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Economic Costs for Outpatient Care in Public and Private Facilities in Delhi, India: Implications for Healthcare Policy

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Abstract

Introduction: With recent reforms for provision of comprehensive primary care, information on unit cost of outpatient visits at different levels of public and private care facilities is vital to inform investments in primary care.

Methods: The costs in 2019-20 were estimated for each type of public facility- Mohalla clinics (AAMC), urban primary health center (UPHC), hospitals, school health scheme, mobile health schemes and non-allopathic (AYUSH) facilities using top-down methodology and adding out-of-pocket expenditures (OOPE) incurred to reflect true costs. The costs of outpatient visit at private clinics and private hospitals were estimated using the inflation adjusted medical OOPE. Data from national health survey, annual government budgets and reports were used.

Results: The average cost of an outpatient visit at a private clinic was ₹1146 (US$16) and was ₹1818 in a private hospital. In comparison, the economic cost per outpatient visit was ₹159/US$2 at AAMC, ₹355/ US$4.6 at a UPHC and ₹1138/US$15.4 in a public hospital. While the cost differential between private and public hospitals is 1.6 times, the cost differential is three times between private clinics and UPHC and seven times between private clinics and AAMC. The cost of an AYUSH facility visit was higher at ₹452/ US$5.3 than at an allopathic UPHC. The facility cost of a UPHC at ₹ 86,60,000 is 3.6 times the cost of AAMC at ₹23,71,000.

Conclusion: Higher investments in primary care facilities in the public sector can promote universal health care at a lower cost.

ABOUT THE AUTHORS

Charu C. Garg is a Visiting Professor at the Institute for Human Development, an independent consultant and advisor with expertise in health financing and policy; costs and cost effectiveness; primary care; economic evaluations; health system strengthening and early childhood development. She has almost 40 years of experience at different institutions including World Health Organization, World Bank, Asian Development Bank, Government of India, Delhi University, and Civil Societies. She has worked in Asia, Europe, Africa, and USA. She completed her Ph.D. from Delhi University and Post doctorate from Harvard School of Public Health, USA. She is proficient in project management; multi-stakeholder alliances; capacity building; policy analysis, resource mobilization and has published over 50 papers and reports and presented widely.

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CONTENTS

Economic Costs for Outpatient Care in Public and Private Facilities in Delhi, India: Implications for Healthcare Policy

Charu C. Garg[1] and Roopali Goyanka[2]

1. INTRODUCTION

Estimates of healthcare costs help providers, purchasers, and policy makers to make informed decisions about healthcare investments and policy choices for designing efficient processes for health service delivery. Unit cost-estimates help to determine allocation of investment across types of facilities and in shifting costs to entities that provide greater value for money [1,2]. Increasing investments in primary care has been emphasized as an affordable and effective strategy to achieve universal health coverage, reduce morbidity and mortality at a lower cost and reduce the burden on secondary and tertiary care [3,4]. Primary care involves an outpatient visit as the first contact with the health system by individuals with different needs for promotive, preventive, curative, and rehabilitative health care. Information about the cost of an outpatient visit at different levels of public and private primary care facilities provides the evidence to shift the delivery of care to facilities with the lowest cost.

In India, only a few facility costing studies are available. Most costing studies highlight the cost of delivering specific services, programs, or condition [5-11]. While most studies have estimated costs for outpatient and inpatient care in public health facilities [12-14], a few have also compared costs in public and private facilities [15,16]. Most studies use input-based bottom-up costing approach for both recurrent and capital expenditures such as human resources, drugs, consumables, utilities, incentives paid under different schemes, equipment, and infrastructure. These studies found the major component of cost to be human resources followed by materials and infrastructure. While bottom-up costing approach may be more

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2. Data curation, Validation, Writing- Reviewing and Editing

accurate in terms of the cost required per patient for the facilities surveyed, it is more expensive and time-consuming as it requires primary data and apportioning the costs by cost centers. Top-down costing studies have an advantage in terms of using actual expenditures incurred in all facilities from published government documents. A recent top-down costing study used administrative records at surveyed public health facilities to estimate recurrent costs [17].

