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## Costs and Utilization of Public Sector Family Planning Services in Pakistan

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### Abstract

**Introduction:** The public sector provides a third of family planning (FP) services in Pakistan. However, these services are viewed as being underutilized and expensive. We explored the utilization patterns and costs of FP services in the public sector.

**Methods:** We used overall budgets and time allocation by health and population departments to estimate the total costs of FP by these departments, costs per woman served, and costs per couple-year of protection (CYP).

**Results:** The public sector is the predominant provider of FP to the poorest and is the main provider of female sterilization services. The overall costs of FP in the public sector are USD 55 per woman served, annually (USD 17 per CYP). Within the public sector, the population welfare departments provide services at USD 72 per woman served, annually (USD 17 per CYP) and the health departments at USD 39 per woman per year (USD 29 per CYP).

**Conclusion:** While the public sector has a critical niche in serving the poor and providing female sterilization, its services are considerably more expensive compared to international and even some Pakistani non-government organization (NGO) costs. This reflects inefficiencies in services provided, client mistrust in the quality of services provided, and inadequate referrals, and will require specific actions for improving referrals and the quality of services.

**Keywords:** Family planning, CPR, Contraception, Utilization, Policy, Pakistan, Programming, Service delivery.

### Introduction

Pakistan is the sixth most populous country in the world with a population of 174 million and one of the highest fertility rates in the world.<sup>1</sup> In 2006-7 when the Pakistan Demographic Health Survey (PDHS) was conducted, there were 24 million married women of reproductive age (MWRA); of these, only 22% or five million used modern contraception.<sup>2</sup> Since female sterilization accounted for

37% of all modern method users and only nine percent of all sterilized women undergo the procedure in each year,<sup>2</sup> only 2.9 million women avail any family planning (FP) service in any given year; a third of these in the public sector. This paper describes the costs and utilization patterns of public sector FP services.

Until recently, the public sector in Pakistan provided FP services through the Ministries of Health (MoH) and Population Welfare (MoPW). Following the devolution of health functions to the provinces in July 2011, the provincial Departments of Health (DoH) and Population Welfare (PWD) became responsible for these services. In 2007, the MoH/DoH accounted for 18% of all FP services via outreach by lady health workers (LHWs) and health facilities nationwide. The MoPW/PWD served 15% of all FP users from fixed facilities such as reproductive health service (RHS) centres and family welfare centres nationwide, in the same year. All told, the public sector combined to served just under one million users in 2006-7.<sup>3</sup>

The government of Pakistan invests around 0.7% of the GDP annually in health, and a smaller portion goes to FP. However, the public sector provision of FP for the poorest Pakistanis is a crucial public health service. To better utilize the limited public resources for FP, it is essential to understand the costs and utilization patterns of public sector services.<sup>4</sup>

A variety of techniques have been used to estimate FP costs, including costs per unit for each type of contraceptive used per-couple year of protection (CYP), costs of use in initial year,<sup>5,6</sup> estimates of cost-savings from FP programmes,<sup>7</sup> and estimation of fixed and variable costs per unit.<sup>8</sup> Studies on cost calculations have focused on adjusting time allocation for FP in hospitals and clinics and used it as a base to aggregate commodity, personnel, and overheads management costs.<sup>9</sup> Some have used time allocation to calculate labour costs and the number of FP-related visits to estimate capital and supply costs.<sup>10</sup> Other research on costing methodology suggests using the average cost per visit and total number of visits for calculating the actual number of visits.<sup>11</sup> Many of these methodologies require details of time allocation by personnel service outlets and managers, and detailed breakdowns of budgets by service

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outlets or administrative units. Such details are often not available in developing countries outside specific projects, and seldom at the national or provincial levels, making it difficult to apply many of these techniques. In Pakistan, no previous research has analyzed the costs of FP incurred by the public sector. We used available cross-sectional data to estimate average costs per woman and per CYP for the public sector using overall national expenditures and described them in the context of public sector services utilization. Following the example of Janowitz and Bratt,<sup>11</sup> we focus only on programme costs and not user costs. Moreover, we used the common technique of measuring FP cost incurred in government programmes based on time allocated to FP.

