public and private sector facilities and exploring their determinants.

In this paper, we address this gap by using the 2013–2014 OOP Expenditure Survey to provide a comprehensive analysis of the determinants of health services utilization and OOP expenditures in public and private facilities across Pakistan for both inpatient and outpatient services across socio-economic groups and disease categories. We believe that this analysis will be a useful and timely resource for policymakers and practitioners engaged with health financing and service delivery reforms, as provincial and federal health departments are planning to scale up the social health protection programs to the national level, enrolling over 15 million poorest families (over 80 million individuals), and empaneling hundreds of health care facilities across the country (23, 24). This analysis will help guide these programs on the populations and disease burdens to target. Additionally, given the lack of costing studies available in Pakistan, the OOP reported by disease category, provider type and care accessed may be a useful point of reference for social protection programs.

## Methodology

### Data

This analysis is based on data from the 2013-14 OOP Health Expenditure Survey, a population-based household survey conducted for Pakistan's National Health Accounts(18). The OOP expenditure survey was conducted on a sub-sample of the larger Household Integrated Economic Survey (HIES) carried out by the Pakistan Bureau of Statistics. A two-stage stratified random sampling strategy was used with enumeration blocks selected at first stage and households within the enumeration blocks selected at second stage. Urban and rural areas, as defined by the respective provincial governments, were used as sampling strata. Using the household roster, respondents were asked if any household member had an illness within 12 months of the interview date. In case of yes, they were then asked questions about the treatment-seeking behavior and expenditures on the ill person. The questionnaire was administered to 4,828 households (a sub-sample of HIES), 4,293 households of which reported using health care services over the past 12 months and responded to the OOP expenditure survey and the dataset put into the public domain for the NHA includes only the latter.

The survey contained questions on the type of healthcare provider accessed, type of illness, type of care accessed, reasons for visiting a health facility, and health expenditures using a recall period of three months for outpatient services and one year for inpatient services. While a more recent HIES was conducted for the 2015-16 National Health Accounts, data from this survey was not appropriate for this analysis because the survey did not include questions on utilization (9). We also explored analyzing pooled HIES data 2013-14 and earlier years for the analysis, but this was not found to be feasible as the recall period for outpatient care in previous surveys was one month as opposed to the three months used in 2013-14. As a result, when we annualized the expenditures, we found that the trend did not intuitively make sense; this was confirmed from NHA staff, who mentioned the limitations in methodology in earlier OOP expenditure surveys.

The survey included questions on each care-seeking encounter over the recall period, and some individuals reported multiple encounters in more than one setting. In all, there were 9,021 encounters from 8,768 unique household members who were reported to have had had an illness within one year of the interview date. Because we were interested in examining the determinants of care sector and OOP expenditures among those who sought medical care (defined as having an inpatient or outpatient medical visit), we excluded encounters related to self-medication (n = 999 or 11.1%) and health facility or provider visits that were not related to an illness (n = 52 or 0.59%).

Medical care was defined to include care from all primary, secondary and tertiary public facilities, private clinics and hospitals, as well traditional practitioners/healers (e.g., herbalist, hakeem, saina, and dai) and pharmacies. Finally, we excluded 59 encounters (0.65%) where the sector of care was not clearly identified. The final analytic dataset contained information on 7,969 encounters from 7,878 individuals who accessed medical care.

### Variables

The goal of this study was to investigate factors associated with healthcare utilization and OOP expenditures among individuals who sought medical care. We examined two outcome variables for the analysis. The first variable, the sector where care was sought, was a binary variable coded as 1 if the encounter was at a private facility or provider and 0 if the encounter was at a public sector facility or provider. Since inpatient and outpatient were analyzed separately, and each category has unique encounters, there are no individuals with both public and private utilization within the inpatient dataset or outpatient dataset. Private sector providers include private hospitals, private physician clinics, traditional practitioners/healers, pharmacies, and private laboratories. Government-owned facilities, including military hospitals, were classified as public sector.

The second variable of interest was the amount paid out-of-pocket for receiving medical care (continuous). In addition to direct medical expenditures (i.e., doctor's fees, cost of medicine or vaccine, diagnostic tests, surgery, and durables), indirect expenditures, such as transportation costs, admission fees, food, tips, and the cost to the accompanying person were also included in this variable.

We were also interested in understanding how the type of illness and socio-demographic characteristics of the individual, such as sex, age, wealth, household size, province, and urban/rural residence, affect utilization and expenditures, and created independent variables to include in the models. Illnesses were vaguely coded and no standardized disease coding was followed in the dataset. The 'disease type' variable was created with lumping illnesses under broader categories, such as communicable, chronic, accidents/injuries, etc. and where an illness could not neatly fit into a broad category, it was classified as 'other'.

