



## CHAPTER 5

### EMPIRICAL RESULTS

#### 5.1 Cost Calculation

Cost of antenatal care services at THC and H&FWC was considered from three dimensions. These are – cost incurred for covering each pregnant mother, cost required for providing at least 3 antenatal visits and also the cost for conducting each normal delivery. Detailed discussion of these three components is given below.

The costs are calculated on an annual basis for the whole period. Costs of antenatal care were calculated separately for each organization in MCH-FP program that was used in each program separately. Identify all resources that were involved in that different levels of service center and identify the unit cost of each resource. Total costs of the program are the sum of cost of capital items and recurrent items. The purchasing prices were used and some cases market price was used for the cost calculation. Both cost and outcome were collected from the service record in 1998 at the service center.

To identify the difference between the cost of Thana Health Complex's service center and Health & Family Welfare Center for antenatal services, the following variables were sought for:

1. Capital cost:

- Building cost
- Equipment cost

2. Recurrent cost:

- Material cost – drugs, equipment (recurrent items)

- Maintenance – equipment and stationary
- Personnel cost – salary and benefit, traveling
- Utilities - electricity and water bills

### 3. Effectiveness

- Number of pregnant mothers coverage.
- Number of antenatal visits.
- Number of normal delivery.

The calculation of annual costs both capital and recurrent cost items for antenatal care in 1998 were done by using appropriate allocation criteria. To allocate costs means to share or assign them to one or more cost activities. Allocating these costs there are two ways: equally among the cost activities or proportionately (Raynolds 1993). In this study both were used for allocating the costs.

In this study the information about Thana Health Complex, Health & Family Welfare Center and outcome of antenatal services under MCH-FP program in 1998, were provided by Medical Officer (MCH-FP) and Thana Family Planning Officer of Fultala thana and Asst. Engineer of Construction Maintenance & Management Unit, Boaria, Khulna from records.

#### **5.1.1 Calculation of Capital Cost**

Capital costs which composed of the cost of capital items i.e. building, equipment for providing antenatal services both for THC and H&FWC under MCH-FP program in 1998. All costs were calculated at 1998 price and then the average annual costs of all capital cost items were calculated.

To calculate the annual average costs of all capital cost inputs, the following information is needed-

- Identify all capital items.

- Determine its construction or purchasing price and year.
- Estimate the lifetime of assets.
- Interest rate in study period i.e. 1998.

In this study space of building which is used to conduct ANC service asses for its cost. The actual estimated cost of THC is not available so construction costs of building were collected from related construction department's record.

By using the formula in Section 4.3.2, the annual capital costs of building of the Thana Health Complex and Health & Family Welfare Center were calculated.

The annual capital cost of the THC building was calculated as follows:

Construction value of the building ( $C_t$ )	= Tk. 5,349,270.00
Interest rate during the period of study( $r$ )	= 14 %
Study period (current year)	= 1998
Expected useful life of the building ( $n$ )	= 30 years
Construction year of the building	= 1978

So the average annual cost of the building -

$$\begin{aligned}
 ACk &= \{5,349,270.00 (1+0.14)^{1998-1978}\}/30 \\
 &= \{5,349,270.00 (1+0.14)^{20}\}/30 \\
 &= \{5349270.00 (13.74348987)\}/30 \\
 &= 73,517,638.06/30 \\
 &= \text{Tk. } 2,450,587.94 \text{ /year}
 \end{aligned}$$

The annual capital cost of the Health & Family Welfare Center building was alculated by similar way to obtain the average annual cost of the capital item of building.

The other capital cost items i.e. height and weight scale for both centers were calculated by using the market price in 1998. Because of this capital cost item was

donated. So the average annual capital cost of that capital cost item was obtained by market price by dividing the annualization factor.