### Methodology

We used cross-sectional data from four data sources: Budget utilization for the MoH and MoPW from the national health accounts (2005-06);<sup>12</sup> service utilization from the PDHS 2006-07;<sup>2</sup> a third-party evaluation of the LHW programme<sup>13</sup> which provided data on the time LHWs spend on FP; and the average annual budget from the LHW programme funding document (PC-1 2003-08).

### Utilization of public sector facilities for family planning

The PDHS describes current contraceptive use patterns in Pakistan.<sup>2</sup> Users of short-term methods such as condoms, injections, and oral pills must come in contact with sources/providers of the method many times in the same year and therefore, each of these users was counted a user of the system. According to the PDHS, 9% of women with sterilization and 30% of those with intra uterine contraceptive devices (IUDs) received their method within the last 12 months.<sup>2</sup> Thus, the total users of FP services in any given year were estimated as all of those that use oral pills, condoms, or injections, 9% of all sterilized women, and 30% of all IUCD users.

### Analysis of service usage

Univariate analysis was carried out to compare the characteristics of contraceptive users among the public and private sectors and within public sector ministries. We also tested logistic regression models to understand which variables influence the choice of facility between public and private sectors and within the two public sector ministries. Important variables included current age of respondent, type of residence, wealth index, education, ethnicity, and choice of contraceptive methods.

### Costs of family planning in the public sector

The FP costs incurred by the MoH/DoH and

MoPW/PWD were calculated separately. The calculations for the MoPW/PWDs are fairly simple as all funds for the ministry go towards FP, but only a third of the outpatient visits to department facilities are for FP (programme data). The budget utilization for the federal and provincial levels were therefore aggregated and divided by three to adjust for total utilization of department facilities for FP. The remaining costs were further divided by the total number of women served to arrive at the costs per woman per year.

Total FP cost per women was calculated as follows:

$$(\text{Total PWD budget} * 0.33) / \text{No of women served}$$

The costs of FP under the MoH/DoH are more complex as the ministry and departments provide many services other than FP. Since MoH/DoH FP services are provided by LHWs and at health facilities, these costs were calculated separately. All costs were calculated at the national level.

1) The proportion of time allocated by LHWs to FP<sup>12w</sup> as multiplied by the total LHW programme budget to arrive at costs allocated to FP by the programme. The costs of oversight by the MoH for FP was calculated from the proportion of the ministry's funding that goes towards the LHW programme multiplied by the proportion of time that LHWs spend on FP.

2) For health facilities, the total cost of FP was calculated by adding actual FP programme and oversight costs. The number of women served with FP services from these facilities was divided by the total number of outpatient visits for all public outpatient facilities nationwide (estimated from the Pakistan Social and Living Measurement Survey [PSLM] 2008-9<sup>14</sup>). This proportion was multiplied with the aggregated funding of vertical programmes, hospitals, and management costs to calculate total expenditure on FP at health facilities.

All costs are depicted in Pakistani rupees and United States dollars, where USD 1 = PKR 60, the prevailing exchange rate in 2006-7.

### Results

According to the PDHS 2006-07, of the 2.9 million women receiving any FP service in a given year. Nearly one million (33%) did so from the public sector; eighteen percent of these used DoH and 15% PWD facilities.

### Comparison of usage of public and private facilities

Women using public FP services are older than private

Table-1: Comparison of public and private sector users of family planning methods/services (2008-9), Pakistan.

