

CHAPTER 4

EMPIRICAL RESULTS

4.1 Provider Cost

In the analysis of the cost of treatment for Diarrhoeal patients at District Hospital and Thana Health Complex it was found that the maximum cost component was the capital cost, followed in order by the labor costs and material costs. In district hospital percentage of costs shared by capital, labor and material was 41.4%, 25.7% and 23.3% and in Thana Health Complex was 44.1%, 29.8% and 19.0% respectively (Tables 4.1 and 4.3). This implies that higher utilization can significantly help to reduce the average cost of treatment.

However, the capital cost plays a lesser role in OPD than in IPD. In District Hospital at OPD the capital, labor, material and Electricity-Telephone-Water and Fuel and Maintenance costs had shares of 29.8 %, 17.6 %, 37.9 % and 14.7 % respectively of the total unit cost i.e., the average cost per OPD visit (Table 4.1). In the IPD of District Hospital, the capital, labor, material, Electricity-Telephone-Water and Fuel and Maintenance and food costs had the shares of 46.0 %, 29.0 %, 8.1%, 7.5 % and 9.4 % respectively of the total unit cost i.e., the average cost per patient day (Table 4.1).

It was found that in the District Hospital average cost of provider for an OPD visit by diarrhoeal patients was 53.74 Tk. Average cost per patient day it was 317.87 Tk and average cost per episode was 953.62 Tk for diarrhoeal patients at IPD (Table 4.1).

Table 4.1 Total and Average Costs for Diarrhoeal Patients at OPD and IPD of District Hospital in 1997.

Cost items	1	2	3	4	5	6	7	8	9
	OPD cost per year (Tk)	OPD cost / patient (Tk)	%of total cost/patient at OPD	IPD cost Per year (Tk)	IPD cost/ Patient Day (Tk)	%of total cost/ patient day at IPD	Cost per Episode At IPD (Tk)	Total cost (OPD+ IPD) /year (Tk)	%of total cost (OPD +IPD) /year
Capital	90467.3	16.02	29.8	352615.6	146.37	46.0	439.12	443082.9	41.4
Salary (Administration)	31076.5	5.50	10.2	39851.1	16.54	5.2	49.63	70927.6	6.6
Salary (Patient Service)	22406.9	3.97	7.4	182101.6	75.59	23.8	226.78	204508.5	19.1
ETW and FM	44625.0	7.90	14.7	57224.0	23.75	7.5	71.26	101849.0	9.5
Material (Drugs and tests)	114916.5	20.35	37.9	61694.5	25.61	8.1	76.83	176611.0	16.5
Food	0	0.00	0.0	72270.0	30.00	9.4	90.00	72270.0	6.8
Total	303492.2	53.74	100.0	765756.8	317.87	100.0	953.62	1069249.0	100.0

Notes:

Total number of diarrhoeal patient at OPD =5647 in 1997.

Total number of diarrhoeal patient at IPD =803 in 1997.

Average number of days stay at IPD was 3 in 1997.

Total number of patient days at IPD=803*3 =2409 in 1997.

Information in Column 1 and Column 4 from Appendix C, Tables C.6 - C.10.

Column 2=Column 1 / 5647

Column 3=(Column 2/ 53.74)*100

Column 5=Column 4 / 2,409

Column 6=(Column 5 / 317.87)*100

Column 7=Column 5*3

Column 8=Column 1+Column 4

Column 9=(Column 8 / 1,069,249.0)*100

Sources : Manikgonj District Hospital, Bangladesh and Table C.11 in Appendix C.

By comparison, in District Hospital the capital cost for IPD was 3.9 times of OPD, material cost (including drugs and tests) 1.86 times in OPD than IPD (Table 4.2). This mean that capital cost plays a lesser role in OPD though a greater number of patients treated but the higher material costs here caused by the greater number of patients treated. Annual cost of salary for patient service for IPD was 8.13 times of OPD. Also in case of cost items salary of administration and Electricity-Telephone-Water and Fuel and Maintenance cost of IPD was 1.28 times of OPD cost. Finally in District Hospital provider total (capital + recurrent) cost for IPD was 2.52 times of total OPD cost for diarrhoea. Though a greater number of patients treated at OPD except material costs all other costs are much more less than IPD.

