

## CHAPTER IV

### RESULTS AND ANALYSIS



This chapter presents the results of cost analysis done for both district hospital and thana health complex. In addition to that it also presents the information obtained about utilization of different dental services at district hospital and thana health complex and also discussed quality issue of dental services, policy, program, target and human resources context of dental care in Bangladesh.

#### 4.1. Cost Analysis

##### 4.1.1. Cost Calculations

In this study at 1<sup>st</sup> the calculation of both capital and recurrent cost of dental care services of District Hospital and Thana Health Complex was done. The calculated total annual capital costs of capital items are summarized in the table 4.1 and detailed in Appendices C and D in Tables C.1, C.2, C.3 and D.1, D.2, D.3.

**Table 4.1: Summary of Capital Costs at District Hospital and Thana Health Complex for Dental Care (OPD Dental) in 1998**

Costs Items	District Hospital Tk.	Thana Health Complex Tk.
<b>Shared Item:</b>		
Building	467,333.51	325,715.96
Water Pump Machine	9,402.70	9,929.76
Reallocated Capital Cost of Administration	154,983.02	130,746.75
Reallocated Capital Cost of Housekeeping	13,148.66	9,378.90
Reallocated Capital Cost of Pharmacy	25,111.62	7,105.44
<b>Sub-Total (A)</b>	<b>669,979.50</b>	<b>482,876.81</b>
<b>Direct Items:</b>		
Dental Equipment (B)	60,874.97	53,696.69
<b>Total(A+B):</b>	<b>730,854.47</b>	<b>536,573.50</b>

(Sources: Tables C.2 & C.3 and D.2 & D.3 of Appendix C & D)

Table 4.1 presents that, for providing treatment to dental patients at District Hospital and Thana Health Complex total capital costs incurred Tk. 730,854.47 and Tk. 536,573.50 respectively in 1998.

Calculated annual recurrent costs of recurrent cost items direct and indirectly related to dental care at District Hospital and Thana Health Complex are summarized in Table 4.2.(Detailed in Appendix C in Table C.4, C.5, C.6, C.7, C.9, C.10 & C.11 and in Appendix D in Table D.4, D.5, D.6, D.7, D.9, D.10 & D.11)

**Table 4.2. Summary of Recurrent costs at District Hospital and Thana Health Complex for Dental Care (OPD Dental) in 1998**

Costs Items:	District Hospital Tk.	Thana Health Complex Tk.
Labor /Manpower Cost (Direct & indirect)	285,500.30	278,637.29
Material (Medicine, Disposable Equipment & others)	147,271.00	39,081.00
Electricity & Water, Telephone and **Fuel & Maintenance	5,214.27	2,495.65
<b>Total</b>	<b>437,985.57</b>	<b>320,213.94</b>

(Sources: Tables C.8, C.9 & C.11 and D.8, D.9 & D.11 of Appendix C & D. Note: \*\*Fuel maintenance cost did not incurred at THC)

The above table shows that in 1998 total recurrent cost of Tk. 437,985.57 and Tk. 320,213.94 were incurred for treatment of 7340 and 1852 dental patients at District Hospital and Thana Health Complex respectively.

#### 4.1.2. Component of Costs

In this study the analysis of costs of dental care of two public hospitals were done, which are situated at two administrative levels of the country i. e. district and thana and the study also identified the components of cost provider's (i.e. the government) providing dental care. By analyzing the costs of treatment of dental patients at District Hospital and Thana Health Complex it is found that among the cost components the maximum costs incurred by the capital item. The capital cost items are mainly two types shared items

those which are shared with other departments and direct items those are directly and exclusively used by the dental department. The component of shared items are building, water pump machine, vehicle used by the administration but not included ambulance because there was no record of use of ambulance by the dental patients. It is also mentionable that the cost of x-ray machine is also not included in capital item. There was no x-ray had done in study hospitals because there was no dental x-ray machine in both the hospitals. Even though some patients needed x-ray and done it from private x-ray clinic out side the hospital. The direct items are mainly the essential capital goods, which are needed to organize and deliver services to the dental patients. Capital costs items those are directly and exclusively used by the dentists or dental department are, dental unit (chair + light + spittoon +compressor etc), examination set (dental probe, dental mirror, twizen etc,), dental cartridge shirring, forceps, hand pieces.

Besides capital costs items this study also identified component of recurrent costs of provider. The main components of recurrent cost of dental care at District Hospital and Thana Health Complex are, labor cost, material cost and auxiliary services costs. Labor costs are two types, direct labor costs and indirect labor costs. Direct labor costs are the salary of dentist, medical technologist (dental) and MLSS i.e. those who are directly serving the dental patients. Among them dentist and medical technologist are professional or technical personnel and MLSS are non-technical support personnel. On the other hand indirect labor costs are the salary of administration staff and salary of the staffs those who deal with the cleaning (i.e. sweeper), security (i.e. guard) and gardening i.e. housekeeping. Labor cost also includes the salary of the pharmacy staffs. Because the patients, those who attend OPD dental in District Hospital and Thana Health Complex usually takes medicine from drug store of the hospital moreover pharmacy always supply medicine, other material to the dental department to do minor surgery and other treatments. Material costs are the costs of medicines/drugs distributed to patients, medicines/ drugs used by the dentists for operation or other purposes, disposable syringes & other surgical equipment and laundry cost. Auxiliary service costs are cost of electricity, water supply, telephone charge, fuel and maintenance of jeep.