Another set of studies compare the cost of outpatient visits at private and public providers by comparing only the out-of-pocket expenditures (OOPE) incurred in these facilities [18,19]. These facility based studies therefore used only the supply side and OOPE studies used only the demand side expenditures for estimating costs and therefore do not provide the full cost of care for an outpatient visit at a facility. While OOPE is a good indicator of costs for private facilities, full costs of care are better measured by expenditures incurred both by the providers (government expenditures) and the users (OOPE) at public facilities. A study in Chhattisgarh used both the government expenditures and OOPE to estimate the costs of an outpatient visit using the bottom-up approach from the study specific survey [15].

Using top-down strategy, our study includes both government expenditures from published government documents and OOPE from the national health survey to estimate the true costs of an outpatient visit. Using this novel methodology, we estimated the economic costs for outpatient care per visit and costs per facility. Costs were also estimated for different types of care such as allopathic and traditional systems of medicines. All these costs were estimated for different levels of primary, secondary, and tertiary care public facilities. The full cost of a visit at public primary care facility was compared with the costs of private clinic; and the cost of visit at a government district hospital was compared with that at the private hospitals.

2. MATERIAL AND METHODS

2.1. Study Setting

Delhi is a state and the capital city of the country and is primarily urban. It has the highest per capita income in the country, but government health expenditure (0.93 % of gross state domestic product) is lower than national average (1.18% of gross national domestic product) despite having a budget surplus and high tax to GSDP ratio [20]. Higher socioeconomic status of Delhi generates greater

demand for healthcare in the private sector, as seen in high OOPE and 56% of ailments being treated at private facilities [21]. It has some of the most advanced health care facilities in the country and attracts a lot of patients from other parts of the country. In 2014, Aam Aadmi Mohalla Clinics (AAMC) were introduced at the lowest level of public healthcare system for providing basic outpatient consultation, free drugs, and free diagnostics to the users. The existing public dispensaries, mother and child welfare centers, and polyclinics provide a wider range of services. People also access secondary and tertiary care facilities for primary care. Structure of Delhi's health care and the number and types of facilities are provided in supplementary Table 1.

2.2. Data

The data on the number of facilities; number of outpatient visits; government recurrent expenditures for all healthcare facilities of Delhi Government for 2019-20 were taken from the Annual Report, Directorate General of Health Services, Government of Delhi [22]. Data on capital expenditures at the different types of public facilities and grant-in-aid were available from the state budget (Detailed Demand for Grants Number 7) and the outcome budget of Delhi Government for 2019-20 [23,24]. Actual expenditures rather than budgeted or revised estimates were used. Data from the 75th round of the household survey on health by National Sample Survey Organization (NSSO) 2017-18, were used to obtain estimates for OOPE in various types of facilities in Delhi [25]. Consumer price Index were obtained from the Ministry of Statistics and Programme Implementation website [26]. Population data from economic survey was extrapolated based on growth rate to estimate 2019 mid-year population for Delhi [27].

2.3. Methods

Two measures of unit cost have been estimated: cost to the government per facility and cost per outpatient visit at a facility. Using a top-down approach, recurrent and capital expenditures were estimated for the public facilities at different levels of care. Public facilities were classified into the following categories: (i) AAMC (ii) UPHC (urban primary health center including dispensaries, seed PUHC, and polyclinics), (iii) school health schemes (SHS), (iv) mobile health schemes (MHS) and (v) AYUSH (Ayurvedic, Yoga, Unani, Siddha, and Homeopathy) clinics (vi) general allopathic hospitals, (vii) super-specialty hospitals run by Delhi Government and (viii) AYUSH hospitals. While i-v are primary care facilities,

people visit the outpatient departments of even secondary and tertiary care facilities (vi-viii) for first contact purposes in the absence of any well-designed referral system.

For each type of public facility, cost to the government per facility was estimated by dividing the recurrent and capital expenditures by the number of facilities. The full cost per outpatient visit for each type of public facility was obtained by adding government cost per visit and OOPE per visit. Both the financial costs and economic costs to the government were estimated.