The average annual capital cost calculation of capital cost items are shown in the following Table 5.1

**Table 5.1: Average Annual Cost of Capital Items Related to Antenatal Services under MCH-FP Program in 1998.**

Capital items	Life time	Making year	Making Cost	Interest rate	Value at 1998 price (Taka)	Average annual cost (Taka)
THC building	30	1978	5,349,270.00	14 %	73,517,638.06	2,450,587.94
Weight & height scale	5	1996	-	14 %	995.57	290.00
H&FWC building	30	1985	603,500.00	14 %	3,314,670.34	110,489.01
Weight & height scale	5	1996	-	14 %	995.57	290.00

Sources:

1. From the Construction Management and Maintenance Unit, Boria, Khulna.
2. From the medical equipment store.

### **A) Cost of Building**

Allocation for the capital costs of the building for administration and antenatal care at THC was calculated by the following way:

#### **Cost for space of administration department:**

Total building space area of THC = 16,617 sq.ft

Space for Family Planning department = 1,474 sq.ft

In THC total number of different types of patient visits were 7,581 and total number of antenatal patients was 381 who were made total number of 901 visits. At H&FWC total number of patients were received services by the number of 17,320 visits including antenatal visits. Total number of pregnant women were 424 who were received total 1,345 antenatal visits at H&FWC

Space for administration department of MCH-FP program at THC = 1,074 sq.ft.(Table A.1 in Appendix A)

So administration department covered  $(1,474/16,617*100) = 6.46\%$  of total hospital building area.

Administration department managed four service centers in different areas. So it was assumed that space of administration department at THC was used by four service centers.

So each service center used  $1,074/4 = 268.5$  sq.ft

and  $268.5/16,617*100 = 1.62\%$  of total hospital building area.

The capital cost of building of administration was reallocated to antenatal care as percentage shared of total patient services for each service center. So reallocation of administration space of building to antenatal care is at THC =  $(268.5/7,581*901) = 31.91$  sq.ft and other services was =  $(268.5/7,851*6680) = 236.59$  sq.ft (on the basis of total number of patients).

So antenatal services at Thana Health Complex under MCH-FP program used of administration area  $(31.91/16,617)*100 = 0.19\%$  and other services 1.43 % of total hospital area which was allocated to each service center.

The annual capital costs of administration of building (THC) related to antenatal patient service under MCH program were calculated as below:

In 1998 price average annual capital costs of building = Tk 2,450,587.94

Reallocated building cost of administration to each service center was  
 $= \text{Tk. } 2,450,587.94/100*1.62 = \text{Tk. } 39,699.52 \text{ /year.}$

The capital cost of building of THC was allocated to the both service centers and it was found that the calculated amount of cost was the same for each service center.

Reallocated building cost of administration to antenatal care at Thana Health Complex in 1998  $= 2,450,587.94*0.19 \%$   
 $= \text{Tk } 4,656.12/\text{year.}$

Similarly reallocation of administration space of building of THC to antenatal care in H&FWC on the basis of total patients was  $(268.5/17,320)*1,345 = 20.85 \text{ sq.ft}$  (Detailed in Tables B.1 and B.2 of Appendix B).

So for antenatal service at H&FWC was used administration space of THC building  $(20.85/16,617)*100 = 0.13 \%$  of total hospital area (THC).

The annual capital cost of administration for antenatal care in H&FWC was  
 $= 2,450,587.94*0.13\%$   
 $= \text{Tk. } 3,185.76 \text{ /year.}$

#### **Cost for space of patient services department:**

Space for patient service department of MCH-FP program at THC = 400 sq.ft

So patient service department covered  $400 \text{ sq.ft}/16,617*100 = 2.41 \%$  of total hospital space area (Detailed in Tables A.2 and A.5).

Allocation of annual cost of the capital cost item of H&FWC building was calculated in the following way:

In this service center there is no administration department. So the annual capital cost of building was only allocated into patient service and the allocation of the calculated

annual capital cost of the building were done on the basis of the percent of total space area covered by the total patient services.

Total building space was = 1,207 sq.ft of which antenatal patient service covered (1,207 sq.ft/17,320)\*1,345 = 93.73 sq.ft (on the basis of total number of patient visits).

Antenatal patients used = (93.73 sq.ft/1,207)\*100 = 7.77 % of total building area. So the annual capital cost of clinic building for antenatal care

$$= (110,489.01/100)*7.77$$

$$= \text{Tk. } 8,585.00/\text{year}$$

### **B) Cost of equipment**

Weight and height scale machine was used for antenatal services, but this cost item was donated. So market price was used to calculate the capital cost of that item by using annualization factor. It was assumed that the weight and height scale was used only for pregnant mother service. So the annual capital cost of this item was directly allocated to antenatal services of both service centers in 1998.