### 4.1.3 Costs structure:

#### 4.1.3.1 Proportion of Cost Components:

It is mentioned in the above that among the component of cost of treatment for dental diseases at District Hospital and Thana Health Complex the capital cost was the maximum.

**Table 4.3.: Total and Average Costs for Dental Care at District Hospitals in 1998.**

Cost Items	1	2	3
	Cost/Year Tk.	% of Total Costs Tk.	Cost Per Patient Tk.
<b>Capital Costs:</b>			
Shared Item	669,979.50	57.32%	91.28
Direct Items	60,874.97	5.21%	8.29
<b>Sub Total:(A)</b>	<b>730,854.47</b>	<b>62.53%</b>	<b>99.57</b>
<b>Recurrent Costs:</b>			
Labor /Manpower Cost (Direct & indirect)	285,500.30	24.43%	38.90
Material (Medicine, Disposable Equipment & others)	147,271.00	12.60%	20.06
Electricity & Water, Telephone and Fuel & Maintenance	5,214.27	0.45%	0.71
<b>Sub Total:(B)</b>	<b>437,985.57</b>	<b>37.47%</b>	<b>59.67</b>
<b>Total (A+B)</b>	<b>1,168,840.04</b>	<b>100%</b>	<b>159.24</b>

Notes:

**Total number of dental patients at District Hospital in 1998 = 7340**

Information of Column 1 from Appendix C Table C.2, C.3, C.8, C.9 & C.11.

Column 2 = (Column 1/1,168,840.04)\*100

Column 3 = Column 1/ 7340

Sources: Narsingdi District Hospital, Bangladesh and Appendix C.

Which was 62.53% and 62.63% of total costs at District Hospital and Thana Health Complex respectively and on the other hand recurrent cost was 37.47% and 37.37% of total cost at District Hospital and Thana Health Complex respectively. Among capital cost items, shared costs items were 57.32% and direct items were 5.21% of total costs at District Hospital and shared items were 56.36% and direct items are 6.27% of total costs at Thana Health Complex. Among the recurrent cost's components labor cost was the highest, which was followed by material costs. After capital costs it (labor) was the

second highest component of total cost. In District Hospital the percentage of total costs shared by labor, material and EWT & FM (Electricity, Water, Telephone and Fuel & Maintenance) 24.43% 12.60% and 0.45% respectively. In Thana Health Complex the percentage of total costs shared by labor, material and EWT (Electricity, Water, Telephone) 32.52%, 4.56% and 0.29% respectively at Thana Health Complex and cost for fuel and maintenance was not incurred at Thana Health Complex. Because there was no vehicle, that the cost of that vehicle or its fuel and maintenance cost could be assigned to the dental department. (See Tables 4.3., Table 4.4 and Figure 4.2).

**Table 4.4: Total and Average Costs for Dental Care at Thana Health Complex in 1998**

Cost Items	1	2	3
	Cost/Year Tk.	% of Total Costs Tk.	Cost Per Patient Tk.
<b>Capital Costs:</b>			
Shared Item	482,876.81	56.36%	260.73
Direct Items	53,696.69	6.27%	28.99
<b>Sub Total</b>	<b>536,573.50</b>	<b>62.63%</b>	<b>289.73</b>
<b>Recurrent Costs:</b>			
Labor /Manpower Cost (Direct & indirect)	278,637.29	32.52%	150.45
Material (Medicine, Disposable Equipment & others)	39,081.00	4.56%	21.10
Electricity & Water and Telephone	2,495.65	0.29%	1.35
<b>Sub Total:</b>	<b>320,213.94</b>	<b>37.37%</b>	<b>172.90</b>
<b>Total</b>	<b>856,787.44</b>	<b>100%</b>	<b>462.63</b>

Notes:

**Total number of dental patients at Thana Health Complex in 1998 = 1852**

Information of column 1 from Appendix D, Table D. 2, 3, 8, 9 & 11.

Column 2 = (Column 1/856,787.44)\*100

Column 3 = Column 1/ 1852

Sources: Shibpur THC Narsingdi, Bangladesh and Appendix D.

The analysis shows that in respect to total capital and recurrent costs proportion to total cost, it seems that, the situation is almost similar at District Hospital and Thana Health Complex (Table 4.5 and Figure 4.2) but actually the situation is not same at two hospitals. Proportion of sheared capital item is higher at DH than THC but on the

contrary the proportion of direct capital item was higher at THC than DH. This might be due to DHs incurred higher share of common or shared cost items to total cost, in comparison to share of common or shared cost items at THC. But share of direct capital cost item is higher at THC than DH. There might be a reason that, DH incurred higher capital cost for building and also for inclusion of the cost of Jeep, which was not incurred at THC i.e. there was no capital cost of vehicle was charged to thana health complex.