2.3.1. Government Financial Costs

Government financial costs are recurrent and capital expenditures as reported in the government statement of accounts. For UPHC, these expenditures were available separately in the government state budgets to estimate UPHC government expenditure. For AAMC, separate information on recurrent and capital expenditures was not available. From the combined recurrent expenditures for AAMC and UPHC (available from the annual report), UPHC recurrent expenditures were deducted to obtain recurrent expenditures for AAMC. These recurrent expenditures were deducted from combined grant-in aid for AAMC (available from the government budget document) to obtain AAMC capital expenditures.

For hospitals, combined recurrent expenditures for inpatient and outpatient services are available from the Annual Report. Using previous studies [28-31], 29% of the total hospital recurrent expenditures were allocated for indirect services and 71% for direct services - the latter including curative, preventive, and promotive care. Further, the direct recurrent expenditures in a hospital were split in the ratio of one-third to two-third for outpatient visits and per bed day of medical IPD. The ratio of recurrent to capital expenditure was estimated to be 91%:9% from the outcome budget, which was then used to estimate the total outpatient expenditures for all the 38 public hospitals in Delhi.

While recurrent expenditures were available directly for AYUSH dispensaries (from the annual reports) and for SHS and MHS (from the demand for grants), the capital expenditures were estimated based on the ratio of capital expenditures in total UPHC expenditures. The government financial cost per visit was obtained by dividing the total government expenditure (capital and recurrent) by number of outpatient visits at each type of facility.

2.3.2. Government Economic Costs

The expenditures in government documents are financial costs and may not include costs such as incentives, staff training, procurement of medicines, goods/services whose price do not correctly reflect their value if used elsewhere; value of gifts and donations, if received; suitable depreciation and discount rate for annualizing capital costs; and shared costs of personnel, consumables, transport and equipment charged under other programs which is normally imputed in bottom-up costing studies. The bottom-up costing studies have estimated share of human resources in total costs as 75% for sub-center, 70% for primary health center and an average of 55% for different levels of hospitals [27-29]. In our study, human resources salaries and wages accounted for more than 90% of overall UPHC expenditures (available from demand for grants). Hence, Government recurrent expenditures were increased by 15% for AAMC and 20% for UPHC to account for items which would not be included as part of financial costs. For hospitals, only 9% of costs are for recurrent expenditures other than human resources, drugs and consumables and office expenses [31]. Hence, recurrent expenditures were increased by 9% to capture the economic costs for hospitals.

2.3.3. Out-of-Pocket Expenditures for Government Facilities

Expenditure on outpatient care which includes doctors' fee, drugs, diagnostics, medical consumables, were used to estimate OOPE for 2017-18 (using health survey). For private facilities, expenditures are available separately for hospitals and doctors' clinics, however for public facilities, expenditures are combined for all types of public facilities. This information is available separately for sub-centres; primary health centres; and public hospitals in NSS 71st round [32], which was used along with the disaggregated information on outpatient visits by types of facilities from the annual report to split the combined OOPE for all public facilities into OOPE for AAMC; UPHC and public hospitals in 2017-18. Total OOPE at public facilities was extrapolated for 2019-20 by using consumer price index for Delhi [26]. Total outpatient visits at public facilities estimated for 2017-18 were extrapolated to 2019-20 using the ratio of visits from the annual reports of 2017-18 and 2019-20 [22]. The OOPE cost per visit was obtained by dividing the OOPE by number of outpatient visits in 2019-20 at each type of facility.

2.3.4. Cost of Outpatient Visit at Private Facilities

The OOPE on doctors' consultation, drugs, diagnostics, and other medical expenditures linked to a visit at private clinics or hospitals, by households can be

assumed to account for both the recurrent and capital costs of outpatient visits. The data for OOPE per visit at private facilities is derived from NSSO 75th round survey for the year 2017-18 and extrapolated to 2019-20 using the CPI [26].

An exchange rate of US$1= ₹71.42, which was the mid-market rate on December 31, 2019, was used to convert the costs into US dollars [33].

3. RESULTS

3.1. Cost of outpatient care at government facilities in Delhi

3.1.1. Recurrent Outpatient Care Costs in Government Facilities

The actual recurrent expenditures, outpatient visits in government facilities and number of facilities of each type in Delhi in 2019-20 are shown in Table 1. Government hospitals account for 45% of all outpatient visits in Delhi in 2019. Of the total hospital recurrent expenditures, 14% was allocated for 4 super-specialty hospitals, 83% was for 30 general allopathic hospitals and 3% for the 4 AYUSH hospitals. Based on the outpatient visits, recurrent expenditure per outpatient visit estimated at ₹1165 (US$16.3) at super-specialty hospitals was ~3 times the recurrent expenditures at ₹363 (US$5.1) per outpatient visit at general hospitals.