Market price of weight and height scale machine was at 1998 price

$$= \text{Tk. } 995.57$$

So the annual capital cost of weight and height scale for antenatal service was

$$= \text{Tk. } 995.57/3.433 \text{ (Market price/Annualization Factors)}$$

$$= \text{Tk. } 290.00$$

For both service centers, this amount of cost was same to antenatal care.

The allocation of annual cost calculation of capital items at Thana Health Complex and Health & Family Welfare Center was summarized in Table 5.2 below.

**Table 5.2:** Summary of Capital Costs at Thana Health Complex and Health & Family Welfare Center for Antenatal Care in 1998.

Cost items	THC (Taka)	H&FWC (Taka)
Building cost for patient service	7,106.71	8,585.00
Capital cost of administration	4,656.12	3,185.76
Weight and height scale	290.00	290.00
<b>Total</b>	<b>12,052.83</b>	<b>12,060.00</b>

Sources:

Tables A.5, A.6 and Tables B.5, B.6, B.7 of Appendices A and B respectively.

### 5.1.2 Calculation of Recurrent Cost

#### A) Salary of administrators

Health personnel spent their time to the activities as percentage share with them. Total time spent to each health service center by the health administrators who were related to antenatal services is summarized in Table 5.3.

**Table 5.3** Time Allocation of Administrators for Manage Patient Service.

Administrator/ Supervisor	Total working hour/year	% of time spent for admin/supervision	Total time spent to each service center for admin/supervision (hr)
MO(MCH-FP)	1960	15 %	294
TFPO	1960	10 %	196
ATFPO	1960	5 %	98
SrFWV	1960	10 %	196
Accountant	1960	10 %	196
Storekeeper	1960	10 %	196

Source: Interview with the health administrators.



At THC total patient visits were 7,581 including 901 antenatal visits and it was  $(901/7,581)*100 = 11.88\%$  of total patients, in the same way antenatal patient visits were 1,345 in H&FWC and  $(1,345/17,320)*100 = 7.77\%$  of total patients.

So salary of administration (support or auxiliary service cost) were reallocated to antenatal care at the rate of 11.88 % at Thana Health Complex and 7.77 % at Health and Family Welfare Center.

It should be noted that Medical Officer (MCH-FP) provided administration and patient service for each health service. Salary of administration of Medical Officer (MCH-FP) per year for antenatal care at THC was calculated as follows:

Average salary of Medical Officer (MCH-FP) per year = Tk 90,216.00

Total working day in 1998 = 245 days.

Total working hours/year = 245 days\*8 hours = 1,960 hours/year.

So average salary/hour = Tk 90,216.00/1,960 = Tk 46.03

MO (MCH-FP) spent 15 % time for administration to each service center.

So the time spent for administration for service center =  $1,960*15\%$   
= 294 hours/year

Time spent for antenatal care at THC =  $294*11.88 = 34.93$  hours

So the annual salary cost of administration for antenatal care at THC  
=  $46.03*34.93$   
= Tk.1607.83.

Allocated salary of administration and supervision to antenatal care at Health and Family Welfare Center were calculated by using similar way mentioned above. (Detailed on Tables A.9 and B.10).

## **B) Salary of patient service**

Recurrent cost of salary for direct patient service was calculated on the basis of time spent by the personnel for antenatal visits and then allocated directly.

It was observed that Medical Officer, Family Welfare Visitor and Ayia spent time to per visit of pregnant mother were 15 minutes, 20 minutes and 5 minutes respectively for both the service centers. Ayia spent 5 minutes/visit with the consulting doctor/FWV for direct support of antenatal patient service.

Salary cost of personnel for patient service calculated in the following way:

For example salary cost of Family Welfare Visitor (FWV) as a patient service provided at THC in 1998 was calculated by using above way as follows -

Total per year salary of FWV was (monthly salary + yearly bonus + travel cost)

= Tk 96,796.00

Total working days in 1998 = 245 days

Total working hours/day = 8 hours/day

Total working hours/year =  $245 * 8 = 1960$  hours/year.