In case of recurrent cost items the difference is more distinct. Table 4.5 showed that the proportion of labor cost was higher at THC than DH but proportion of material and other recurrent costs (EWTF & M) was higher at DH than THC. Proportion of material cost was higher at DH, it might be due to treatment of more patients at DH than THC.

**Table 4.5: Summary of Proportion of Cost Component at DH & THC**

<b>Cost Items</b>	<b>DH</b>	<b>THC</b>
<i>Capital Items:</i>		
Shared-Capital	57.32%	56.36%
Direct- Capital	5.21%	6.27%
<b>Total Capital Cost</b>	<b>62.53%</b>	<b>62.63%</b>
<i>Recurrent Items:</i>		
Labor	24.43%	32.52%
Material	12.60%	4.56%
E & W, T and **F & M	0.45%	0.29%
<b>Total Recurrent Cost</b>	<b>37.47%</b>	<b>37.37%</b>
<b>Total</b>	<b>100%</b>	<b>100%</b>

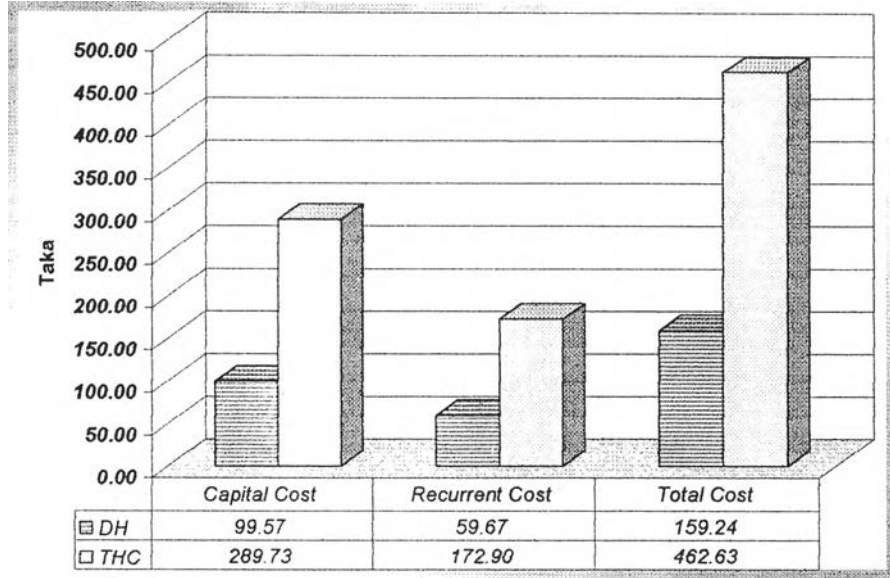
(In above table E & W= Electricity and water, T = Telephone and F & M= Fuel & maintenance. \*\* F & M cost is not included in THC)

### 3.1.3.2 Comparison of Total Costs Incurred at DH and THC

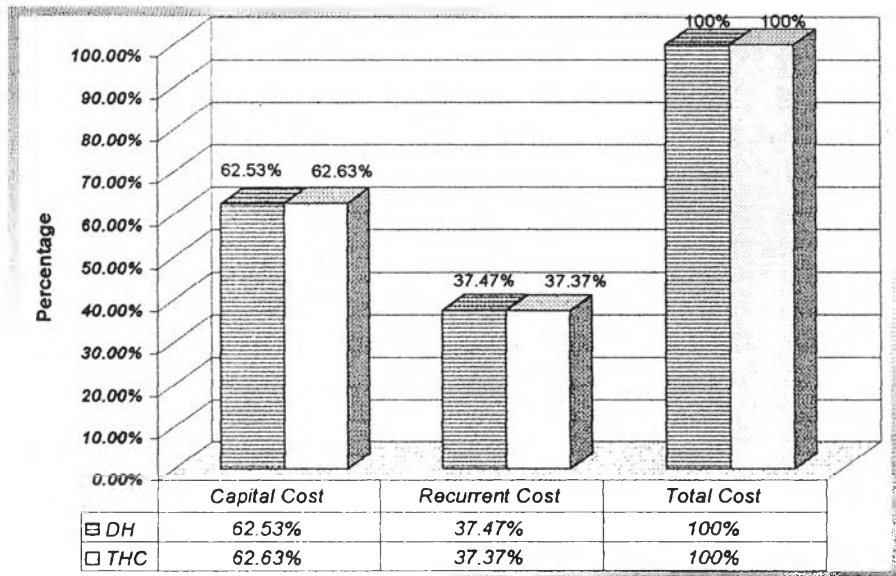
It is found that the total cost and it's both component i.e. capital and recurrent costs are higher at DH than THC. Total cost is 1.36 times at DH than THC and it's components capital and recurrent 1.36 and 1.37 times respectably at DH than THC. If we go into more

detail in respect to total amount of cost items the difference was varied with different degree.