	Public	Private	p	PWD	DoH	p
Age	37	34	<0.001	38	33	<0.001
Urban residence	34%	33%	0.204	39%	23%	<0.001
Total children ever born	5.6	4.6	<0.001	5.8	5.0	<0.001
Children that died	0.5	0.4	0.002	0.6	0.4	0.005
Births in last five years	0.7	0.9	<0.001	0.5	1.2	<0.001
Age of respondent at firstbirth	19.8	20.3	<0.001	19.6	20.2	<0.001
Heard about FP on television in the last month	50%	50%	<0.001	50%	50%	<0.001
Heard about FP on the radio in the last month	14%	15%	<0.001	14%	14%	0.886
Female household head	6%	5%	<0.001	6%	7%	0.618
Highest year of education	3.9	3.7	0.016	4.0	3.8	0.050
<b>Wealth quintiles</b>						
Richest	19%	46%	<0.001	21%	16%	0.074
Richer	22%	28%	0.451	24%	19%	0.089
Middle	22%	16%	0.034	19%	30%	<0.001
Poorer	20%	6%	<0.001	19%	21%	0.474
Poorest	17%	5%	<0.001	17%	15%	0.443

Data source: Pakistan Demographic and Health Survey (PDHS) 2006-07.

PWD = Population Welfare Department; DoH = Department of Health.

Table-2: Method and service mix at public and private sector facilities for family planning in Pakistan (2006-7).

	Public	Private	p	PWD	DoH	p
Method mix	%	%		%	%	
Pills	9	10	0.46	4	21	<0.001
IUCDs	11	12	0.497	10	15	0.025
Injections	11	12	<0.001	7	21	<0.001
Condoms	11	43	<0.001	3	31	<0.001
Female sterilization	56	23	<0.001	74	11	<0.001
Male sterilization	<1	<1	-	1	0	0.092
Norplant	1	0	0.003	1	1	1.00
<b>Service mix</b>						
Pills	24	17	<0.001	15	28	<0.001
IUCDs	5	6	<0.001	24	3	<0.001
Injections	29	25	<0.001	26	27	<0.001
Condoms	28	48	<0.001	11	40	<0.001
Female sterilization	13	5	<0.001	24	1	<0.001

Data source: PDHS 2006-07.

PWD = Population Welfare Department; DoH = Department of Health; IUCD = intrauterine contraceptive device.

sector users (37 vs. 34 years,  $p < 0.001$ ), poorer, and slightly more educated. They also have higher fertility (5.6 vs. 4.6 children,  $p < 0.001$ ; AOR: 1.23, CI: 1.017-1.487), lost a child (0.5 vs. 0.4,  $p = 0.002$ ) and lived in Khyber Pakhtunkhwa (KPK) (AOR: 3.569, CI: 1.037-12.286). Few women had ever heard of any FP mass media message (Table-1).

Within the public sector, women using PWD FP services are older (38 vs. 33 years,  $p < 0.001$ ), urban (31% vs. 17%,  $p < 0.001$ ), and have more children (6 vs. 5,  $p < 0.001$ ; AOR: 1.253, CI: 1.008-1.558) compared to DoH facility

users. Within the public sector, usage of DoH or PWD facilities is unaffected by the wealth status of women (Table-1).

### Method and service mix at DoH, PWD, and private facilities

Consistent with the overall method mix, female sterilization is the predominant method in either the public or private sectors, followed by condoms in the private sector, whereas no method predominates in the public sector after sterilization. In the public sector, the MoPW provides sterilization and injection services

Table-3: Multivariate logistic regression model for factors associated with public and private sector FP services use, 2008-09, Pakistan.

	AOR	Lower limit	Upper limit
<b>Regression predicting the use of public (vs. private) sector services</b>			
Female head of household	0.371	0.220	0.624
Number of births in last five years	0.705	0.577	0.862
Number of living children	1.230	1.017	1.487
Khyber Pakhtunkhwa residence	3.569	1.037	12.286

**Dependent variable:** Source of service (public or private) - Binary variable.

**These variables were insignificant:** Age of respondent at first birth, Sindh, Punjab, Urban, Sindhi ethnicity, Pakhtun ethnicity, Urdu ethnicity, Balochi ethnicity, Punjabi ethnicity, current age of respondent, highest year of education, rich, respondent currently working, total children ever born.