## Statistical analysis

We conducted bivariate analyses to characterize the study sample and estimate unadjusted OOP expenditures by illness type and socio-demographic characteristics. Outpatient utilization was analyzed for the three-month recall period, but outpatient OOP expenditure was annualized for descriptive and multivariate analyses. In the bivariate analysis, we first compared type of healthcare provider accessed by type of care for the encounter, for example community health workers, private hospitals, etc. Next, we compared a breakdown of the average annual OOP expenditures for outpatient and inpatient by sector of care, for instance do patients on average spend more on doctors' fee in the public or private sector in an outpatient setting. Lastly, we compared proportions of expenditure composition per encounter for inpatient and outpatient by sector of care.

To investigate factors associated with the sector where care was sought, we fitted multivariate models stratified by type of care (i.e., inpatient and delivery separately from outpatient), because the factors driving the choice of setting differs based on an individual's perceived needs. Next, we fitted multivariate linear regression models to identify determinants of OOP expenditures stratified by type of care. For the linear regression analyses, we also included sector of care (i.e., public vs. private) as a model covariate, since we were interested in whether there were differences in OOP expenditures by sector of care. Modelling the determinants of health care expenditures is challenging because indicators of health care expenditure often have distributions that is skewed with a large mass with zero expenditures (25). However, in our case, less than one percent of encounters had zero health care expenditure, justifying the use of the OLS model. We used Stata 13 SE (StataCorp, 2013) for data management and all analyses (26). Estimates were weighted and standard errors clustered to account for the complex sampling design.

## Results

### Study sample characteristics

Characteristics of the study sample and their health encounters are shown in Table 1. Of the 7,878 people who had an illness within 12 months of interview, the highest percentage was reported amongst respondents in the 41 to 60 years old age bracket for outpatient encounters (25.3%), and 21 to 40 years old age bracket for inpatient/delivery encounters (47.4%). In terms of income, the highest percentage of people reporting illness were in the wealthiest quintile for both inpatient (28.3%) and outpatient (22.5%), while the lowest percentage was in the poorest quintile for both (16.3% for outpatient, 12.5% for inpatient). Approximately half of the respondents lived in Punjab (49.1% for outpatient, and 57.6% for inpatient), and most respondents lived in rural areas (61.8% for outpatient, and 69.3% for inpatient). Most (85.9%) of the care sought took place in an outpatient setting. Most respondents went to see a private provider; among those who sought outpatient care, 84.6% went to a private provider, while 68.5% of those who accessed inpatient care did so at a private facility.

Table 1  
Characteristics of the study sample and their health encounters

	Outpatient		Inpatient/ Delivery	
	n	%	n	%
<b>Characteristics of the study sample (n = 7,878)</b>				
<b>Total</b>	6,724	85.3	1,154	14.6
<b>Age</b>				
0 to 5 years	1,226	18.2	76	6.6
6 to 20 years	1,632	24.3	143	12.4
21 to 40 years	1,415	21.1	547	47.4
41 to 60 years	1,701	25.3	248	21.5
> 60 years	749	11.1	140	12.1
<b>Sex</b>				
Male	2,950	43.9	358	31
Female	3,774	56.1	797	69
<b>Household wealth quintile</b>				
Poorest	1,097	16.3	145	12.5
Poorer	1,194	17.8	165	14.3
Middle	1,408	20.9	232	20.1
Richer	1,513	22.5	287	24.8
Richest	1,512	22.5	327	28.3
<b>Province</b>				
Punjab	3,300	49.1	665	57.6
Sindh	2,384	35.5	252	21.8
KP	827	12.3	198	17.1
Balochistan	214	3.2	39	3.4
<b>Region</b>				
Urban	2,567	38.2	355	30.7
Rural	4,157	61.8	800	69.3
<b>Household size</b>				
1 to 4	1,490	22.2	206	17.8
5 to 8	3,688	54.9	604	52.3
9 to 12	1,171	17.4	247	21.4
13+	375	5.6	98	8.5
<b>Characteristics of healthcare encounters (n = 7,969)</b>				
<b>Total</b>	6,770	85.9	1,199	15
<b>Disease type</b>				
Communicable	1,108	16.4	150	12.5
Accident/Injury	112	1.7	71	5.9
Chronic	1,705	25.2	237	19.8
Childbirth	N/A		450	37.5
Other female reproductive health concerns	319	4.7	55	4.6

	Outpatient		Inpatient/ Delivery	
	n	%	n	%
Other	3,525	52.1	237	19.7
<b>Setting of care</b>				
Public	5,728	84.6	821	68.5
Private	1,043	15.4	378	31.5

## Bivariate analysis

As shown in Figs. 1 and 2, where they live and the illness type has an impact on where respondents sought care, as respondents in Punjab and Sindh provinces had a higher private sector utilization at 70% and 82% for outpatient care, compared to KP and Balochistan provinces, where this figure was much lower at 58% and 54% respectively.