**Figure 4.1: Average Cost or Costs/Visit (Average Capital, Recurrent and Total or Costs per Visits) for Dental Care at DH & THC in 1998**



**Figure 4.2: Percentage of Capital, & Recurrent Cost to Total Costs for Dental Care at DH & THC in 1998**



Shared and direct capital costs were 1.39 and 1.13 times higher respectively at DH than THC. It again tells us that dental care at DH shared more common capital cost than THC. Total labor cost is 1.02 times at DH than THC, it implies that, labor cost had a lesser role for variation between total costs of two hospitals especially the direct labor inputs were almost same. In case of direct materials the total cost of materials at DH was 3.77 times higher than THC. It was due to use of more material for treating more patients at DH compared to THC. EWTF & M cost at DH was 2.09 times than EWT cost at THC. The reasons for that were F & M cost was not incurred at THC and total electricity & water and telephone (EWT) costs was also higher at DH (See Table 4.6).

### 3.1.3.2 Comparison of Average Costs of Dental Cared at DH and THC

On the other hand in terms of average cost, the situation was almost reverse. Average cost per dental patient visit at DH was Taka 159.24 and in this amount the share of capital cost was Taka 99.57 and recurrent cost was Taka 59.67 and the average cost per dental patient at THC was Taka 462.63 in this amount the share of capital cost was Taka 289.73 and recurrent cost was Taka 172.90. Average total cost is 2.91 times higher at THC than DH and its components average capital & recurrent costs were 2.91 and 2.90 times higher

**Table 4.6 Summary of Comparison of Total and Average Cost of DH and THC**

Cost Items	Total Cost			Average Cost		
	DH	THC	Comments	DH	THC	Comments
<i>Capital</i>						
Shared Capital	669,979.50	482,876.81	1.39 times higher at DH than THC	91.28	260.73	2.86 times higher at THC than DH
Direct-Capital	60,874.97	53,696.69	1.13 times higher at DH than THC	8.29	28.99	3.50 times higher at THC than DH
Total Capital	730,854.47	536,573.50	1.36 times higher at DH than THC	99.57	289.73	2.91 times higher at THC than DH
<i>Recurrent</i>						
Labor	285,500.30	278,637.29	1.02 times higher at DH than THC	38.90	150.45	3.87 times higher at THC than DH
Material	147,271.00	39,081.00	3.77 times higher at DH than THC	20.06	21.10	1.05 times higher at THC than DH
EWTF & M	5,214.27	2,495.65	2.09 times higher at DH than THC	0.71	1.35	1.90 times higher at THC than DH
Total Recurrent	437,985.57	320,213.94	1.37 times higher at DH than THC	59.67	172.90	2.90 times higher at THC than DH
Total	1,168,840.04	856,787.44	1.36 times higher at DH than THC	159.24	462.63	2.91 times higher at THC than DH

at THC than DH. If we look into the detail in respect to cost components, we find that average cost of shared and direct capital costs was 2.86 and 3.50 times higher at THC than



DH. Among the recurrent cost items average labor cost was 3.87 times higher at THC than DH. But average material cost was almost same at THC and DH and only 1.05 times higher at THC than DH. Though dental care provided at THC did not incur F & M cost but EWT cost per visit at THC was 1.90 times higher than EWT F & M cost per visit at DH. The reason for higher average cost at THC compared to DH might be due to utilization of or providing higher quantity of services at DH in comparison to THC.

But the dental care provided at District Hospital and Thana Health Complex is comprised of different services which needs different quantity & types of materials and also different volume of labor hours. Which can directly effect the average costs and also the cost structure. Which needs detail study and calculation and it would be more relevant to have the cost per \*procedure or treatment. But here due to non-availability of data this study could not able calculate the detail unit costs i.e. cost per procedure and instead of that it calculated cost per visit which seems appropriate in this context. Since one procedure is done in one visit it is thought that cost per visit will provide a useful information. It also mentionable that this study found that there was no practice/system of costing of output is existing in these hospitals. Which is an important tool for ensuring accountability, improvement of efficiency and quality of services of a hospital.

#### 4.1.3. Sensitivity Analysis

Uncertainty in economic evaluation is pervasive, entering the evaluative process at every stage Sensitivity analysis is a method by which analyst have allowed analyst have in economic evaluations i.e. how to cope with uncertainty. In this study the costing of dental care were based on some variables and value of which might suffers from uncertainty and to incorporate uncertainty into the estimates and to allow readers to make their judgements on result of this study a sensitivity analysis was carried out. Among the variables the interest rate is considered to have influence this uncertainty. In this study the chosen interest rate is 14%(i.e. the interest rate fixed by the central bank). But uncertainty sill remains. Because it not clear that is this rate reflects individuals or society's time preference. This study used 3 %, 10% and 20% interest rate for costing of capital cost items. Many studies used 3% rates and also 5% rate and here 3% is chosen

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\*Medication, Extraction, Fillings (permanent and temporary), Scaling/gum- treatment, Operculotomy

because and it is thought that costing by using 3% rates will not vary significantly with 5%. On the other hand 10% and 20% is used to see the situation from an optimistic and pessimistic point of view respectably. The following table will show how the cost changed with changing in interest rate in both the hospitals.