#### Regression predicting the use of Population Welfare Department (vs. Department of Health) facilities

Female head of household	0.508	0.284	0.907
Number of births in last five years	0.517	0.395	0.677
Number of living children	1.253	1.008	1.558
Pakhtun ethnicity	0.369	0.159	0.856

**Dependent variable:** Source of service with the public sector (Population Welfare Department vs. Health Department) - Binary variable.

**These variables were insignificant:** Urban, age of respondent at first birth, respondent currently working, Punjab, Khyber Pakhtunkhwa, Punjabi ethnicity, Urdu ethnicity, highest year of education, Sindh, rich, Sindhi ethnicity, Balochi ethnicity, total children ever born, current age of respondent.

Data source: PDHS 2006-07.

PWD = Population Welfare Department.

whereas the MoH mainly provided short-term methods such as condoms, pills, and injections (Table-1).

The services at the DoH provide an estimated 664,515 CYP as compared to 1,866,796 CYP by the PWD, which reflects the higher proportion of sterilization services at PWD facilities.

### Costs of family planning in the public sector departments of health

The total public health spending by the ministry and departments of health was PKR49.5 billion (USD 825 million) in 2005-6. This budget was further subdivided into three broad categories -preventive programmes (PKR14 billion or USD233 million), hospitals and clinics (PKR28 billion or USD467 million), and management (PKR7 billion or USD117 million). Preventive programmes included the LHW programme and facilities included the basic health units (BHUs).

The average annual allocation of the LHW programme was PKR 5.3 billion (USD83.83 million). The LHWs work 29.5 hours a week. Of this, they spend3.89% of their time promoting and providing FP services and 1.85% of their time managing FP related complications.<sup>13</sup> Based on this

Table-4: Family planning costs in the public sector.

<b>The Ministry and Departments of Health</b>		
Women served with FP by LHW		394,142
CYP provided by the LHW programme		417,579
Women served with FP at health facilities		113,949
CYP provided at health facilities		158,981
Total women served by the Health Department		508,091
Total CYP provided by the Health Department		664,515
	<b>PKR</b>	<b>USD*</b>
Oversight on FP by Health Department	86 million	1.7 million
Cost of FP by LHW programme	478 million	8 million
Costs of FP at other facilities	101 million	1.7 million
Total costs for FP	721 million	12 million
Total cost of MoH for FP per woman served	1,419	24
Total cost per CYP	1,085	18
<b>The Ministry and Departments of Population Welfare</b>		
Women served with FP at population welfare facilities		443,189
Total CYP provided by the PWD		1,866,796
	<b>PKR</b>	<b>USD*</b>
Total spending on FP	1,926 million	32.1 million
Cost of MoPW per woman served	4,347	72
Total cost per CYP	1,032	17
<b>Combined Costs of FP by DoH, PWD and Ministries</b>		
Per woman served	2,783	46
Per CYP	1,046	17

\*PKR to USD conversion at PKR 60 = USD 1.

Data source: NHA, 2005-06.

FP= family planning; LHW= lady health worker; CYP= couple-year of protection; MoH= Ministry of Health; PWD= Population Welfare Department; MoPW= Ministry of Population Welfare.

5.74% of time allocated to FP services, the LHW programme spends PKR478 million (USD8 million) on FP at an average cost of approximately PKR1,392 (USD23) per woman served per year or USD 25 per CYP.

The total health facilities budget was PKR 27.7 billion (USD461 million)<sup>12</sup> of which an estimated 25% is for outpatient services that see approximately 56 million visits, annually.<sup>15</sup> Of these, approximately 817,000 visits are for FP services to serve the 114,000 women that avail FP from these facilities. Based on this service allocation, the expenditure on FP through facilities is PKR101 million (USD1.7 million) or PKR 1,020 (USD 17) per woman per year.