Government recurrent expenditures per outpatient visit in a general allopathic hospital was 2.6 times for an outpatient visit in an allopathic dispensary at ₹141 (US$2); and government recurrent expenditures per visit at dispensaries were twice as much as at AAMC at ₹70 (US$1).

Government recurrent cost per outpatient visit under SHS and MHS were high primarily because the scheme conducts several community programs and are not specific to individual needs. The recurrent expenditure per outpatient attendance was higher in all AYUSH facilities as compared to allopathic primary care facilities. The costs per outpatient visit at Unani dispensaries was highest at ₹1679 (US$23.5) as compared to homeopathic and ayurvedic dispensary. These are due to low footfalls and similar budgets across Ayurvedic and Unani dispensaries.

The per capita recurrent costs of outpatient visit at AAMC or allopathic dispensary was estimated as ₹129 (~US$2) for 2019-20, by dividing the combined recurrent government costs at AAMC and UPHC by the midyear population of Delhi. Also, the average number of visits per day was estimated at 65 per AAMC and 156 per allopathic dispensary.

Table 1
Government Recurrent Expenditures, Number of Outpatient Visits, Number of Facilities, and Financial Recurrent Costs per Outpatient Visit for Different Types of Delhi Government Facilities, 2019-20

Types of schemes and facilities	Government recurrent expenditure (₹ '000)	Number of outpatient visits	Number of facilities	Financial recurrent Costs per Outpatient visit (₹)	Financial recurrent Costs per Outpatient visit (US$)
Allopathic facilities					
AAMC[a]	686,299	9,873,549	485	70	0.97
Allopathic dispensaries (UPHC) [b]	1,833,801	12,968,494	266	141	1.98
General hospitals outpatient costs (allopathy)	6993663	19248909	30	363	5.1
Super specialty hospitals outpatient costs (allopathy)	1177095	1010181	4	1165	16.3
Schemes					
School Health Scheme	206071	149,441	60	1379	25.1
Mobile Health Scheme	156884	191,349	22	825	11.6
AYUSH[d] facilities			175		
Homeopathy dispensary	376410	1,991,395	107	189	2.6
Ayurveda dispensary	303115	437,752	46	692	9.7
Unani dispensary	303115	180,532	22	1679	23.5
AYUSH[c] hospitals outpatient costs	263996	840666	4	314	4.4

Source: Annual report 2019-20 p. 117-18 and authors calculation

Notes: a. Aam Aadmi Mohalla Clinic; b. Urban Primary Health Centers; c. Ayurvedic, Yoga, Unani; Siddha, Homeopathy – Traditional systems of medicines

3.1.2. Total Outpatient Care Costs in Government Facilities

The total costs per facility and per visit are shown in Table 2 for public facilities. The average government economic cost per UPHC at ₹ 86,60,000 was 3.7 times the cost of an AAMC facility estimated at ₹23,71,000. If only recurrent costs were compared, the UPHC cost at 68,94,000 was 4.9 times the costs of AAMC facility at ₹14,15,000. In 2019-20, the capital expenditures under newly set up AAMC were higher, leading to higher costs for AAMC. Government economic cost per outpatient visit at AAMC was ₹116 as compared to ₹178 at UPHC and ₹588 at government hospitals. The

total costs including the OOPE at AAMC was ₹159 (US$2) as compared to ₹355 (US$5) at UPHC. ₹1138 (US$15) at government allopathic hospitals. Cost per visit at AYUSH dispensaries at ₹452 were higher than at Allopathic UPHC but lower in AYUSH hospitals as compared to allopathic hospitals.