**Table 4.7: Sensitivity Analysis with Interest Rate for DH and THC**

Hospital	Discount Rate Tk.	Capital cost. Tk.	Recurrent Cost Tk.	Total cost Tk.	Average Cost per visit Tk.
District Hospital	3%	75,362.25	437,985.57	513,347.82	69.94
	10%	324,270.89	437,985.57	762,256.46	103.85
	14%	730,854.47	437,985.57	1,168,840.04	159.24
	20%	2,295,593.85	437,985.57	2,733,579.42	372.42
Thana Health Complex	3%	78,443.45	320,213.94	398,657.39	215.26
	10%	277,273.71	320,213.94	597,487.65	322.62
	14%	536,573.50	320,213.94	856,787.44	462.63
	20%	1,322,787.27	320,213.94	1,643,001.21	887.15

Thus we see here that capital costs of dental care at both the hospitals is highly sensitive to the interest rate used to annualized capital costs. The results of this analysis, should therefore be interpreted with caution. Quantity or demand of service which is another important factor, which should also be considered in sensitivity analysis. Because cost is directly related with quantity. So, sensitivity analysis for demand/quantity of service needs detail data about the types and quantities of inputs needed for different care/ treatment provided at DH and THC. But due to non-availability of detail data this study could not do the sensitivity analysis for this factor.

## 4.2. Utilization of Dental Care

It is mentioned earlier that in District Hospitals (DH) and Thana Health Complexes (THC) exclusively curative treatments are provided to the dental patients. The hospital authorities and dental surgeons informed that, dental patients attended at both setting with different diseases/ problems. Usually the treatment or services are provided to them are medication, filling, extraction, Scaling/Gum treatment, operculactomy (minor surgery). A brief description is given in Appendix F about of the dental diseases that treated at district hospital and thana health complex and treatment provided for that..

In 1998 a total of 129121 patients were treated at Norsingdi DH. Among them 124817 were out patients 4304 were in-patients. Among the out-patients 7340 were dental patients. On the other hand a total of 79554 patients were treated at Shibpur THC. Among them 77776 were out patients 1778 were in-patients. Among the out-patients 1852 were dental patients.

Table 4.9 & 4.10 and figure 4.3 & 4.4 show the distribution of user of different dental services by different gender in DH and THC 1998.

**Table 4.8: Utilization of Dental Care in Narsingdhi DH by Different Gender in 1998**

Sex	Treatment						Total (No.)
	Medication (No.)	Extraction (No.)	Filling (No.)		Scaling/Gum - treatment (No.)	Operculactomy (minor surgery) (No.)	
			Temporary	Permanent			
Male	1521	1210	168	51	237	97	3284
Female	1731	1535	195	50	423	122	4056
<b>Total</b>	<b>3252</b>	<b>2745</b>	<b>353</b>	<b>111</b>	<b>660</b>	<b>219</b>	<b>7340</b>

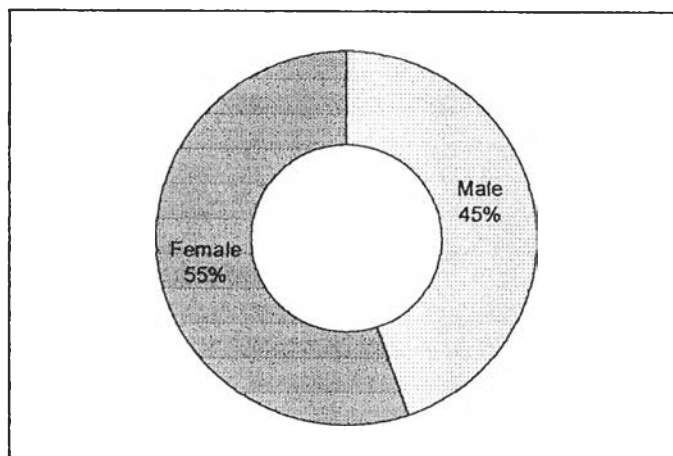
Source: Civil Surgeon Narsingdi and Superintendent of District Hospital