Average salary/hour =  $96796.00 / 1960 = \text{Tk. } 49.39$

Salary cost per activity/year =  $49.39 * \text{time spent for each activity}$   
performed by the FWV.

So when the family welfare visitor worked the activity of antenatal service, from the above calculation, the salary cost for antenatal care was determined in following way:

Average time spent for pregnant women services = 20 minutes per visit

Total antenatal visit covered = 901 visits for 381 pregnant women.

So she spent total time for ANC/year =  $901 * 20 / 60 = 300.33$  hours.

So, the cost of salary for the activity of 381 pregnant women visits was  
=  $49.39 * 300.33 = \text{Tk. } 14,833.30$ .

MO (MCH-FP) consulted 39 pregnant mothers, who were referred from FWV in 1998. He spent on average 15 minutes time/visit of antenatal care for consultation and total time for antenatal patient was  $39 * 15 / 60 = 9.75$  hours. So the cost of salary for antenatal patients service was  $9.75 * 46.03 = \text{Tk. } 448.79$ .

So total amount of time spent by each person for patient service calculated by multiplying the time spent by each person/visit of antenatal care in 1998. Then calculated total cost of time for each person by multiplying the total time spent by each person by his/her per hour salary cost for antenatal care separately and then all health personnel costs added together to get total cost for antenatal service (Detailed in Table A.10 of Appendix A and Table B.12 of Appendix B).

### **C) Cost of drugs**

The total number of 381 pregnant women consumed drugs by the number of 901 visits at Thana Health Complex and total number of 424 pregnant mothers used drugs by the number of 1,345 visits at Health & Family Welfare Center. So the costs of drugs were directly allocated into pregnant mothers supplied for each service center separately (Table A.11 and Table B.13).

### **D) Cost of equipment**

It was assumed that the B.P machine with stethoscope was used for 7,581 times at Thana Health Complex in 1998. Total number of pregnant women (381) used 901 times in that period. So on the basis of utilization rate  $(901/7,851 \times 100) = 11.88\%$  of times was used by pregnant women and other services was 88.12 % of times.

The calculated annual cost of B.P machine for antenatal care at THC was (price of B.P machine\*11.88%) =  $792.00/100 \times 11.88 = \text{Tk.}94.09$  (Detailed on Table A.12 and Table B.14 of Appendix A and Appendix B respectively).

### **E) Cost of maintenance (utility cost)**

Recurrent cost of maintenance were allocated to antenatal care for each service center as percentage shared with the activity. It should be mentioned that there were no repairing costs in 1998 for both the health service centers. Maintenance costs e.g.

electricity bill, stationary bill was also allocated to antenatal care at THC according to its coverage i.e., at the rate of 11.88%.

There is no separate meter of patient service room for electricity bill. Water bill and electricity bill would not be separated because underground water is lifted for supply through electricity at THC. Electric bill for patient service room was Tk. 9,680.00. The cost of electricity consumed for antenatal service was  $(9,680 \times 11.88\%) = \text{Tk } 1,149.98$  (On the basis of utilization rate).

Also in the similar way allocation of the calculated average annual costs of recurrent cost items were done to the antenatal care to know the recurrent costs of the provider for antenatal care service at Health and Family Welfare Center in 1998.

The annual recurrent cost of recurrent cost items of Thana Health Complex and Health & Family Welfare Center are summarized in Table 5.4

**Table 5.4:** Summary of Recurrent Costs at Thana Health Complex and Health & Family Welfare Center for ANC Program in 1998.

Cost items	Thana Health Complex	Health & Family Welfare Center
	Total cost (Taka)	Total cost (Taka)
<b>Salary cost of health personnel:</b>		
Salary of Administration	5,547.51	3,628.55
Salary of patient service	17,076.50	23,792.94
<b>Cost of material items:</b>		
Drug	3,229.56	2,731.12
Equipment	2,235.09	2,845.54
Maintenance & stationary cost	1,577.66	597.98
<b>Total cost</b>	<b>29,666.32</b>	<b>33,596.13</b>

Source: From Appendix A and Appendix B.

The detail computation of capital cost items and recurrent cost items of the Thana Health Complex and Health & Family Welfare Center showed in Appendix A , and Appendix B.