Department/Ministry overhead costs were estimated from the management budget reported in the National Health Accounts. The LHW programme constituted 11% of the total health budget under the Ministry, and based



on time allocated to FP services (5.74%) via the LHW programme, total cost of oversight on the programme was PKR 71 million (USD 1.2 million). Based on a similar time allocation, the oversight on FP by health facilities was PKR 15 million (USD 0.3 million). These overhead costs are included in the costs of the programmes (Table-4).

### Population Welfare Departments

The total budget for PWDs for the year 2005-06 was estimated at PKR 6.4 billion or USD 0.1 billion.<sup>12</sup> However, only 33% (PKR 1.9 billion) was spent on FP services (PWD, Sindh). Since the PWD served 450,000 women, the costs of FP per woman served were PKR4,347 (USD72) per woman or USD17 per CYP (Table-4).

### Discussion

We found that the costs of FP services in the public sector are USD 55 per woman served or USD 21 per CYP. However, public sector services are the main source of contraception for the poorest women. Users of the public health system are slightly older, more fertile, and poorer than those using private facilities. Both the private and the public sector services predominantly favour short-term methods.

The public sector fulfils an important niche in providing FP to the poorest. A third of public sector users are from the poorest two quintiles compared to around 11% for the private sector. Nearly half of all public sector services are via outreach by LHWs who mainly supply short-term methods such as condoms and pills. The PWD is the main provider of female sterilization in the country which is the most common long-term method in the method mix, although not the commonest service provided. However, the overall footprint of FP services is small with less than three million couples being served annually by all means, with only a third of these being served by the public sector and over half of all FP users buying commodities directly from stores.<sup>3,16</sup> Thus the bulk of FP services are for short-term, client-driven means with most contraception users availing their method without advice from a health provider. This finding, along with the low overall number of FP users suggests low levels of trust in the quality or reliability of available services and service providers.

At USD21 per CYP or USD 55 per woman served per year, the costs of FP in the public sector are considerably higher than the USD 5 seen in many private sector models in Pakistan<sup>17</sup> as well as those seen in many comparable countries. While costs of FP will vary by the region and service types, the average FP cost per user in the Asia are around USD 18, and USD 28 in Africa.<sup>18</sup> Clinical costs —

presumably where costs are shared by other services — are lower at USD 5-15; while community-based programme costs in Asia and Africa vary between USD 5-36.<sup>19</sup> Costs are higher in Africa — ranging from USD 3-36 per woman served in Mali<sup>5</sup> to USD 1-26 in Ethiopia<sup>6</sup> — than in South America where in the Dominican Republic they range from USD 9-12 per CYP.<sup>20</sup>

The predominant reasons for the high public sector costs of FP in Pakistan are underutilization of fixed facilities, weak outreach and non-functioning referrals that lead to inefficient services. Both the PWD and DoH have high fixed costs for personnel and overheads, and devote around 0-13% of all FP spending to commodities in any given year (UNFPA 2010, Khan MA, personal communication). The PWD is the predominant provider of sterilization services, which being an operation, require costly infrastructure. These facilities should receive referrals from the community, LHWs, and health department clinics. In reality, these referrals rarely happen, reducing access to, and utilization of these services, ultimately driving costs up. This is seen by the fact that the PWDs serve approximately 0.4 million women annually nationwide from over 3,000 facilities, or approximately 147 clients per facility. Similarly, the health departments serve around 114,000 women annually from their 5,000 BHUs or around 23 women per year per facility. This low utilization of facilities is complemented in the outreach provided by the nearly 100,000 lady health workers, who serve around 430,000 women with FP, or around four women per LHW per year. All of these represent considerable underutilization of services whose costs are essentially fixed, leading to high costs per woman served or CYP.<sup>21</sup>

There are two ways to reduce costs: either increase utilization of existing facilities, or reduce personnel and facilities.<sup>22</sup> The latter is difficult since job creation within the public sector is one of the key expectations that people have from their elected representatives and officials and is part of the political economy of the public sector.<sup>23</sup> Current utilization is limited by the low levels of trust that clients have in these facilities and by a lack of referral between components of the health system.