**Table 4.9: Utilization of Dental Care in Shibpur THC by Different Gender in 1998**

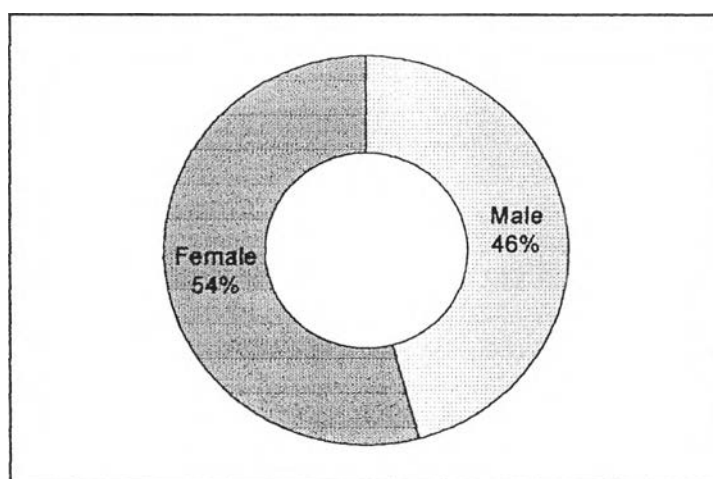
Sex	Treatment						Total (No.)
	Medication (No.)	Extraction (No.)	Filling (No.)		Scaling/Gum - treatment (No.)	Operculactomy (minor surgery) (No.)	
			Temporary	Permanent			
Male	180	515	25	16	64	51	851
Female	259	540	36	19	80	67	1001
<b>Total</b>	<b>439</b>	<b>1055</b>	<b>61</b>	<b>35</b>	<b>144</b>	<b>118</b>	<b>1852</b>

Source: Civil Surgeon Narsingdi and THA Shibpur.

**Figure 4.3: Utilization of Dental Care in Narsingdi DH by Different Gender in 1998**



**Figure 4.4: Utilization of Dental Care in Shibpur THC by different gender in 1998**



Among the dental patients who were treated at district hospital in 1998 55% were female and 45% were male. On the other hand at thana health complex 54 % were female patients and 46 % male patients. In both the hospitals females are consumed more service than male. This might be due to comparatively higher prevalence of disease among women than man, in this district or might be some other reason which influenced women consume more services or influenced men to use lesser services at study hospitals. But

from the available data we can not draw a clear conclusion, but this matter needs proper attention especially for need assessment.

Table 4.10 & 4.11 and Figure 4.4& 4.5 presents the age distribution of user of different services in both DH and THC 1998. In district hospital 3% of patients were belongs to <1

**Table 4.10: Utilization of Dental Care by Different Age Group at Narsingdhi District Hospital in 1998**

Age Group	Treatment						Total (No.)
	Medication (No.)	Extraction (No.)	Filling (No.)		Scaling/Gum - treatment (No.)	Operculactomy (minor surgery) (No.)	
			Temporary	Permanent			
< 1 year	195	15	0	0	0	0	215
1-4 years	713	205	99	0	0	0	1012
5-15 years	937	822	94	44	145	29	2071
15+ years	1407	1703	160	67	515	190	4042
<b>Total</b>	<b>3252</b>	<b>2745</b>	<b>353</b>	<b>111</b>	<b>660</b>	<b>219</b>	<b>7340</b>

Source: Civil Surgeon Narsingdi and Superintendent of District Hospital

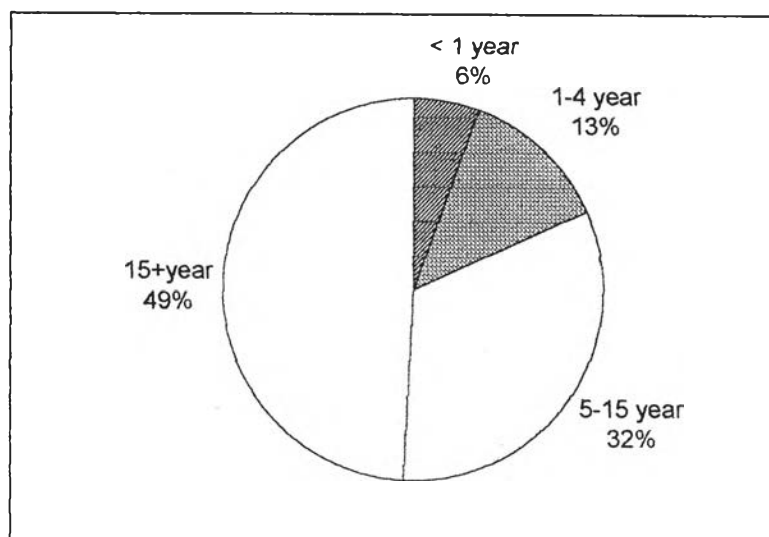
**Table 4.11: Utilization of Dental Care by Different Age Group at Shibpur Thana Health Complex in 1998.**

Age Group	Treatment						Total (No.)
	Medication (No.)	Extraction (No.)	Filling (No.)		Scaling/Gum - treatment (No.)	Operculactomy (minor surgery) (No.)	
			Temporary	Permanent			
< 1 year	90	13	0	0	0	0	103
1-4 years	57	168	0	0	10	0	235
5-15 years	201	329	29	12	14	16	601
15+ years	91	545	32	23	120	102	913
<b>Total</b>	<b>439</b>	<b>1055</b>	<b>61</b>	<b>35</b>	<b>144</b>	<b>118</b>	<b>1852</b>