Our results show that about 90% of utilization for communicable diseases and chronic conditions was for outpatient care, with over 70% of respondents using private sector facilities. Predictably, accidents and injuries had a relatively higher percentage of inpatient utilization. A large proportion of our sample encounters has been categorized as other, and over 80% of the utilization for all other illnesses is for outpatient services at private sector health facilities.

Table 2 presents the distribution of healthcare encounters by provider type and type of care. Most outpatient encounters occurred at a private doctor/clinic (69.4%), followed by public tertiary care (12%), and private hospitals (8.3%). Most inpatient encounters occurred at private hospitals (51.7%), public tertiary care hospitals (27.8%), and private doctor/clinic (8.3%). It is worth noting that traditional modes of care were also consulted; 5.3% and 7.5% of the medical care seekers opted them for outpatient and inpatient respectively.

Table 2  
Type of healthcare provider accessed by type of care

	Type of care <sup>a,b</sup>	
	Outpatient (n = 6,770)	Inpatient (n = 1,199)
<b>Public sector providers</b>		
Community health workers (Lady Health Visitor [LHV]/Nurse, Lady Health Worker [LHW])	0.1	1.2
Primary care (Basic Health Unit [BHU], Rural Health Center (RHC), Dispensary/Maternal & Child Health Care Centre)	2.7	0.8
Secondary care (Tehsil Headquarter [THQ]/District Headquarter Hospital [DHQ])	0.2	0.8
Tertiary care (Tertiary, teaching or specialized hospital, Government hospital)	12	27.8
Autonomous bodies/semi-government hospital (Military Hospital, Social Security Hospital, & other autonomous bodies)	0.4	0.9
Public sector provider sub-total	15.5	31.5
<b>Private sector providers</b>		
Private Doctor/Clinic	69.4	8.0
Private Hospital	8.3	51.7
Traditional modes of care (Homeopath/Hakeem/ Herbalist/Saina /Dai)	5.3	7.5
Others (Laboratory, Pharmacy/Shops, & other private facilities)	1.5	1.4
Private sector provider sub-total	84.5	68.5
<b>Total</b>	<b>100.0</b>	<b>100.0</b>
a. Column percentages shown		
b. Chi-squared test p<0.001		

Table 3 shows average annualized expenditure (PKR) for outpatient and inpatient by sector of care. Although the average total outpatient expenditures between the public and private sectors are similar, differences exist when individual expenditure components are examined. For example, outpatient expenditures on doctors' fee was shown to be significantly higher ( $p < 0.001$ ) in the private sector, where the mean expenditure on doctors' fees was PKR 2110 compared to the average fee in the public sector of PKR 29. There were more differences in inpatient spending categories between the public and private sector. Private sector encounters led to significantly higher expenses on 'parchi/admission fee', 'doctors fee', and 'operation

theater/intervention room charges' ( $p < 0.001$  for all). For non-medical expenses, expenses on 'tips' was found to be significantly higher only for inpatient encounters in private sector facilities ( $p = 0.01$ ).

Table 3  
Average annualized expenditure (PKR) for outpatient and inpatient by sector of care