After find out the capital cost and recurrent cost for ANC service from each level the total cost of ANC service in each level at 1998 were added together for antenatal service in the THC (Appendix A, Table A.14) and Health & Family Welfare Center (Table B.16 in Appendix B) by using this formula is given bellow—

$$\text{Total cost} = \text{Total capital cost} + \text{Total recurrent cost}$$

## 5.2 Total Cost for Antenatal Care

From the preceding section it was found that the maximum cost component of antenatal care for pregnant women at THC and H&FWC was the labor cost, followed in order by the capital costs, material cost and utility costs. In THC percentage of costs shared by labor, capital, material and utility was 54.23 %, 28.89 %, 13.10 % and 3.78 % and in H&FWC was 60.06 %, 26.42 %, 12.21 % and 1.31 % respectively. (Table 5.5).

Table 5.5: Total Cost for Antenatal Care at THC and H&FWC in 1998.

Cost item	THC		HFWC	
	Total cost/year (Tk)	% of total cost	Total cost/year (Tk)	% of total cost
Capital cost	12,052.83	28.89	12,060.76	26.42
Salary of administration	5,547.51	13.30	3,628.55	7.95
Salary of patient service	17,076.50	40.93	23,792.94	52.11
Material cost (drug & equipment)	5,464.65	13.10	5,576.66	12.21
Maintenance/utility cost	1,577.66	3.78	597.98	1.31
<b>Total</b>	<b>41,719.00</b>	<b>100</b>	<b>45,656.89</b>	<b>100</b>

Source: Tables A.14 and B.16 from Appendices A and B.

### Capital Cost:

The capital cost plays an important role in THC and H&FWC. As administration department of Family Planning program managed and controlled four-service centers, so the capital cost of administration was assigned to both services center equally. But in THC percentage of costs shared by the cost of patient service, administration and equipment was 58.96 %, 38.63 % and 2.41 % and in H&FWC was 71.18 %, 26.41% and 2.41% respectively (Table 5.6). It implies that the capital cost of administration of antenatal care for THC is higher (Tk. 4,656.12) than that for H&FWC (Tk. 3,185.76). The difference was due to providing more patients services in H&FWC. It was also found that total capital cost at THC and at H&FWC was more or less the same, but the total number of patients treated varied between two service centers. It also implies that higher service utilization can significantly help to reduce the cost of antenatal care.

Table 5.6: Total Capital Costs at Thana Health Complex and Health & Family Welfare Center for Antenatal Care in 1998.

Cost items	THC (Tk)	% of total cost	H&FWC (Tk)	% of total cost
Building cost(patient service)	7,106.71	58.96	8,585.00	71.18
Capital cost of administration	4,656.12	38.63	3,185.76	26.41
Weight and height scale	290.00	2.41	290.00	2.41
<b>Total</b>	<b>12,052.83</b>	<b>100.00</b>	<b>12,060.76</b>	<b>100.00</b>

Sources: Table A.7 and Table B.8 of Appendices A and B respectively.

### Recurrent Cost:

The percentage of total recurrent cost shared by salary of patient service, salary of administration, material and utility cost was 57.56 %, 18.70 %, 18.42 % and 5.32 % of the total recurrent cost in the THC (Table 5.7). While the salary of patient service, salary of administration, material and utility cost had the shares of 70.82 %, 10.80 %.

16.60 % and 1.78 % respectively of the total cost at H&FWC. It was found that the salary of administration was allocated to the each service center equally.

By comparison at H&FWC the salary of administration was lower than that of THC, this means the greater number of patient visits were served with little administrative cost. On the other hand higher salary of patient services at H&FWC caused by the greater number of pregnant women received much more visits though material and utility cost play a lesser role. Though a greater number of pregnant mother got antenatal care at H&FWC except salary of patient service all other costs are much more less than THC. At THC higher utility cost might be due to modern facility and lower utilization of services:

Table 5.7 Total Recurrent Costs for Antenatal Care at THC and H&FWC in 1998.

