

## ORIGINAL ARTICLE

## COST OF PRIMARY HEALTH CARE IN PAKISTAN

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**Background:** Detailed cost analysis is an important tool for review of health policy and reforms. We provide an estimate of cost of service and its detailed breakup on out-door patient visits (OPV) to basic health units (BHU) in Pakistan. **Method:** Six BHUs were randomly selected from each of the five districts in Khyber Pukhtonkhawa (KPK) and two agencies in Federally Administered Tribal Areas (FATA) of Pakistan for this study. Actual expenditure data and utilization data in the year 2005–06 of 42 BHUs was collected from selected district health offices in KPK and FATA. Costs were estimated for outpatient visits to BHUs. Perspective on cost estimates was district-based health planning and management of BHUs. **Results:** Average recurring cost was PKR.245 (USD 4.1) per OPV to BHU. Staff salaries constituted 90% of recurrent cost. On the average there were 16 OPV per day to the BHUs. **Conclusion:** Recurrent cost per OPV has doubled from the previous estimates of cost of OPV in Baluchistan. The estimated recurrent cost was six times higher than average consultation charges with the private general practitioner (GP) in the country (i.e., PKR 50/ GP consultation). Performance of majority of the BHUs was much lower than the performance target (50 patients per day) set in the sixth five-year plan of the government of Pakistan. The Government of Pakistan may use these analyses to revisit the performance target, staffing and location of BHUs.

**Keywords:** Primary healthcare, healthcare cost, administrative efficiency, health services accessibility

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## INTRODUCTION

Pakistan health expenditure is low in comparison to some regional countries with similar socio-economic status and epidemiological profile. Most of the spending in healthcare in Pakistan is private out-of-pocket. Public spending was around 33% of total spending on health in 2005–06.<sup>1</sup> There were more than 11000 government health facilities across the country in the year 2005–06.<sup>2</sup> Management of these many health facilities with meagre resources has been a real challenge to health policy makers in Pakistan. As a result many health facilities are without basic supplies and other inputs essential for timely services delivery.

There are 572 Rural Health Centres (RHC), 5395 Basic Health Units (BHU) and 4813 Dispensaries in the country.<sup>2</sup> A Dispensary, BHU and RHC are considered as first level care facilities (FLCF). A BHU is an outpatient basic healthcare facility that has a medical doctor post, where as a dispensary performs similar function but through a paramedic or dispenser. The Rural Health Centre (RHC) provides outpatient and some inpatient care in rural areas.

Most of the extension in PHC was carried out during the 1980s and 1990s, throughout the country in inspiration and adaptation of the Alma Atta Declaration of 1977. The PHC model in Pakistan was primarily envisaged in the sixth five year plan of the government of Pakistan. The key objective of this plan for health sector was to provide a comprehensive healthcare to the target population by posting one medical doctor per facility, at least 50 patients per day, extending outpatient

timing from 8.00 am to 8.00 pm and strong referrals of Basic Health Units (BHU) with Rural Health Centres (RHC) and Tehsil and District Headquarter Hospitals (DHQ).<sup>3</sup>

Over the last two decades BHUs have been emphasised as key outlets for the PHC services delivery in the rural areas of country. A BHU serves as the focal point of major of PHC program including vertical programs and routine delivery of PHC services. It is usually staffed with one medical doctor, six paramedics and three support staff. However, beside support of vertical programs and key out let of health delivery of district health system, the provision of PHC services at the BHUs is somehow below the original targets of the PHC model.<sup>4</sup>

Various efforts have been made to improve utilization of PHC facilities in the country. Provision of official residence for medical doctors within BHUs (1980s), enhancement of non-salary items and supplies to PHC facilities (1990s) and renovation of buildings and refurbishment of equipment of PHC facilities (early 2000s) are just a few of such efforts to name.<sup>3,4</sup> All of these efforts had a huge resource implication to the government. However there is little improvement in the utilization of PHC facilities particularly BHUs. The Pakistan Social and Living Measurement Survey (PSLM) regularly reports respondent's choice of health facilities for seeking healthcare since 1990. Over last two decades the PSLM national average of choices to seek care from the BHUs remained less than 10% of

all health seeking choices over the years 1995–96 to 2006–07.<sup>5</sup> (Figure-1)

There are many policy tools to understand the low utilization such as review of management practices, performance audit, cost analysis and third part evaluation. Cost analysis is one of the important policy tools to review resource allocation and health system efficiency. This paper estimated cost of OP visits in BHUs in Pakistan. These estimates suggest that the health policy and planning of primary healthcare services including BHUs can be revisited specifically the mandate of services delivery, staffing patterns and geographical location of BHUs.