	Outpatient		p-value		Inpatient				p-value	
	Public sector (n = 1,043)		Private sector (n = 5,728)		Public sector (n = 378)		Private sector (n = 821)			
	Mean	(SD)	Mean	(SD)	Mean	(SD)	Mean	(SD)		
<b>Medical</b>										
Parchi and admission fee	43.81	(149.84)	61.92	(639.60)	0.07	63.24	(674.90)	889.00	(2,311.63)	< 0.001
Medicine/ vaccine	7,877.19	(26,167.09)	5,399.12	(10,427.44)	0.11	3,438.94	(61,366.47)	7,114.99	(16,515.53)	0.51
Supplies/ medical durables	300.56	(1,520.27)	550.12	(5,556.40)	0.04	4,065.80	(60,948.26)	1,213.20	(5,583.05)	0.40
Diagnostic tests	1,008.59	(3,721.70)	1,059.85	(3,823.73)	0.73	2,182.43	(7,616.12)	1,610.13	(4,441.35)	0.22
Doctors' fee	28.72	(407.31)	2,109.64	(3,555.00)	< 0.001	580.78	(6,302.82)	3,646.50	(5,290.76)	< 0.001
Operation theater/ intervention room charges	N/A		44.97	(1,318.50)		883.46	(5,960.55)	3,294.18	(14,471.24)	< 0.001
<b>Non-medical</b>										
Food	162.35	(1,045.61)	164.30	(624.13)	0.96	587.86	(1,231.55)	608.03	(1,142.96)	0.82
Tips	5.57	(144.49)	3.89	(87.66)	0.72	34.99	(159.76)	73.56	(292.25)	0.01
Transport	863.50	(2,072.86)	829.05	(2,651.37)	0.69	1,000.15	(3,142.08)	831.80	(1,258.59)	0.39
Accompanying person costs	97.73	(669.64)	52.88	(462.90)	0.27	747.29	(3,101.04)	559.51	(1,560.77)	0.35
Other	52.55	(373.22)	119.55	(553.66)	< 0.001	95.03	(252.56)	76.19	(229.09)	0.22
<b>Total</b>	<b>10,440.56</b>	<b>(29,456.01)</b>	<b>10,395.29</b>	<b>(18,248.51)</b>	<b>0.98</b>	<b>19,694.94</b>	<b>(135,422.50)</b>	<b>19,917.08</b>	<b>(34,109.45)</b>	<b>0.98</b>

Table 4 shows the expenditure composition per admission or visit by type and sector of care. In the outpatient setting, medicines and vaccines account for about three quarters of public sector OOP expenditure (75.4%); other major drivers of OOP expenditures were diagnostic tests (9.7%) and transportation (8.3%). Medicines and vaccines are also major cost drivers for private sector outpatient visits, but their share of total OOP expenditure (51.9%) is not as large as in the public sector. Instead, doctors' fees (20.3%) and diagnostic tests (10.2%) collectively account for almost 31% of all private sector outpatient OOP expenditures. We observed similar patterns in inpatient settings: public sector expenditures were driven by medicines and vaccines (48%), supplies and medical durables (20.6%), and diagnostic tests (11.1%), while private sector OOP expenditures were driven by medicines and vaccines (35.7%), doctors' fees (18.3%), and operation theater or room charges (16.5%).

Table 3. Average annualized expenditure (PKR) for outpatient and inpatient by sector of care

Table 4  
Expenditure composition per admission or visit by type and sector of care

	Outpatient <sup>a</sup>		Inpatient <sup>a</sup>	
	Public sector	Private sector	Public sector	Private sector
	(n = 1,043)	(n = 5,728)	(n = 378)	(n = 821)
<b>Medical</b>				
Parchi and admission fee	0.4	0.6	0.3	4.5
Medicine/ vaccine	75.4	51.9	48.0	35.7
Supplies/ medical durables	2.9	5.3	20.6	6.1
Diagnostic tests	9.7	10.2	11.1	8.1
Doctors' fee	0.3	20.3	2.9	18.3
Operation theater/ intervention room charges	N/A	0.4	4.5	16.5
<b>Non-medical</b>				
Food	1.6	1.6	3.0	3.1
Tips	0.1	0.0	0.2	0.4
Transport	8.3	8.0	5.1	4.2
Accompanying person costs	0.9	0.5	3.8	2.8
Other	0.5	1.2	0.5	0.4
<b>Total costs</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
a. Column percentages shown				

## Multivariate models

### Factors associated with sector of care

We examined the factors associated with the sector where care was sought among those who sought medical care. Because we anticipated that the factors would differ for those who sought inpatient care or delivery assistance compared to those who sought outpatient care, we analyzed the data on sector of care separately based on type of care. The regression results are presented in Table 5.

Table 5

Marginal effects from logistic regression modelling: factors associated with choosing a private sector provider vs. a public sector provider stratified by type of care