Table 4.2 A Comparison of Cost Components of Provider between IPD and OPD of District Hospital in 1997.

Cost items	IPD cost/ Year (Tk)	OPD cost/ Year (Tk)	Remarks
Capital	352,615.6	90,467.3	IPD cost 3.90 times of OPD cost
Salary (Administration)	39,851.1	31,076.5	IPD cost 1.28 times of OPD cost
Salary (Patient Service)	182,101.6	22,406.9	IPD cost 8.13 times of OPD cost
ETW and FM	57,224.0	44,625.0	IPD cost 1.28 times of OPD cost
Material (Including Tests and Drugs)	61,694.5	114,916.5	OPD cost 1.86 times of IPD cost
Food	72,270.0	0	OPD do not have any food cost
Total	765,756.8	303,492.2	Total IPD cost 2.52 times of OPD

Source: Table 4.1

In the Thana Health Complex it was found that the average provider cost per patient for an OPD visit was 63.32 Tk. In case of IPD cost per episode was 813.81 Tk and cost per patient day was 406.90 Tk for diarrhoeal patient (Table 4.3).

In terms of shares, in Thana Health Complex at OPD the capital, labor, material and Electricity-Telephone-Water and Fuel and Maintenance costs had the shares of 35.6 %, 29.8 %, 24.5 % and 10.0 % respectively of the total unit cost i.e., the average cost per OPD visit of the Thana Health Complex (Table 4.3).

In IPD the capital, labor, material, Electricity-Telephone-Water and Fuel and Maintenance and food costs had the shares of 50.9 %, 29.9 %, 7.1 %, 4.7 % and 7.4 % respectively of the total unit cost i.e., the average cost per patient day in IPD of Thana Health Complex (Table 4.3).

Table 4.3 Total and Average Costs for Diarrhoeal Patients at OPD and IPD of Thana Health Complex in 1997.

Cost items	1	2	3	4	5	6	7	8	9
	OPD cost per year (Tk)	OPD cost/patient (Tk)	% of total cost/patient at OPD	IPD cost Per year (Tk)	IPD cost/Patient Day (Tk)	%of total cost/patient day at IPD	Cost/ Episode At IPD (Tk)	Total cost (OPD+ IPD) /year (Tk)	% of total cost (OPD+ IPD) /year
Capital	92799.4	22.56	35.6	164177.1	207.29	50.9	414.59	256976.5	44.1
Salary (Administration)	59161.8	14.38	22.7	34134.6	43.10	10.6	86.20	93296.4	16.0
Salary (Patient Service)	18544.0	4.51	7.1	62085.9	78.39	19.3	156.78	80629.9	13.8
ETW and FM	26176.4	6.36	10.0	15103.1	19.07	4.7	38.14	41279.5	7.1
Material (Drugs and tests)	63808.1	15.51	24.5	23007.6	29.05	7.1	58.10	86815.7	14.9
Food	0.0	0.00	0.0	23760.0	30.0	7.4	60.00	23760.0	4.1
Total	260489.7	63.32	100.0	322268.3	406.90	100.0	813.81	582758.0	100.0

Notes: Total number of diarrhoeal patient at OPD= 4,114; and at IPD= 396 in 1997.

Average number of days stay at IPD was 2 in 1997.

Total number of patient days at IPD=396*2 =792 in 1997.

Information in Column 1 and Column 4 from Appendix D, Tables D.6 - D.10.

Column 2=Column 1 / 4,114

Column 3=(Column 2 / 63.32)*100

Column 5=Column 4 / 792

Column 6=(Column 5 / 406.90)*100

Column 7=Column 5 * 2

Column 8=Column 1+ Column 4

Column 9=(Column 8 / 582,758.0)*100.

Sources: Singair Thana Health Complex, Manikgonj, Bangladesh and Table D.11 of Appendix D.

Table 4.4 A Comparison of Cost Components of Provider between IPD and OPD of Thana Health Complex in 1997.