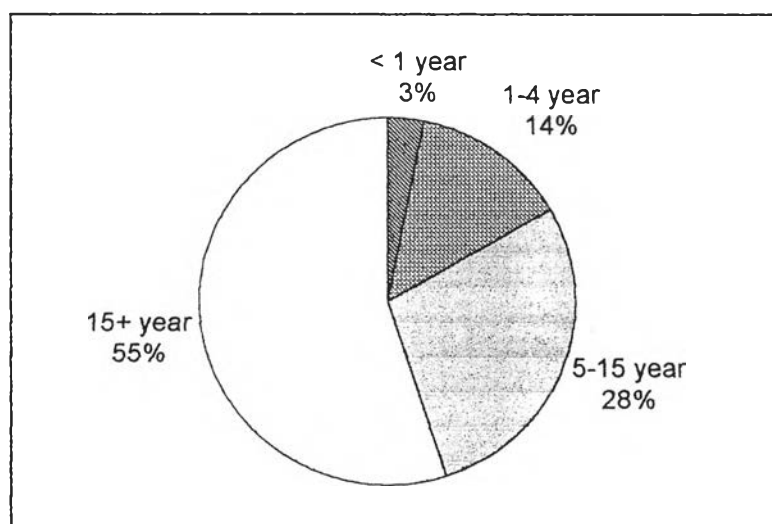
Source: Civil Surgeon Narsingdi and THA Shibpur.

year age group, 14 % were in 1-4 years, 28 % were in 5-15 years and 55 % were in 15+ years age group. In THC 6 % of patients were in <1 year, 13 % were in 1-4 years, 32 % were in 5-15 years and 49 % were in 15+ years age group It shows that the proportions of the patients of different age groups at DH and THC are not similar.

**Figure 4.5: Utilization of Dental Care by different age group at Narsingdhi District Hospital in 1998**



**Figure 4.6: Utilization of Dental Care by different age group at Shibpur Thana Health Complex in 1998**



If we divide total patients into two broad age groups i.e. 0-15 year and 15+ years, we find that in DH more than 50% (i.e.55 %) patients were in 15+ age group and 45% patients

were in 0-15 years age group. But in THC more than 50% (i.e.51%) patients belongs to 0-15 years age group and 49% patients belongs to 15+years age group. Though a large number of patients consumed services at DH than THC, but in terms of percentage, a higher percentage of young people consumed more service at THC in comparison to DH. It might have impact on total cost and on cost structure at both hospitals. But this data on age distribution of patients are not enough to explain the utilization pattern of different age groups. In particular the above information is not sufficient to tell specifically about the old age demand and utilization. For example Burt and Eklund (1992) used the age group as 5 or bellow,5-17, 18-24, 25-44, 45-64, and 65 & over. The demand of dental care is increased at old age and treatment cost increased in old age. So, specific data on utilization by different age group is helpful for costing of dental treatment and estimating future demand. But in this study available data on utilization by different age group was not enough for calculation cost of treatment incurred by different age group and estimating future demand.

Now if we look into utilization different services/treatments we find that the situations of the two hospitals are quite different. For example in DH and THC only medicine

**Table 4.12: Proportion of Utilization of Different Services/Treatments at DH and THC**

Hospital	Patients number & % of Total patients	Treatment						Total
		Medication	Extraction	Filling		Scaling/ GT	Opercul actomy	
				Temporary	Permanent			
DH	No. of Patient	3252	2745	353	111	660	219	7340
	% of Total Patients	44.31%	37.40%	4.81%	1.51%	8.99%	2.98%	100%
THC	No. of Patient	439	1055	61	35	144	118	1852
	% of Total Patients	23.70%	56.97%	3.29%	1.89%	7.78%	6.37%	100 %

prescribed to 44.31% and 23.70% patients respectably. The above table also shows that proportion of utilization of other treatments viz. extraction, temporary filling, permanent filling, scaling/gum treatment and Operculactomy were also varied in different degree at between DH and THC. The use different services by different proportion at DH and THC might have impact on total cost and cost structure. But to draw a conclusion in this matter needs detail information about average treatment time per procedure/service, quantity &

price of direct material needed or used for each of the procedure/service and information about other cost factor which is different for different services/treatments.

To explain the utilization pattern the information on other factors specially socio-economic status (SES), quality of service, physical access, severity of diseases target population are necessary. This study identified the need for collecting and recording information on above mentioned factors which will be helpful for explaining utilization pattern of dental care in both the hospitals and ultimately which will be helpful for estimating costs and expenditures and allocating resources for dental care. Basically in this section this study tried to look in to who are user (age group and sex) of services of DH and THC. That is it considered only those who came to use the services, but not the population who did not come. But the term utilization is a broad term which not considers only the population those who are using the services but it also considers the proportion of the population who are not using the service (Tanner, 1999).