Pr(Private)	Outpatient			Inpatient		
	Marginal effect	SE	p-value	Marginal effect	SE	p-value
<b>Gender</b>						
Male	Ref.			Ref.		
Female	-0.025	0.01	0.02	0.034	0.04	0.41
<b>Age</b>						
0 to 5	Ref.			Ref.		
6 to 20	-0.003	0.02	0.88	-0.042	0.07	0.52
21 to 40	-0.005	0.02	0.78	-0.018	0.06	0.78
41 to 60	-0.016	0.02	0.37	-0.096	0.07	0.14
> 60	-0.011	0.02	0.62	-0.024	0.07	0.73
<b>Wealth</b>						
Poorest	Ref.			Ref.		
Poorer	0.001	0.02	0.97	-0.010	0.07	0.87
Middle	0.002	0.02	0.93	0.058	0.06	0.34
Richer	0.058	0.02	0.001	0.004	0.06	0.95
Richest	0.075	0.02	< 0.001	0.082	0.06	0.19
<b>Region</b>						
Urban	Ref.			Ref.		
Rural	0.001	0.01	0.92	0.112	0.04	0.001
<b>Province</b>						
Punjab	Ref.			Ref.		
Sindh	0.062	0.01	< 0.001	0.053	0.04	0.14
KPK	-0.133	0.02	< 0.001	-0.185	0.04	< 0.001
Balochistan	-0.187	0.03	< 0.001	-0.065	0.06	0.30
<b>Household size</b>						
1–4	Ref.			Ref.		
5–8	-0.050	0.01	< 0.001	0.028	0.04	0.53
9–12	-0.051	0.02	0.001	-0.033	0.05	0.54
13+	-0.060	0.03	0.03	-0.026	0.07	0.72
<b>Disease type</b>						
Communicable	Ref.			Ref.		
Accident/Injury	-0.107	0.05	0.04	0.005	0.08	0.95
Chronic	-0.014	0.02	0.40	-0.095	0.06	0.13
Childbirth	-0.053	0.03	0.08	0.056	0.06	0.38
Other female reproductive health concerns	N/A			0.159	0.08	0.05
Other	0.033	0.01	0.02	-0.008	0.06	0.89
<i>N</i>	6,770			1,199		
<i>Pseudo R-squared</i>	0.06			0.06		

Among those who chose outpatient care (n = 6,724), females were 2.5 percentage points (pp) less likely than males to choose care from a private sector provider (p = 0.02). In addition, the choice of sector also appeared to follow a wealth gradient, where the richest quadrant was 7.5 pp (p < 0.001) more likely, and the second richest quadrant 5.8 pp (p = 0.001) more likely than the poorest to choose private sector care. There were no statistically significant differences in sector of care for respondents in middle and poor wealth quintiles compared to the poorest.

We also observed that the likelihood of seeking outpatient care from the private sector was negatively correlated with household size. Those living in households with more than four individuals were less likely to choose private-sector providers than those in households with 1 to 4 individuals (all p-values < 0.05). Finally, we saw that private care was more likely to be sought for some illness types than others. For example, compared to communicable diseases, accidents and injuries were less likely to be treated in a private sector, whereas other health concerns were more likely to be treated in the private sector.

The patterns observed among those who sought outpatient care were quite different from the patterns observed among those who sought inpatient and delivery care. For example, in contrast to those who sought outpatient care, sex, wealth and household size had no statistically significant association with the choice of seeking care in a public or private sector provider.

One of the only variables which had significance was that individuals in rural areas who sought inpatient care were 11.8 percentage points more likely to seek private care than those in urban areas (p = 0.001). Finally, the only illness type that was significantly associated with seeking private inpatient care was for 'other female reproductive health concerns' (marginal effect 18.4 pp, p = 0.01). No statistically significant differences were observed for the remaining disease categories.

## **Factors associated with out-of-pocket (OOP) expenditures**

After examining factors associated with utilization of care, we looked at factors associated with OOP expenditures for those who sought medical care stratified by type of care (i.e. inpatient and delivery assistance vs. outpatient). The results from the OLS regressions are presented in Table 6.