## MATERIAL AND METHODS

**Literature Review:** Literature search was carried out with two objectives. Firstly to find appropriate methods of costing and secondly to relate finding of this study with earlier research carried out in the field of cost analysis. EMBASE, Ovid Medline, International Bibliography of the social sciences and Google scholar were used for literature search. Search terms that were included in the search strategy were efficiency in Healthcare; Health care cost; cost of treatment; cost per patient; cost of illnesses; primary healthcare; low and middle income countries (LMIC). Four articles and two grey reports were found to this analysis.

Articles on costing studies in Tanzania, Indonesia, India and Pakistan were reviewed for this analysis.<sup>6-9</sup> Study on Public-private partnership in health in Pakistan was carried out by Future Group International during 1996–97.<sup>10</sup> This study reported recurring cost of primary health services in Pakistan including BHUs. A report on basic package of health service estimated cost of services in Afghanistan.<sup>11</sup>

In the articles mentioned above, cost was estimated from a health system perspective. Only the direct costs born by the health system were estimated excluding out-of-pocket expenditure and third party reimbursements. Costs have been reported in two formats either as cost per capita/person/head and cost or cost break down into different components such as salaries, medicines and maintenance etc. Both the approaches of costing were accommodated in this analysis.

The objective of this study was to estimate cost per OP visit to BHU in the province of Khyber Pukhtonkhwa (KPK) and Federally Administered Tribal areas (FATA) of Pakistan. Outpatient visits were preferred to other performance indicator of BHUs such as outreach activities on health promotion and vaccination. Most of other activities are carried out with the administrative and financial support of vertical PHC programs such as National Program for primary HealthCare and family planning, and Expanded program on immunization. These programs are funded

by the federal government and do not necessarily carry significant financial implication to the district government.

Five districts were selected out of 23 districts of KPK for this analysis. In addition two agencies (An agency is administrative unit in FATA similar to a district) were selected out of seven agencies and 6 frontier regions of FATA. Selection of District was based on purposive sampling with the perspective of health sector reforms priorities in KPK and FATA. In each of five districts and two agency six BHUs were selected at random. Sample size was 4.4% of the total 961 BHUs in KPK and FATA. Thirty BHUs were 3.7% of the total 802 BHUs in KPK. Sample of 12 BHUs was 7.6% of the 159 BHUs in FATA.

A questionnaire was designed to record expenditure by the district health office on 1) salaries of staff, 2) equipment, furniture, 3) medicine and other supplies and 4) utility bills in the selected in the sampled BHUs. Actual expenditure on the BHUs in 2005-06 was obtained from the Executive District Officer Health (EDOH) or Agency surgeon (AS) (similar to an EDO (H)).

Salaries cost was the actual expenditure incurred on the staff posted in the BHUs. Estimated annual capital cost of building and furniture/equipment etc. was based on standard annuitized costing method.<sup>12</sup> Capital cost in BHU was based on cost of establishing a new BHU in 2005, i.e., PKR 10.582 million.<sup>13</sup> A 50 years life for building and 10 years for the equipment and a 3% real discount rate was used for annual capital cost of building, and furniture and equipment. Cost of monitoring and supervision during the year 2005 was based on the appropriation of total expenditure on monitoring visits to BHUs by the EDOH/ASH. The expenditure on travelling included actual expenditure on petroleum products and travel allowance paid to the EDO/AS. This cost is divided by the total number of facilities in a district/agency and then multiplied by the number of BHUs in the sample. Cost of supplies was the actual cost of medicines and other essential supplies to the BHUs during the year 2005–06. Cost of repair and maintenance (minor and major) was the expenditure reported on renovation/repair of buildings of BHUs.