Cost items	IPD Cost/year (Tk)	OPD Cost/year (Tk)	Remarks
Capital	164,177.1	92,799.4	IPD cost 1.77 times higher than OPD
Salary (Administration)	34,134.6	59,161.8	IPD cost 1.73 times lower than OPD
Salary (Patient Service)	62,085.9	18,544.0	IPD cost 3.35 times higher than OPD
ETW and FM	15,103.1	26,176.4	IPD cost 1.73 times lower than OPD
Material (including tests and drugs)	23,007.6	63,808.1	IPD cost 1.86 times lower than OPD
Food	23,760.0	0.0	OPD do not have any food cost
Total	322,268.3	260,489.7	Total IPD cost 1.24 times higher than OPD

Source : Table 4.3

From the Table 4.4 it is evident that in Thana Health Complex capital cost of IPD was 1.77 times of OPD and material cost (including drugs and tests) of OPD was 1.86 times of IPD. Greater number of patients treated at OPD caused higher material costs but capital cost has lesser role here than IPD. Annual cost of salary for patient service was 3.35 times in IPD than that of OPD cost. Also the salary cost of administration and Electricity-Telephone-Water and Fuel and Maintenance for OPD was 1.73 times of IPD cost. Finally in Thana Health Complex total provider cost (capital + recurrent) for IPD was 1.24 times of OPD for diarrhoea.

Table 4.5 A Comparison between Average Capital Costs of Provider at IPD and OPD of District Hospital and Thana Health Complex in 1997.

	IPD cost/patient Day (Tk)	% of cost difference	OPD cost/visit (Tk)	% of cost difference
District Hospital	146.37	41.62 % less than THC	16.02	40.82 % less than THC
Thana Health Complex	207.29	41.62 % higher than DH	22.56	40.82 % higher than DH

Sources : Tables C.11 and D.11 of Appendices C and D.

Table 4.5 shows that in the IPD of District Hospital capital cost per patient day was 41.62% lower than that of Thana Health Complex and for OPD capital cost per visit also 40.82% lower in District Hospital than Thana health Complex. This may be because of utilization rate of Manikgonj District Hospital was nearly full (99.73 %) and Thana Health Complex utilization rate was much more lower than District Hospital, it was only 56% in Thana Health Complex (DGHS, 1997).

Therefore, the analysis implies two alternative policy implications. First, if we want to reduce the average cost in Thana Health Complex we must have to increase utilization rate; i.e., more patients should be encouraged to seek treatment at Thana Health Complex. Secondly, otherwise people should be encouraged to seek more treatment in District Hospital specially at IPD and to scale down capital in Thana Health Complex.

For OPD, we can encourage people to seek treatment at the nearby health care providing organizations, so as to increase the utilization rate at OPD of Thana Health Complex. Consequently, it will reduce the crowd at District Hospital in OPD.

Table 4.6 A Comparison of Average Recurrent Costs of the Provider at IPD and OPD of District Hospital and Thana Health Complex in 1997.

	IPD cost/patient day (Tk)	% of cost difference	OPD cost/visit (Tk)	% of cost difference
District Hospital	171.50	16.39 % less than THC	37.72	8.06 % less than THC
Thana Health Complex	199.61	16.39 % higher than DH	40.76	8.06 % higher than DH

Sources : Tables C.11 and D.11 from Appendices C and D.

Let now consider the recurrent cost, it is evident from the Table 4.6 that recurrent cost of the provider at IPD per patient day in District Hospital was 16.39% less than Thana Health Complex and also in case of cost / OPD visit at District Hospital was cheaper than Thana Health Complex and it was 8.06% less in District Hospital. The management of the disease seems to imply cheaper in District Hospital than Thana Health Complex both in IPD and OPD.

To summarize, the average provider cost per patient day for IPD in District Hospital was lower than Thana Health Complex. In addition the average length of stay in District Hospital was more than Thana Health Complex and this was may because of more severe cases go to the District Hospital and admitted in the IPD. Average provider cost for an OPD visit in the District Hospital was also lower than Thana Health Complex.

The higher unit cost for both an OPD visit and cost per patient day at IPD of Thana Health Complex than that of District Hospital is perhaps because Thana Health Complex incurred higher capital and as well as recurrent cost for treating the patient due to under-utilization of the Thana Health Complex. In Thana Health Complex in 1997 no diagnostic tests were done for the patients at OPD but in District Hospital some diagnostic tests were also done for OPD patients. Till that in District Hospital cost/OPD visit was even lower because of full utilization (99.73 % in 1997). In case of IPD patients cost/patient day at District Hospital was lower than Thana Health Complex this was may because of District Hospital being more efficient in disease operation and management. However, when compare average capital cost and average recurrent cost, the figures show that the lower average costs could be mainly attributable to the maximum (higher) utilization in District Hospital.