Table 2

Government Costs per Facility and Per Outpatient Visit for different Types of Delhi Government Public Facilities, 2019-20

Types of Public Facilities	*Government Financial (recurrent + Capital) Expenditure (₹'000)*	*Government Financial Expenditure per facility (₹'000)*	*Government economic Expenditure per facility (₹ '000)*	*Government financial Cost per outpatient visit (₹)*	*Government economic Cost per outpatient visit (₹)*	*OOPE per Outpatient visit (₹)*	*Total (Govt economic + OOPE) cost per Outpatient visit (₹)*
AAMC[a]	1,000,000	2,062	2,371	101	116	42	159
UPHC[b]	1,919,559	7,216	8,660	148	178	177	355
SHS[c]+MHS[d]	362,955	4,426	5,090	1,065	1,225	0	1,225
All Allopathic Hospitals (for outpatient visits)	8,896,848	261,672	285,222	439	479	660	1,138
AYUSH dispensaries (for outpatient visits)	982,640	5,615	6,738	377	452	<0.5*	452
AYUSH Hospitals	264,749	66,187	72,144	315	343	<0.5*	343

Source: Annual Report 2019-20, DGHS, Demand for Grants, Department of Finance, Delhi and authors' calculations.

Notes: a. Aam Aadmi Mohalla Clinic; b. Urban Primary health center; c. School Health Scheme; d. Mobile Health Scheme; e. Ayurvedic, Yoga, Unani; Siddha, Homeopathy; f. Out-of-pocket expenditures

* The data from health survey for 2017-18 shows only 3.9% of the people used AYUSH facilities. Only one person reported OOPE, when the nature of treatment was AYUSH.

3.2. Out-of-Pocket Expenditures in Public and Private Facilities

The cost of a visit estimated by using the average medical OOPE that a patient incurs when using a private facility was estimated at ₹1818 (US$25.5) in a private hospital and ₹1146 (US$16) in a private clinic in Delhi in 2019-20 (Table 3). Private clinics include both allopathic and AUYSH facilities. Medicines are normally provided free at AYUSH facilities as part of the consultation, yet OOPE per outpatient visit for AYUSH medicines was estimated at ₹125 as compared to ₹240 for non-AYUSH medicines in Delhi in 2017-18. OOPE in public facilities which includes all levels of facilities like sub-centers, PHCs and hospitals was ₹433, which was lower than at any of the private facilities.

Table 3
Average Household Medical Expenditure Per visit for an Ailment for Non-hospitalized Treatment during a 15-day Period by Types of Providers, Urban Delhi, 2017-18 and 2019-20

Type of provider/ facility	*2017-18*	*2019-20 (₹)*	*2019-20 (US$)*
Public Facility [a]	387	433	6.1
Charitable/NGO-run facility	878	983	13.8
Private doctor/ private clinic	1024	1146	16.0
Private hospital	1624	1818	25.5
All (including public facilities)	817	914	12.8

Source: Key Indicators NSS 75th round report, July 2017 – June 2018 (table A22 and A23, appendix) NSS Report 586; Table A 60. Data for 2019-20 is estimated using the CPI inflation factor.

4. DISCUSSION

The average cost of outpatient visit in a private clinic at US$16 was 3.2 times the cost of US$5 in UPHC and seven times the cost of US$2 in AAMC. The cost differential in hospitals were much lower at 1.5 times, with an outpatient visit at private hospital at US$ 25.5 and US$15 in a public allopathic hospital. The government's economic cost of an outpatient visit was estimated at ₹116 in AAMC, ₹178 in UPHC, and ₹479 in a government allopathic hospital, with the rest of the cost per visit being incurred due to OOPE per visit when using a public facility. The average economic costs of running a UPHC was found to be ₹86,60,000 which was 3.5 times the costs of the AAMC (₹23,71,000). In terms of recurrent financial costs, UPHC was 4.9 times more costly than AAMC.

Overall, the total costs (including government economic costs and OOPE) of providing primary care in lower-level allopathic public facilities were estimated to be the lowest. An outpatient visit in government hospital at ₹1138 was three times the cost in a UPHC (₹355) and eight times the cost in AAMC (₹159). Even though footfall in public primary care facilities has increased, yet the share of outpatient visits at government hospitals in total outpatient visits at public facilities was 45% [25], implying further shift towards primary care from hospitals is required.