Five field visits were carried out in order to triangulate the data from the data collection tools, data of provincial Health Management Information System (HMIS) with data of BHUs. A total of 12 BHUs were visited in four districts in KPK and one agency in FATA. Data collected by questionnaire was validated with the records of the EDOH/AS office. Such physical features of the BHUs that were difficult to capture in the data collection form but were essential for cost estimation, were verified, i.e., Staff, medicine, equipment and furniture inventory of the BHUs.

During the field visits the data collected from the EDO/AS was cross examined with the records of EDOs/AS. Some variations were noticed in the number of OPV and population of catchment area of the BHUs. On the basis of these findings some data of the EDOH/ASs was replaced with more reliable data from provincial HMIS.

Two types of costs were estimated in this analysis, i.e., total cost and recurring cost. Total cost was important from a long term investment perspective of primary healthcare in Pakistan. Recurrent cost is relevant to annual budgeting of BHUs and other PHC facilities. Recurring cost included all cost except building, equipment, furniture and major repairs. These components constitute significant share in the annual budgets of the EDO (H).

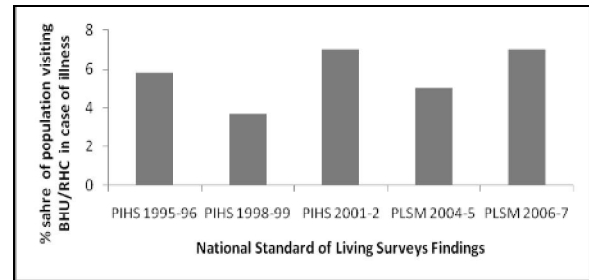
**RESULTS**

Aggregate total cost and aggregate recurrent cost of 42 BHUs was PKR 55.95 million (USD 0.935 million) and PKR 39.93million (USD 0.667 million) respectively. On the average a BHU costs PKR1.33 million (US\$22256) (1 US\$= PKR 59.86 IN 2005) to the public exchequer in a 2005-06. Yearly mean recurrent cost per BHU was PKR 950727(US\$ 15938).

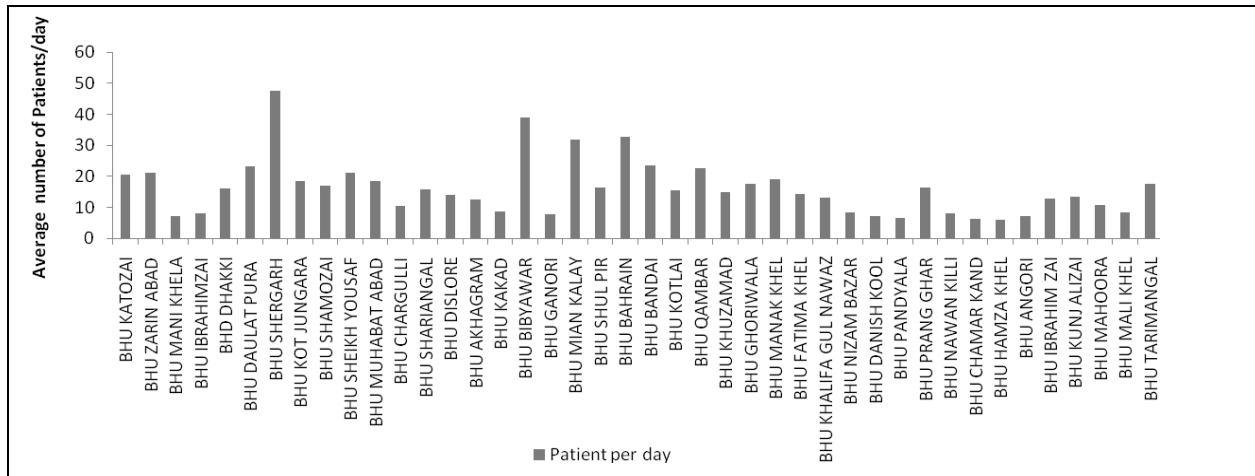
Mean total cost per OPV was PKR 346 (USD5.89) (Standard deviation PKR 164.49). Mean recurring cost per OPV was PKR 245(USD4.1), Standard deviation PKR 121.58. Key findings of the study are summarized in Table-1.