4.2 Patient Cost-A Comparison

To analyse the costs of treatment it is important to know the cost of both patients and providers. In this study costing for the operation of diarrhoeal disease from patients' perspective did not done because of limitation of time and available resources. However, some patients, cost can be estimated by applied some basic assumptions to the results and figures from Begum (1995).

Begum (1995) carried out a study in Bangladesh about cost analysis of childhood diarrhoeal inpatients at Narayangonj District Hospital (General Hospital) from patients' perspective. In her study it was found that in 1995 rural people

incurred cost per patient 1,989.59 Tk and urban people incurred 1,465.40 Tk per patient for IPD of diarrhoea in district hospital.

To be comparable in this study, the patient cost will be measured at 1997 price. Unit cost of rural patient including earning lost by the attendants/parents = $1,989.59 (1+0.14)^2 = 2,585.67$ Tk

where,

1,989.59 Tk = The average cost/patient at IPD of District Hospital at 1995,

0.14 = Loan rate

2 = Time expressed in year = (1995-1997)

Taking into account the result and some figures from Begum's study and on the basis of some assumptions made, patient cost per patient day in IPD and cost per visit in OPD at District Hospital and Thana Health Complex can be estimated at 1997 price as follows:

Patient cost at IPD in District Hospital per episode = 2,585.63 Tk

Hence, patient cost at IPD in District Hospital per patient day = $2,585.63/6 = 430.94$ Tk (where on average IPD treated 6 days).

Estimated patient cost/visit at OPD in District Hospital = {Patient cost at IPD in District Hospital - (Registration fee + Bed cost + Food cost + Wage lost)}/6 = $\{2,585.63 - (10.40 + 33.59 + 260.89 + 645.07 + 740.29)\}/6 = 895.39/6 = 149.23$ Tk

Estimated patient cost per patient day at IPD in THC = (IPD patient cost per episode at district hospital - Travelling cost) / 6 = $(2,585.63 - 164.22) / 6 = 403.57$ Tk.

Estimated patient cost/visit at OPD in THC = (Patient cost at OPD of district hospital - Travelling cost) / 6 = (895.39-164.22)/6 = 731.17/6 =121.86 Tk

Details of cost figures used above for estimations were shown in the Appendix E, Table E.1.

It is noted that-

(1) Narayangonj District Hospital is a tertiary care general hospital and the average length of stay of the diarrhoeal patient at IPD was 6 days.

(2) It was also assumed that one in-patient day at IPD equivalent to one OPD visit.

(3) All the calculations made at 1997 price.

(4) It was assumed without losing generality that in-patient cases were the severe cases and outpatient cases were the non-severe cases.

It was also noted that only in the Thana Health Complex provider cost for the management of severe cases i. e., in the IPD was higher than that of the patient cost. Patient costs were higher than that of provider cost in IPD and OPD of District Hospital and also in the OPD of Thana Health Complex (Table 4.7). This may indicate that Thana Health Complex provides inefficient service for IPD i.e., for severe cases (the significant higher provider cost). The lower utilization rate could be a part of the high average provider cost in Thana Health Complex.

Table 4.7 A Comparison of Average Provider Costs, Patient Costs and Total Costs at IPD and OPD of District Hospital and Thana Health Complex in 1997.

	IPD (severe cases)		OPD (non-severe cases)	
	Cost/patient Day at District Hospital	Cost/Patient day at Thana Health Complex	Cost/OPD visit at District Hospital	Cost/OPD visit at Thana Health Complex
Provider Cost (value at 1997 price)	317.87 (42.45%)	406.90 (50.20%)	53.74 (26.48%)	63.32 (34.19%)
Patient Cost (value at 1997 Price)	430.94 (57.55%)	403.57 (49.80%)	149.23 (73.52%)	121.86 (65.81%)
Total	748.81 (100%)	810.47 (100%)	202.97 (100%)	185.18 (100%)

Sources : Tables 4.1, 4.2 and E.1 of Appendix E.

In case of IPD of District Hospital and Thana Health Complex the total average costs were similar for cost per patient day and it was 602.44 Tk and 603.18 Tk respectively. But in OPD average total cost per visit was about 15% higher (Table 4.8) in District Hospital than Thana Health Complex .