Overcoming mistrust to attract clients to public facilities would require addressing the quality of services including consistent supplies, reducing stock-outs, provider competence, client-centred approaches, governance issues such as absenteeism, and making providers see FP as part of their routine work. This would require major rethinking on the part of the leadership of Health and Population Welfare Departments to consider

FP services and their provision as a priority and to address systemic limitations to these services.

Referrals may be possible within the existing setup by focusing on LHWs and health facility providers. Although it is their main responsibility, LHWs spend around six percent of their time on FP and rarely ask women about their FP needs. Neither LHWs nor health facility providers ever refer women for long-term methods.<sup>13</sup> Developing checklists that prompt LHWs and facility providers to ask and refer clients for FP will help. There is a huge unmet need for long-term and permanent methods and the currently underutilized population welfare facilities are the main venues where these methods are available. Having LHWs refer clients with a need for long-term methods to these facilities can essentially double the contraceptive prevalence rate (CPR) by just meeting this need.<sup>24</sup>

Other possible means to increase utilization are incentives to clients for using services. Vouchers have been used successfully in Pakistan for increasing referrals to facilities for births,<sup>25</sup> and elsewhere. Referrals have worked well for FP.<sup>26,27</sup> Recently Packard Foundation and the Marie Stopes Society have started a pilot to see if vouchers aimed at the poorest of women can increase uptake of FP services. Many NGOs in Pakistan have used reminders to their outreach workers to capture these clients, with excellent results.<sup>27</sup> All of these are means to increase "foot traffic" at facilities. If public facilities meet quality standards, women will avail them for FP as they have for other medical care.<sup>28</sup>

Family planning costs less than having an unwanted child<sup>29</sup> and FP use increases with improving socio-economic conditions,<sup>16,22,30</sup> While families currently pay for the bulk of FP services, the government has a critical niche, particularly in serving the poorest. However, this can only be sustained and improved if costs for providing these services are manageable. It is interesting to note that while advocates have rightly sought to increase funding for FP in Pakistan, efficiency of government services has rarely been discussed. One consideration is that, were Pakistan's public sector to achieve the higher level efficiency of USD 4-5 per CYP, current public sector funding could be sufficient to increase CPR from its current level of 30% to well over 50% with government funds alone.

### Limitations

Due to a lack of detailed data on direct and indirect costs of FP incurred by the public sector, we used aggregates and applied proportionate time allocated to FP in

calculating expenditures on FP. This approach approximates how health planners manage programmes by dealing with overall programme spending and also avoids the problem of requiring micro-level data such as personnel and facilities time allocation, since such data are not available in many developing countries.

We did not include provincial breakdown of costs since available data on expenditure by Health Ministry/Departments have insufficient details to allow such disaggregation. In addition, while we recognize that data on costs are from 2005-06 and the PDHS was conducted in 2006-07. However, CPR has changed at <1% annually in the past decade and therefore a significant variance in numbers is unlikely.

We arrived at the number of women availing services from the current method mix, and therefore we may not have counted women that had tried one method and then switched to another within the same year. However, since a woman switching to another method uses services for either method for only part of a year, the total costs for providing these services should "average out" for the entire sample. Additionally, data show that only a minority of contraception users switch methods.<sup>29</sup>

We found that FP costs incurred by the government are high by international and local NGO standards and represent programme inefficiencies due to underutilization of existing public sector services. However, these services are an essential form of security net for the poor. Suggestions have been proposed to increase the efficiency of government services with reforms of service quality, outreach, referral and management in the public sector. An alternative may be to discontinue unwanted services, reduce personnel and overheads at unused/underused facilities and shift these government funds to buy services from a more efficient NGO or private sector that is already stepping into the space vacated by the government. Cost analysis is an effective decision making tool to determine what FP services are required and where. However, once answers are found, they must be acted upon, sometimes in the face of political expediency.

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