While overall AYUSH dispensaries were only slightly more expensive than UPHC at ₹452, Unani dispensaries were found to be most expensive with the government recurrent cost per visit at ₹1679, largely due to low footfall. The utilization of AYUSH facilities among the public facilities was found to be only

7% out of the total outpatient visits. The health survey estimated the utlisation to be 4% for AYUSH facilities out of which most utilization was at private facilities. The average OOPE on AYUSH medicines was half of that for non-AYUSH medicines, but most of the AYUSH OOPE were incurred when private facilities were used.

The differences in costs per visit and by facilities are seen by nature of ownership and modes of production and level of services provided. Both demand and supply side factors may explain the cost differences between private and public providers. On the supply side, factors like salaries for providers and quality of care; and on the demand side factors such as socio-economic status of the users, and epidemiology treated in different types of facility could explain differences in cost between different levels and types of facilities [34]. Poor-quality of services in public primary care facilities including doctor's absenteeism, lack of faith/ trust; often lead patients to use private sector general practitioners, informal care (including pharmacies), or higher-level secondary and tertiary public and private facilities as the first point of contact, despite financial and physical access constraints [35-37]. A primary survey in our main study showed that proximity to the facility, free drugs and diagnostics were the main reason to shift to public primary facilities; reputation, quality of care and faith in private doctors remained as primary explanations for continued higher utilization of private facilities for outpatient visits.[38]

Our estimates for outpatient care at public facilities are comparable with those estimated for Chhattisgarh, India, in 2020 at ₹400 for public providers, ₹586 for informal private providers and ₹2643 for formal for-profit providers respectively [15]. The government economic cost per outpatient consultation were estimated to be slightly lower at all levels of facilities in Punjab, Haryana, and Himachal Pradesh in 2014-15, and in urban PHC's in Gujarat for period covering 2017-20 [12,17,30]. In Kerala, government cost per outpatient visit were higher at ₹130 in a sub-center [29]. In 2011-12, unit cost of outpatient visit at public and private hospitals ranged from Rs. 94 (district hospital) to Rs. 2,213 (private hospital) [16]. The cost per catchment population in Gujarat for urban areas was lower at ₹49-₹101 for period covering 2017-20 as compared to the per capita government recurrent cost of an outpatient visit at primary care facilities at ₹129 in our study. In terms of facility costs, our results are comparable to studies from Gujarat, Himachal Pradesh, and Kerala, where the average annual recurrent cost of UPHC was estimated as 4.82 (Range:4.3-5.8) times the cost of subcenter [17,29,30]. The top-down costing study

to estimate the costs of Health and Wellness Centers (HWCs) for Gujarat found that average total cost (post-conversion into HWCs) per sub-center was ₹18,70,000; per PHC was ₹120,00,000; per Urban PHC was about 46,00,000 and per corporation urban PHC was ₹77,00,000 [17]. The differences in the services offered and size of the population served can explain some of the differences in costs across facilities.

The strength of our study is the use of top-down costing methodology on secondary data to analyse the costs of facilities and outpatient visits. This avoids reliance on expensive and time-consuming facility surveys. Most countries publish government documents regularly, so quick estimates of costs can be easily obtained to inform resource allocations for facilities. We estimated both the financial (including recurrent, capital and out of pocket expenditure) and economic costs at government facilities to make a fair comparison with costs at private facilities. Bottom-up costing requires estimation of all the resources such as physician or nursing costs, cost of equipment, and cost of infrastructure and maintenance and other recurrent and capital costs. Our study estimated the additional costs for shared and other items charged under other programs to make it comparable with bottom-up costing. Our study has limitations in terms of using ratios from bottom-up costing studies for other states for apportioning hospital expenditures into outpatient and inpatient care. The study also used the ratios of OOPE across types of public facilities from the previous time-period for splitting the total OOPE in public facilities in 2017-18. It is recommended that the future health surveys capture disaggregated information on OOPE by types of public facilities and nature of treatment. Indirect costs of lost productivity due to illness or insurance costs were not included in the estimates. Outpatient costs is generally not a part of the insurance in India except for some formal sector employees. It would be useful to assess the benefits in terms of outputs and outcomes along with costs to assess cost effectiveness of using different types of facilities. However, this was outside the scope of this study.

We conclude based on our estimates that it is less costly to provide outpatient visits in primary care public facilities and hence these should be strengthened to better utilize the limited budgets in the health sector.

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