Staff salaries and building cost were two major cost drivers of the total costs. These components constituted 52.20% and 28.25% of the mean total cost respectively. Staff Salaries constituted 90% of the mean recurring cost of OPV. Breakup of mean recurring and mean total cost and different cost component is given in the table-2.

In the year 2005–06, 203614 OPVs were reported to 42 BHUs. User charges were PKR 2 (UDSD 0.03) for each OP visit to primary healthcare facilities Pakistan. The total user charges were PKR 407228 (USD 6803). On the average BHUs were providing PHC services to 16 patients daily: mostly diagnosed with common illness such as Acute Respiratory Infection (ARI) and diarrhoea. Mean OPVs per day in the BHUs is given in that Figure-2. With the exception of BHU Shergarh (Mardan District) and BHU Bibywar (Upper-Dir District), all BHUs in this analysis were performing far behind the target set in sixth five year plan, i.e., 50 OPV per day.



**Figure-1: PHC utilization in Pakistan**



**Figure-2: Average numbers of patients per day**

**Table-1: Summary of finding**

Costs and visit in the year 2005-06 in PKR	Mean and (Standard deviation)		
	Khyber Pukhtonkhwa	FATA	Total
Aggregate year total Cost per BHU	1324086 (168939)	1352704 (74443)	1332262 (278466)
Aggregate yearly Recurring Cost per BHU	944182 (170551)	967089 (92855)	950727 (279066)
Total cost per OP Visit	290 (134)	487 (249)	346 (165)
Recurring cost per OP Visit	206 (97)	344 (183)	245 (121)
Outpatient visits per BHU	5572 (2783)	3038 (2220)	4848 (2689)
Daily OP visits per BHU	18 (9.28)	10 (7.4)	16 (8.96)

**Table-2: Cost analysis**

Cost component	Percentage Share	
	Total cost	Recurrent cost
Salaries	52.83	90.33
Building	27.38	-
Equipment and Furniture	3.66	-
Major Repair	10.47	-
Minor Repair	0.65	1.12
Utilities	1.22	2.09
Supplies	3.47	5.93
Monitoring & Supervision	0.31	0.53

**Table-3: Cost estimates from literature in 2005 prices**

Country	Type of facility	Cost (USD)	Cost (USD) (2005 prices)
Afghanistan <sup>11</sup>	Basic health centre	2.41	2.65
Tanzania <sup>6</sup>	Rural health centre	1.5	4.82
India <sup>8</sup>	Primary health centre	0.918	1.331
Indonesia <sup>7</sup>	Rural health centre	1.6	3.42
Pakistan <sup>9</sup>	Basic health unit	1.69	2.10

**DISCUSSION**

The estimated cost of OPVs to BHUs could be compared with some command standards e.g. 1) previous cost estimates( in current prices), 2) cost of similar services in private sector in 2005 and 3) government’s own performance standards for BHUs.

Green *et al* 2001 reported average actual annual recurrent expenditure of PKR 218960 (US\$ 5616) on BHUs in Baluchistan.<sup>9</sup> In 2005 prices this cost would be PKR390077 (US\$6539) which is in ratio of 2:5 of the average annual recurrent cost/expenditure of BHUs in current estimates, i.e., PKR 950727 (US\$ 15938). The current estimates on cost of primary healthcare could not answer the reasons of an increase in the aggregate recurrent cost of BHUs as compared to previous costs estimates. It is likely that the standard of BHUs staffing and other inputs might differ between Baluchistan and KPK/FATA or might have changed over time from 1995 to 2005.