Individually average recurrent costs of the provider both at IPD and OPD of District Hospital was lower than that of Thana Health Complex and it was 16.39% and 8.06% respectively. Average recurrent cost of the patient also lower in both cases at Thana Health Complex than District Hospital and it was about 7% in IPD cost /patient day and 22.46% in OPD cost /visit. This was because of patients incur less travel and food cost, also may incur less wage lost.

Table 4.8 A comparison of Average Recurrent cost of Provider's, Patient's and Average Total Recurrent Costs at IPD and OPD of District Hospital and Thana Health Complex in 1997.

Recurrent cost	IPD cost/patient day (Tk)		% of cost difference Between DH & THC	OPD cost/visit (Tk)		% of cost difference between DH & THC
	DH	THC		DH	THC	
Provider cost (value at 1997 price) (% of total)	171.50 (28.47)	199.61 (33.10)	DH 16.39% Less than THC	37.72 (20.17)	40.76 (25.07)	DH 8.06% Less than THC
Patient cost (value at 1997 price) (% of total)	430.94 (71.53)	403.57 (66.90)	DH 6.78% Higher than THC	149.23 (79.83)	121.86 (74.93)	DH 22.46% Higher than THC
Total	602.44 (100%)	603.18 (100%)	DH 0.12 % Lower than THC	186.95 (100%)	162.62 (100%)	DH 14.96% Higher than THC

Sources : Tables 4.1, 4.3 and 4.5 .

Taking into consideration of patient perspective, non-severe cases (OPD cases) should be encouraged to seek treatment in Thana Health Complex because of lower cost (22% lower). However, severe cases like IPD cases, District Hospital performed better and should be encouraged to serve by at least two reasons. First, average provider cost is much lower (16% less of IPD compared to 8% less of OPD case). Second, though patient cost is higher for both IPD and OPD cases due to travel and food cost, it is only 7% higher in District Hospital than Thana Health Complex for IPD cases compared to 22% higher for OPD cases. Moreover, if taking into consideration that, the quality of District Hospital services is higher (discussion of satisfaction in the next section); the quality of District Hospital services combined with the slightly higher patient cost should strengthen the reason to support the argument in favour of District Hospital for severe cases.

4.3 Satisfaction of the People

The perceived satisfaction of the people towards different health care service points did not measured in this study because of limitation of time and available resources. However, the perceived satisfaction of the people towards different health care service points had been studied and measured by Begum in Bangladesh in 1995. In her study satisfaction of the urban and rural patients (respondents) was measured, towards the services/activities of District Hospital and as well as Thana Health Complex.

Urban respondents have no idea about Thana Health Complex but they are satisfied about most of the services and activities of the district hospital.

On the other hand rural respondents are much more satisfied about almost all the services of the District Hospital like doctors availability, doctors attention towards the patient, laboratory services, adequacy of laboratory facilities, drug satisfaction, nursing services, food quality, diet schedule and a bit less satisfied about the waiting time to see the doctor at District Hospital because of over crowding. But most of the

respondents are not satisfied about the location of the district hospital because of its longer distance from their home.

In her study it was also found that rural and urban respondents regardless of their education, occupation and income prefer district hospital though the patient incur a substantial amount of recurrent cost which was much more greater than the average provider cost in District Hospital.

Satisfaction of the rural people towards the district hospital was much more higher and on the contrary District Hospital provide in-patient as well as outpatient service with less cost of provider in comparison to Thana Health Complex. This was mainly because of its maximum utilization and also may be District Hospital was more effective and efficient in their services.

In this situation the rural more severe diarrhoeal cases might be referred to the district hospital for health care service because the provider cost is much more lower there and may be efficient which was reflected from Begum's study about the satisfaction of the people for management of severe diarrhoeal cases.

In case of OPD services cost difference per visit in district hospital and in thana health complex was not so much. So it is advisable to avail the nearby health care or hospital OPD facility by the people as a quick preventive measure to avoid in-patient care which cost much for the management of the disease. In those cases people need not to go too far i.e., need not to travel too far from home and can get treatment or services at a lower cost of the consumer because they need not to incur too much travel cost and as well as at a lower cost of the service provider through increased utilization i.e., rural people should use Thana Health Complex and urban people to District Hospital.