Table 6  
Factors associated with OOP expenditures stratified by type of care

OOP Expenditure	Outpatient			Inpatient		
	Coeff.	SE	p-value	Coeff.	SE	p-value
<b>Sector of care</b>						
Public	Ref.			Ref.		
Private	323.89	1,746.25	0.85	2,542.07	6,709.02	0.71
<b>Gender</b>						
Male	Ref.			Ref.		
Female	-903.86	814.95	0.27	-15,805.47	9,330.36	0.09
<b>Age</b>						
0 to 5	Ref.			Ref.		
6 to 20	1,615.67	623.96	0.01	5,303.79	6,310.17	0.40
21 to 40	4,534.54	805.67	< 0.001	22,392.37	15,803.35	0.16
41 to 60	7,739.44	1,285.85	< 0.001	6,359.68	5,080.32	0.21
> 60	6,783.22	1,345.96	< 0.001	-1,422.00	5,022.26	0.78
<b>Wealth</b>						
Poorest	Ref.			Ref.		
Poorer	1,635.30	698.94	0.02	4,876.62	2,560.78	0.06
Middle	3,602.40	1,345.75	0.01	7,963.91	2,522.21	0.002
Richer	4,627.93	933.37	< 0.001	9,101.82	3,141.53	0.004
Richest	7,682.89	1,254.77	< 0.001	32,022.94	6,009.46	< 0.001
<b>Region</b>						
Urban	Ref.			Ref.		
Rural	1,911.11	720.91	0.01	6,776.35	4,293.27	0.12
<b>Province</b>						
Punjab	Ref.			Ref.		
Sindh	-3,687.50	600.25	< 0.001	-1,838.55	2,136.70	0.39
KPK	-4,845.11	942.16	< 0.001	9,815.98	9,744.92	0.31
Balochistan	-2,049.35	1,143.39	0.07	-6,556.00	3,912.06	0.09
<b>Household size</b>						
1-4	Ref.			Ref.		
5-8	-460.87	739.11	0.53	-9,374.45	4,215.23	0.03
9-12	-1,553.66	1,038.68	0.14	-16,625.35	5,848.16	0.01
13+	-3,342.74	1,202.09	0.01	9,630.24	22,565.51	0.67
<b>Disease type</b>						
Communicable	Ref.			Ref.		
Accident/Injury	3,168.77	2,860.32	0.27	16,542.05	8,447.22	0.05
Chronic	1,546.07	913.29	0.09	3,796.30	4,169.78	0.36
Childbirth				-6,108.60	6,562.17	0.35
Other female reproductive health concerns	510.30	1,374.94	0.71	-5,626.99	5,169.36	0.28
Other	-3,344.26	795.11	< 0.001	24,261.33	10,018.41	0.02

OOP Expenditure	Outpatient			Inpatient		
	Coeff.	SE	p-value	Coeff.	SE	p-value
Constant	5,507.60	1,649.27	0.001	889.33	4,695.31	0.85
<i>N</i>	6,770			1,199		
<i>R-squared</i>	0.07			0.07		

A major finding from our study is that for both inpatient and outpatient care, private sector clients were not found to have statistically different OOP expenditure as compared with public sector clients, after controlling for other factors. However, several demographic and socio-economic indicators did emerge as statistically significant, as explained below.

Among those who sought outpatient care, patient age was positively associated with OOP expenditures. Compared to patients age 0 to 5 years, those who were 41 to 60 years spent PKR 7,739 more and individuals over 60 years old spent PKR 6,783 more on outpatient care (both p-values < 0.001). Like the results in Table 3, the difference in expenditures were highest between the poorest and the richest quintiles, with the richest spending on average PKR 7,683 more for outpatient care than the poorest (p < 0.001). Rural residents spent over PKR 1,911 more than their urban counterparts (p = 0.01). Additionally, compared to people living in province Punjab, people who lived in Sindh and KP provinces on average spent less for outpatient care (PKR 3,688 and PKR 4,845 respectively, both p-values < 0.001). Perhaps not surprisingly, people in the largest households, with 13 or more members, spent PKR 3,342 less on average than those in households with 1 to 4 members (p = 0.01).

Among those who sought inpatient care, we found that the expenditures did not differ by age, gender, province, rural areas or disease type. There was a positive correlation between wealth and expenditure as we found that wealthier individuals were more likely to pay higher OOP expenditures. This figure is most striking for the wealthiest quintile which spends on average PKR 32,023 more compared to the poorest quintile (p < 0.01). For household size, we found larger households with 5 to 8 members and 9 to 12 members spent on average PKR 461 and approximately PKR 1500 less respectively compared to smaller households with 1 to 4 members.

## Discussion

This is the first study that had comprehensively investigated how healthcare utilization and OOP expenditures differ by sector, type of care, and socio-economic characteristics in Pakistan. Its findings will be useful for the federal and provincial health ministries in planning and monitoring the impact of next phase of their social health protection programs and supply side reforms. This study adds to the limited evidence base of research in LMICs for gauging disparities in healthcare utilization and OOP expenditures across different population groups. We used data from the National Health Accounts OOP expenditure survey, which would enable the utilization of findings for future research both within Pakistan and across LMICs.

An important finding from our study is the high utilization of private sector providers - in our sample, 82.5% of care took place in the private sector. This high utilization of the private sector was also observed in other studies from Pakistan including the Demographic and Health Survey (20, 21, 29, 30). Globally, there is a growing consensus about private sector engagement for achieving UHC due to the high utilization of private sector facilities in LMICs (2, 27). The global evidence on the benefits of engaging the private sector in countries with high private sector utilization, and our province-specific findings on the high utilization of private sector in Punjab and Sindh may provide a rationale for reforms which partner with the private sector in these provinces.