Cost item	THC		H&FWC	
	Total cost/year (Tk)	% of total cost	Total cost/year (Tk)	% of total cost
Salary of administration	5,547.51	18.70	3,628.55	10.80
Salary of patient service	17,076.50	57.56	23,792.94	70.82
Material cost (drug & equipment)	5,464.65	18.42	5,576.66	16.60
Maintenance/utility cost	1,577.66	5.32	597.98	1.78
<b>Total</b>	<b>29,666.32</b>	<b>100</b>	<b>33,596.13</b>	<b>100</b>

Notes: Column 3 = Column 2/29,666.32\*100

Column 5 = Column 4/33,596.13\*100

Table A.14 of Appendix A and Table B.16 of Appendix B.

### 5.3 Average Costs for Antenatal Care

To get the costs per visit of antenatal care is computed by dividing the annual total cost of antenatal care by the total number of antenatal patient visits in 1998.

The detailed data on the average cost of each service is shown in Table 5.8.

The average cost i.e cost per visit at THC was higher than that at H&FWC and it was found that Tk. 46.30 at THC and Tk. 33.95 at H&FWC. It was also found that the average cost of all cost item was individually higher for THC (Table 5.8).

The percentage share at THC for salary of patient service, capital cost, material cost, salary of administration and utility cost were 40.93 %, 28.89 %, 13.10 %, 13.30 % and 3.78 % of the total unit cost.

At H&FWC average cost shared for salary of patient service, capital cost, material cost, salary of administration and utility cost were 52.11 %, 26.42 %, 12.21 %, 7.95 % and 1.31 % of the total unit cost (Table 5.8).

Table 5.8 Annual Costs for Antenatal Care of THC and H&FWC in 1998.

Cost item	Thana health complex			Health & Family Welfare Center		
	Cost/year (TK.)	Cost/visit (TK.)	% of total cost/visit (Tk)	Cost/year (Tk.)	Cost/visit (Tk.)	% of total cost/visit (Tk.)
Capital cost	12,052.83	13.38	28.89	12,060.76	8.97	26.42
Salary of administration	5,547.51	6.16	13.30	3,489.50	2.70	7.95
Salary of patient service	17,076.50	18.95	40.93	23,808.00	17.69	52.11
Material cost	5,464.65	06.07	13.10	5,609.20	4.15	12.21
Utility cost	1,577.66	1.75	03.78	597.98	0.44	1.31
<b>Total</b>	<b>41,719.15</b>	<b>46.30</b>	<b>100</b>	<b>45,656.89</b>	<b>33.95</b>	<b>100</b>

Notes: Information in column 2 and column 5 is from Table A.14 of Appendix A and Table B.16 of Appendix B

The figures shown in the table imply that the average cost of capital cost and recurrent cost between two service centers THC ranks higher. It should be cited that the cost of material was nearly to same for the both center, but by the same cost in H&FWC provided more pregnant women service. It indicated the efficiency of service providers due to serve more antenatal service at minimum cost or inputs.



Obtaining both average capital cost and recurrent cost we can then compare those of THC and H&FWC as shown in Table 5.9

**Table 5.9:** Comparison of Average Capital Cost and Recurrent Cost of THC and H&FWC in 1998.

Cost item	THC		H&FWC		% of cost difference
	Cost/visit (Tk)	% of unit cost	Cost/visit (Tk)	% of unit cost	
Capital cost	13.38	29.04	8.97	26.97	In THC 2.07 %higher than H&FWC
Recurrent cost	32.69	70.96	24.91	73.53	In THC 2.57 % less than H&FWC

Notes: Information from Tables 5.6 and 5.7

Column 2 = Total capital or recurrent cost/ total number of visits.

Column 6 = Column 3 - Column 5

Table 5.9 shows that at THC capital cost per antenatal visit was 2.07 % higher than that at H&FWC. This may be because of lower service utilization rate at THC under MCH program. In terms of average recurrent cost it was 2.57 % higher in H&FWC. This might be due to more service utilization at H&FWC.

However, when average capital cost and average recurrent cost were compared, the figures showed that the lower average costs were mainly attributable to maximum utilization of H&FWC service.

#### 5.4 Effectiveness Measurement

The effectiveness for ANC service of each organization was determined as the more coverage of pregnant women, number of mother who received at least 3 ANC visits and number of normal delivery. So in terms of the effectiveness of service center, at THC pregnant mother coverage, at least 3 antenatal visits and normal delivery was 79.38 %, 42.52 % and 93.37 % respectively (Table 5.10).