This study found that in DH 7,340 patients were treated in comparison to 1,852 of THC, which was 3.96 times than that of THC with same number of manpower and dental equipment (direct capital item). However, it is important to note that the catchment area of these two hospitals were different. The quantity of materials used was different and proportions of different treatments were also different at DH and THC. So, now the question is whether DH was over utilized and/or THC was under utilized or DH was running with high efficiency or THC was running with low efficiency. It is very difficult to give a straightforward answer to this question on the basis of the available data. To be more clear on this issue in addition to available data, we need information about standard time required for providing each of the services (medication, filling, extraction, scaling of the gum treatment, operculotomy) by same personnel and same equipment and also need actual working time and quantity of service. On the other hand, the total working hours of dental department in 1998 can be found by multiplying total working days in 1998 with working hours per day. If it is found that total standard time needed for total (different) services provided to them in 1998 is less than actual working hours, in such case we may



say that the health facility was under utilized and/or inefficient, but in case of reverse situation we may say that the health facility was over utilized and/or more efficient, though there are some other factors i.e. quantity of material, quality of service etc. need to be considered. But this study did not find any data on standard time required for different services provided at DH and THC. But considering the big difference (3.96 times) we can tentatively conclude that, for dental care DH might be over utilized and THC might be under utilized and services of DH might suffer from low quality compared to THC and THC might suffer from low efficiency compared to DH. A previous study on cost analysis of childhood diarrhoeal inpatients found that both rural and urban respondents regardless of their education, occupation, and income prefer District Hospital though the patient incur a substantial amount of cost which was much greater than average provider cost in District Hospital. This study also found that both rural and urban people use the service of District Hospital and rural peoples have a higher satisfaction about the over all services of District Hospital compared to than Thana Health Complex (Begum 1995) It is found that peoples uses more services from District Hospitals than Thana Health Complex. As a result District Hospitals are facing problems of over utilization and thana health complexes facing under utilization problem (Ali 1997).

#### **4.3. Quality of Dental Care Services**

In literature review (Chapter II) is mentioned that, to assess a dental care services provided from any settings is needs analysis of data on some indices. There was no study conducted in the past to asses the quality of dental care provided at district hospitals and thana health complexes in Bangladesh. Especially there was no survey was conducted to assess the patients' satisfaction about dental care of district hospitals and thana health complexes. Especially for introduction of cost recovery mechanism in those hospitals, the quality of the dental care services need to be assessed and for analysis of the quality of care, its needs to obtain information & data on different factor through detail observation and prospective survey.

#### **4.4. Dental Care Policy, Goal and Target**

In chapter II, the aspects of public policy, legislation, guideline, target regarding health care service delivery is reviewed and public policy, guideline, resource allocation, coverage (target), legislation, equity etc are recognized as important factors in apprising a health care system or health program. In many countries of the world have national health policy and in all most all the countries have law/regulation/legislation on health and health related matters. But very few countries of the world have specific policy or law /regulation/legislation about dental health and dental care, though WHO has specific dental health goals and also policy.

Bangladesh is one of those countries those who have no specific oral health or dental care policy, target or goal Though the country is one of those countries who has a national health policy and it has a detail five yearly National health (HPSP). (Policy principles of the National Health Policy 1999 and main features and objectives of HPSP were enclosed at Appendix G). But it is mentionable here that oral or dental health care is not given specific priority in current health program and policy of the country. Besides these in Bangladesh there are two laws are existing regarding dental education practice and registration. These are The Bangladesh Medical and Dental Council Act 1980 and The Government Resolution on Sate Medical Faculty 1947(See Appendix G).

For improvement of the dental health status of the people of this country, there should be specific policy and program on dental care. Because the country is belongs to the 20 percent of countries in the world where the periodontal conditions of the population are among the worst.

#### 4.5. Dental Manpower Production in Bangladesh

It is found that in Bangladesh there are three categories of dental education. These are Diploma in Dental Surgery (DDS-.It's a post graduate diploma), Bachelor of Dental Surgery (BDS), and Diploma in Medical Technology (Dentistry) A brief description of these courses is given bellow:

**Table 4.13.Types & Capacity of Dental Manpower Production in Bangladesh**

Course/ Degree/ Diploma	Institute	Requisite Qualification	Seat Capacity	Duration	Remarks
<b>Public Sector</b>					
DDS	BBSMMU	BDS	*5	1 year	
BDS	Dhaka Dental College Chitagong Dental College Rajshahi Dental College	HSC	70 30 30	4 years	
Dip. in MT (Dentistry)	Institute of Health Technology Dhaka	SSC	20	2 years	
<b>Private Sector</b>					
BDS	Pioneer Dental College	HSC	20	4years	Not yet produced

(\*Only in 1996 six students were admitted)

Among different dental auxiliaries only one type of auxiliary is being produced in Bangladesh, but the production capacity is very low in comparison to 122.8 million population.

**Table 4.14 Dental Manpower Production During 1992-96**

Course	Total Enrolment / Target/Capacity	Out-put	% Total Target or Capacity
Diploma in Dental Surgery(DDS)	26	22	86.62%
Bachelor of Dental Surgery (BDS)	650	274	42.15%
Diploma in Medical Technology(Dental)	100	60	60%

The above table (Table 4.11) is showing the situation in production of dental manpower of five years (1992-96) and it revealed that production of dental manpower is not going according to target. The country is facing scarcity of human resources in dental care

sector. But public sector institutes are not producing dental manpower according to target. The institutes are not able to produce manpower as per their capacity. The labor cost for dental care is an important factor for providing care form different level or setting. So to solve the scarcity problem of dental manpower in the country, this issue needs proper attention.