The goal of universal health coverage (UHC) is to ensure that individuals and communities can access health services that they need without risk of financial hardship. A key finding from our study is that both poorer and larger households are accessing less care than their richer and smaller household counterparts, respectively. Households in the poorest household quintile were found to have reported illnesses the least and spend the least on care compared to higher income groups. On average, the wealthiest quintile paid approximately PKR. 7,700 more for outpatient care, and roughly PKR 32,000 more for inpatient care compared to the poorest quintile across both public and private facilities. Similarly, our findings show that households with 1 to 4 members paid approximately PKR 3,300 more for outpatient compared to households with over 13 members, and PKR16,625 more for inpatient care compared households with 9 to 12 members.

The wide difference between wealth groups and household size in utilization and OOP expenditures on health care may signal that poorer families and larger families could be forgoing care and may have significant unmet need due to financial constraints. This interpretation of our results on the influence of relative wealth validates the bottom-up approach opted by the social health protection programs recently adopted by the government, whereby the poorest segment of the population has been targeted as beneficiaries (10, 11). It also supports the programs' decision to enroll all members of the household regardless of family size. Overall, this is a very important area for future research as there is very little information available on the population unable to access care, and unaffordable diseases in Pakistan; such information would be greatly useful for social health protection programs to design an appropriate benefit package.

This study has yielded other important findings for social health protection programs. Invariably, the benefit packages of the social health protection programs cover expenditures on inpatient care, including doctors' consultation, admission, medicines, supplies and medical durables, diagnostic tests,

operation theater/intervention room, and transport (for a certain number of visits in a year). Our analysis shows that the same expenditures were the main cost drivers for inpatient care in both public and private facilities, signaling that social health protection programs have appropriately selected the expenditure categories, however, each program has an annual coverage limit, and future research should explore the extent to which programs have been able to provide financial protection for inpatient needs.

Further, based on our findings, we recommend that any expansion in benefit package of social health protection programs should include outpatient care, as 90% of utilization for communicable diseases and chronic conditions was for outpatient care. The current benefit package only includes coverage for inpatient care which may not be enough to provide adequate financial protection. Similar studies from other countries also show that the total OOP for outpatient utilization is substantially higher than inpatient utilization (5, 6, 31). Our findings regarding outpatient utilization and OOP expenditures, especially those related to geographic location, household size, and wealth status, can be used for developing appropriate payment mechanism for strategically purchasing outpatient care.

As has been found in several other LMICs, consultation fee (usually including doctors and paramedics fee, facility visit or admission charges) was not found to be among the main cost drivers for both outpatient and inpatient care in public facilities (4). Further, no significant difference was found in OOP expenditures on inpatient care in public and private facilities. Hence, the reforms, either supply or demand sided, should go beyond abolishment of user fee and should focus on the provision of essential services, including supply of medicines, medical durables, and diagnostics.

More than 5% of healthcare clients visited traditional practitioners/healers both for outpatient and inpatient. This finding reiterates the need for integration of traditional modes of care into mainstream health system through appropriate education, training, and regulation for rational prescription and usage of traditional medicines in the country (32, 33).

Our study also shows three important results that should be explored for further research. The timing of our study coincides with contracting out reforms in the province of Sindh, where currently all public primary care facilities have been contracted out to private providers. Our analysis shows that 82% of respondents in Sindh used private sector facilities, and it may be helpful to evaluate the impact of contracting out on OOP expenditures and public sector utilization through a follow-up survey. Another interesting finding from our analysis is that rural populations were 11.8% more likely to visit private sector providers for inpatient care than urban populations. This finding may be a result of multiple causes, such as limited presence and perception of poor quality of care in public facilities and could be an important area for further research. Lastly, this study analyses the determinants of OOP expenditures and utilization between public and private providers. Further research could include respondents with self-medication and non-users to explore the determinants of self-medication or non-utilization for those who were sick.

Our analysis also has several limitations which should be accounted for while using these results for policy making. For instance, this analysis has only used one wave for the national health accounts, as the other waves have used different recall periods for outpatient care. As explained above in the methodology section, this was causing great variation in the average OOP expenditure across different waves and would make it impossible to interpret the results while controlling for any bias due to reporting periods. Therefore, our findings are a snapshot in time. In addition, because the recall period for outpatient care was only three months, it is not possible to investigate outpatient utilization rates. Instead, we could only estimate the percentage of care sought in either the public or private sectors among those who sought outpatient care.

We have also drawn limited conclusions on the reasons for utilizing healthcare, as approximately half of the encounters for inpatient and outpatient care were classified as 'other' for the variable on type of disease, and other categories were labelled poorly, such as one which was classified as "women's issues". It was unclear whether there is any overlap between the diseases categorized as other and the current categories. As a result, we can make limited conclusions on the disease specific utilization and related OOP expenditures.