**Table 5.10: Annual Effectiveness and a Comparison of the Effectiveness of MCH Program for providing ANC in THC and H&FWC in 1998.**

Activity	THC	H&FWC	% of effectiveness difference
Pregnant women coverage	79.38 %	88.33 %	8.95 %
At least 3 ANC visits	42.52 %	69.58 %	27.06 %
Normal delivery	93.37 %	99.00 %	5.63 %

Source: Table A.15 of Appendix A and B.17 of Appendix B.

At H&FWC it was found that the pregnant mother coverage, at least 3 antenatal visits and normal delivery was 88.33 %, 69.58 % and 99 %.

At H&FWC the average cost of per antenatal visit was lower but the effectiveness of antenatal care was much higher than that of THC. Comparing between H&FWC and THC it was found that pregnant women coverage was 8.95 % and at least 3 antenatal visits coverage was 27.06 % higher at H&FWC. These might be due choice driven by the quality perception or less consumers cost incurred (like travel cost or wage lost) to receive service from H&FWC. It was also found that who got antenatal care at H&FWC occurred normal delivery 5.63 % higher than that at THC. On the other hand the MCH service at THC was found to be less effective than that of H&FWC.

### **5.5 Cost-effectiveness Measurement**

Using figures on cost obtained from section 5.2 and effectiveness in section 5.4 we there compare cost-effectiveness of antenatal care services in THC and H&FWC as shown in Table 5.11.

Table.5.11: Total Cost, Average Cost and Cost-effectiveness at THC and H&FWC at in 1998.

Service center	Total cost of ANC visit (Tk)	No. of ANC Visits	Cost/ Visit (Tk)	Effectiveness			Cost-effectiveness		
				% of pregnant mother coverage	% of at least 3 visits/ mother	% of normal delivery	Pregnant mother coverage	At least 3 visits/ mother	Normal delivery
THC	41,719.15	901	46.30	79.38 %	42.52 %	93.37 %	109.50	257.53	123.43
H&FWC	45,656.89	1,345	33.95	88.33 %	69.58 %	99.00 %	107.68	154.77	114.43

Notes: Column 4 = Column 2/Column 3

Columns 5,6 and 7 from Table A.15 & Table B.17

Column 8 = Column 2/Output (TableA.15 & TableB.17)

Column 9 = Column 2/Output (TableA.15 & TableB.17)

Column 10 = Column 2/Output (TableA.15 & TableB.17)

From cost-effectiveness figures shown in Table 5.11 it is seen that total providers cost incurred for antenatal visits at THC was Tk. 41,719.15, whereas the total cost for the same at H&FWC were a bit higher (Tk. 45,656.89). With these costs total number of pregnant mother visits covered at THC was much less (901 visits) than that covered at H&FWC (1,345 visits). Cost per visit at THC was much higher (Tk. 46.30) compared to H&FWC where the cost per visit was only Tk. 33.95. As effectiveness is considered it is found that H&FWC covered a higher percentage (88.33 %) of targeted pregnant mothers than that covered by THC (79.38 %). As regard to 3 visits more about two-thirds of the pregnant mothers were covered by the H&FWC, but the coverage done by the THC was below half of the amount (42.52 %). Majority had normal delivery (99.00 %) received service from H&FWC, which were a little higher than that had at THC (93.37 %). Cost effectiveness of the program was determined with the use of 3 preset indicators like number of pregnant mothers covered, number of pregnant mothers who paid 3 visits and number of normal delivery occurred. The result showed that cost required covering each pregnant mother was almost the same both at THC (Tk. 109.50) and H&FWC (Tk.107.68). But in THC per pregnant mother got average  $(1,345/424) = 3.17$  antenatal visits where in THC it was  $(901/381)$

= 2.36 visits. The cost required providing each pregnant mother with at least three visits was higher in case of THC (Tk. 257.53) than that incurred at H&FWC (Tk. 154.77). The antenatal cost in terms of having normal delivery shows the same trend. Cost of having normal delivery at H&FWC is lower (Tk. 114.43) in comparison to that conducted at THC (Tk. 123.43). Comparing three indicators it is evident that providing antenatal care services is more cost-effective at H&FWC than that at THC.