Anand and Kapor *et al.* (1993) reported cost of USD 0.918 (USD 1.31 in 2005 prices) per OP visit to primary healthcare centre in India.<sup>8</sup> Green *et al* 2001 reported PKR 66 (US\$ 1.69) (USD=PKR38.99 IN 1996) recurrent cost per attendance at BHUs in 1996-97.<sup>9</sup> In 2005–06 prices this cost would be USD 2.1. The mean recurring cost per OPV in this study were find nearer to cost per OP visit to rural health centres in Tanzania (USD 4.82) and cost per visit to rural health centres in Indonesia (USD3.48).<sup>6,7</sup> The average recurrent cost estimates of current study was almost two times then the recurrent cost estimates of Green *et al* (2001).<sup>9</sup> In comparison to fee of general practitioner in private sector in 2005–06 the mean total cost in this analysis is almost six times high.<sup>14</sup> The cost estimates of the literature converted to 2005 prices are summarized in table-3.

Future Group (1997) reported salaries as 70% and non-salaries as 30% of the total cost of the primary healthcare in Pakistan.<sup>10</sup> Green *et al*, 2001 reported recurrent cost comprising 86% on salaries and 14% on non-salary items during 1996–97.<sup>9</sup> The proportion of salaries has slightly increased over the years 1995–2005, i.e., 86% to 90%. In the backdrop of the strategy to enhance non-salary budget to primary health facilities this analysis provide useful information for analysis of PHC policy in Pakistan. Social Action program (SAP) was launched to improve social services delivery in Pakistan. One of the components of the program was to ensure a 15% annual increase in non-salary budget to primary healthcare. From 1993–1997 the program managed an increase in the share of non-salary budget from 25–29%.<sup>4</sup> However during SAP-II period ending 2004 the non-salary spending proportionately declined.<sup>15</sup> Findings of this study confirm that SAP budgetary policies could not generate an impact of enhanced non-salary support to BHUs.

Paper by Green *et al* 2001 developed a standard for cost composition of the primary healthcare facilities including BHUs.<sup>7</sup> For BHU they advocated salary and non-salary share as 49% and 51% respectively and budget enhancement on the basis of same criteria. Based on the cost composition in this analysis an enhancement in non-salary budget to primary healthcare could be a recommendation. However a careful review of the determinants of health seeking at BHUs is essentially important. The cost estimates in this paper could not provide information on actual availability of resources in the BHUs for the year 2005–06. However low utilization and resulting high cost per OPV hints on the issues that have hampered visits to BHUs. Physical presence of staff and provision of supplies at least to the extent of expenditure reported could have been a factor in utilization patters of BHUs.

A recent management reform in Punjab has demonstrated improvement in patient visits and satisfaction with services through contracted management of BHUs. Instead of enhancement of budgets same resources were re-appropriated by rationalizing staff posted at BHUs and converting savings to supplies etc. This improved the cost efficiency and demonstrated significant improvement in BHU utilization and population satisfaction.<sup>16</sup>

The government policy makers may consider revisiting the primary healthcare target set in the sixth five years plan. On the basis of performance there seems hardly any justification for a standardized staffing for each BHU, i.e., one medical doctor, six paramedics and three support person on full-time salaries.

The management reform and cost analysis are important policy tool for performance of services delivery. Yet there are other strategic aspects of access and utilization of BHUs for instance location of facilities, availability and access to private healthcare and affordability of the people. A BHU would still attract few patients if its location does not suite the target communities or/and if they can afford to avail quality and timely health services from private providers.

A BHU also perform routine and outreach activities on vaccination and reproductive health. These activities are carried out under the federal government funded vertical programs namely Expanded Program on Immunization (EPI) and National Program on Primary healthcare and family planning (NP PHC & FP) respectively. So the salaries of vaccinators and lady health workers and their other related inputs were excluded in the costs estimates.

## CONCLUSION

The cost of OP visits has increased with a ratio of 2:5 over ten years. Yet the share of non-salary in recurrent cost has decreased from 14% in 1997 to 10% in 2005. The utilization patterns in Figure 2 strongly endorse that uniform criteria for staffing and other inputs is not cost efficient. These analyses suggest a policy debate on the cost and utilization of primary healthcare services in Pakistan. It would be appropriate to align performance of BHUs with the healthcare need of the target population and resulting demand. This could address the decade's long stigma of poor service delivery and gross inefficiencies in the extensive network of primary health care of Pakistan.

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