Lastly, this analysis is based on data collected prior to the implementation of social health protection programs in Pakistan. These results for OOP expenditures and its determinants for inpatient care may have changed after the implementation of the programs, but this is not expected to have a large impact on the overall results since both the utilization and OOP expenditures were mostly for outpatient care, which is not covered in the social health protection programs. An important area of future research would be to replicate the analysis using the out-of-pocket expenditure dataset to be published by Pakistan Bureau of Statistics in mid-2020 and assess the impact of the programs.

## Conclusion

Despite the study limitations, this research has comprehensively analyzed a nationally representative out-of-pocket expenditure dataset to address the demand for Pakistan specific research on health services utilization and out-of-pocket payments. The findings can be potentially used as pre social health protection reform scenario. Federal and provincial governments, Pakistan Bureau of Statistics, and related development partners should develop a consensus on the type of evidence to be generated through regular surveys for gauging the impact of social health protection programs on service coverage and financial protection of the enrolled population. The government needs to bolster its efforts for bringing the traditional practitioners/healers into the mainstream. Private sector engagement, though needed, must be carefully managed for ensuring financial protection of the care seekers.

## Abbreviations

LMIC  
Low and Middle Income Country  
OOP  
Out-of-pocket  
UHC  
Universal Health Coverage  
NHA  
National Health Accounts  
KP  
Khyber Pakhtunkhwa  
HIES  
Household Integrated Economic Survey

## Declarations

### Ethics approval and consent to participate:

Not applicable

### Consent for publication:

Not applicable

### Availability of data and material:

The data that support the findings of this study was obtained from National Health Accounts, Pakistan Bureau of Statistics, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of the Pakistan Bureau of Statistics.

### Competing interests:

The authors have no competing interests to declare

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### Authors' contributions:

FK conceived the overall outline of the paper and analysis; RHS and WR performed the analysis; FK, WR, and RHS wrote the first draft; FK, WR, DRH, and RHS reviewed the paper and contributed to the revisions and final draft

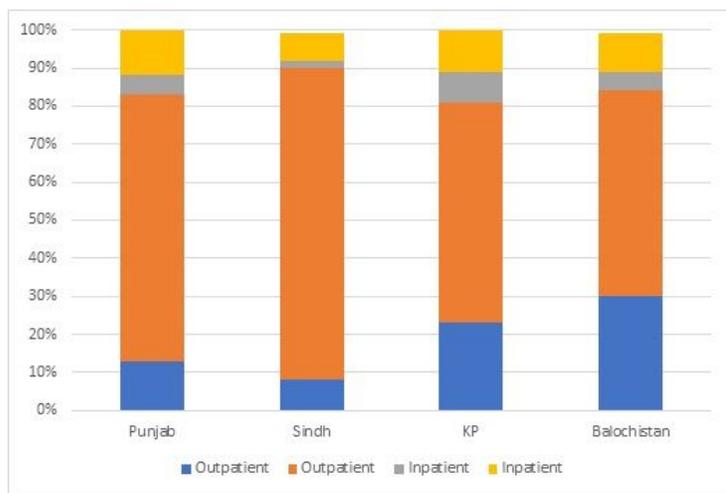
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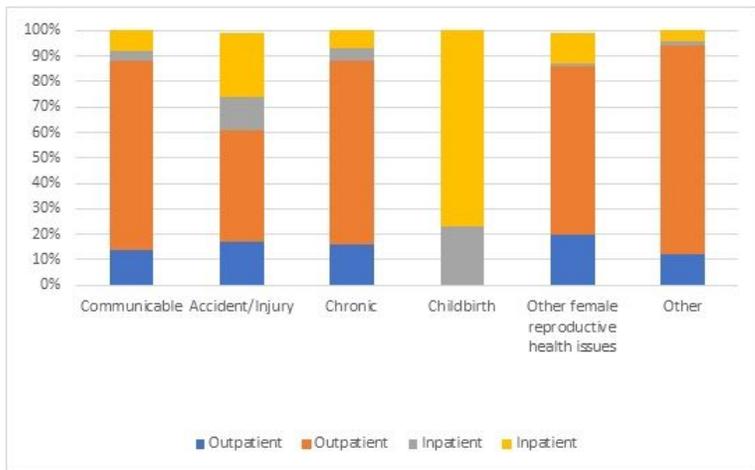
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## Figures



**Figure 1**

Type of provider accessed by province



**Figure 2**

Type of provider accessed by disease category

## Supplementary Files

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