

CHAPTER 2

LITERATURE REVIEW

To achieve the goals of "HEALTH FOR ALL" by the year 2000, health care delivery services must be implemented cost-effectively because most of the developing countries facing severe constraints of financial resources for health sector for health care services. Knowledge about the costs of health care management both unit cost and total cost will help the health care planner in health care service planning and budgeting in the future for effective and efficient management of health care services. Also to charge the patient for particular health care service by the provider, cost analysis for the care will provide information about the costs to be charged for patient.

2.1 Cost analysis

According to the Guidelines for Cost Effectiveness Analysis of Vector Control by Phillips and others 1993 explained that different types of costs are analyzed during the time of cost analysis like capital cost/fixed cost, recurrent cost/variable cost, total cost, unit cost/average cost, marginal cost etc.

Capital costs/fixed costs are the costs which lasts longer than one year and do not vary with the level of output in a given period of time.

Recurrent costs/variable costs are the costs purchased regularly, used up within in a year and vary with the level of output.

Total cost means the total value of resources necessary for an activity in a given period of time.

Unit cost/Average cost means the total cost divided by the total number of units of output.

Marginal cost is the cost of the additional unit of output.

This study concentrates on the total cost and unit cost or the average cost of the provider for the management of diarrhoea at different level of health care. Creese and Parker in their book *Cost Analysis in Primary Health Care* (1994) classified costs primarily by inputs and secondarily by function/activity, by level, by currency and by source.

By input costs are of two types :

Capital costs are those cost items that lasts longer than one year, such as building, equipment, vehicle etc., and

Recurrent costs are those cost items that are used up in the course of a year and usually purchased regularly.

Classification by function/activity involves the kind of activity or function for which the resources are used. An MCH program, for example, encompasses a wide range of activities, such as the weighing of children, tetanus toxoid vaccinations for pregnant women, pre-natal care, supervision of deliveries, and vaccination of children. For each of these activities, groups of physical inputs are required. For example, infant weighing requires personnel to do the weighing and record the results, scales, tables, charts, building, space and possibly vehicles (Creese and Parker, 1994).

By activity costs are direct costs may be defined in relation to a given activity, a medical service or a hospital department. The direct costs of a medical service are the costs relating to the provision of that service alone. Example : the drugs consumed by a patient are a direct cost in the treatment of that patient's disease. The cost of radiology equipment is a direct cost of the radiology department and has nothing to do with the laboratory department, for instance. Direct costs are easy to identify and relatively straightforward to calculate.

Indirect costs are very difficult to identify. These are the costs of goods and services used jointly for several activities or by several departments of the health facility, and which cannot therefore be attributed in their totality to one department,

service or activity. Example: the hospital guard does service for the entire hospital. His employment therefore incurs a cost for the hospital as a whole. But this common cost can be distributed between the different departments or services on the basis of well defined criteria:

(i) It can be examined whether the guard's services are used more by some departments than others. For example, if the guard spends 50% of his time keeping guard over the equipment of the surgery department, then 50% of the cost of his service can be attributed to that department.

(ii) It can be decided to spread the common cost in question evenly between the different services. For instance, if a hospital has five technical departments, 20% of the common cost can be charged to each of these departments

(iii) The common cost can be distributed in proportion to the volume of activity of the departments. If it is determined that the volume of activity of surgery department represents 30% of the total work of all the hospital's technical departments, 30% of the common costs can be charged to that department on this ground. But the problem is that the concept of volume of activity may have several definitions. A department's volume of activity may be defined in terms of :

- the volume of work of the personnel;
- the number of patients admitted by the department;
- the size of the departments revenue from payments;
- the amount of its direct costs;
- other criteria (Carrin and Elvo, 1995).

The study of a methodology for the calculation of health care costs and their recovery by Carrin and Evlo developed a simulation model to analyze the cost of activities in the public health sector in order to know and evaluate the effect of health care reform for the Government of Guinea and the fee system. In that study, the

common costs have been distributed on the basis of the volume of activity of the departments this being defined in terms of the volume of work of the personnel. The following cost categories have been recognized as indirect costs in that methodology:

- all the costs related to administrative services;
- the cost of water, electricity and gas;
- the cost of buildings and fixed installations;
- the cost of rolling stock [except for the means of transport reserved for specific activities].

In this study for calculating the unit cost for OPD and IPD for the management of diarrhoea, the common costs have been distributed on the basis of the volume of activity of the departments. The cost categories recognized as indirect costs -all the costs (recurrent and capital) relating to the administrative services.

Cost by level means at which level the resources are to be used. For most health programs there is an obvious hierarchy of operations. In a national program, for example, some resources are used at the central or national level while others are used at the provincial, regional or district level.

Cost by source means the source of resources (that is who provides them) is another important characteristic. Contributors may include the Ministry of Health, other national government departments, local government bodies, international donors, bilateral donors, independent non-government charitable or private organizations, community groups, and individuals.

Cost by currency is the cost closely associated with the source of resources is the type of currency required to purchase those resources. Bilateral and international donors, for example, very often supply goods and services needing to be purchased in foreign currency (foreign to the recipient). The distinction between resources requiring domestic currency and those requiring foreign currency is an important one to make, particularly in those developing countries where there is a shortage of

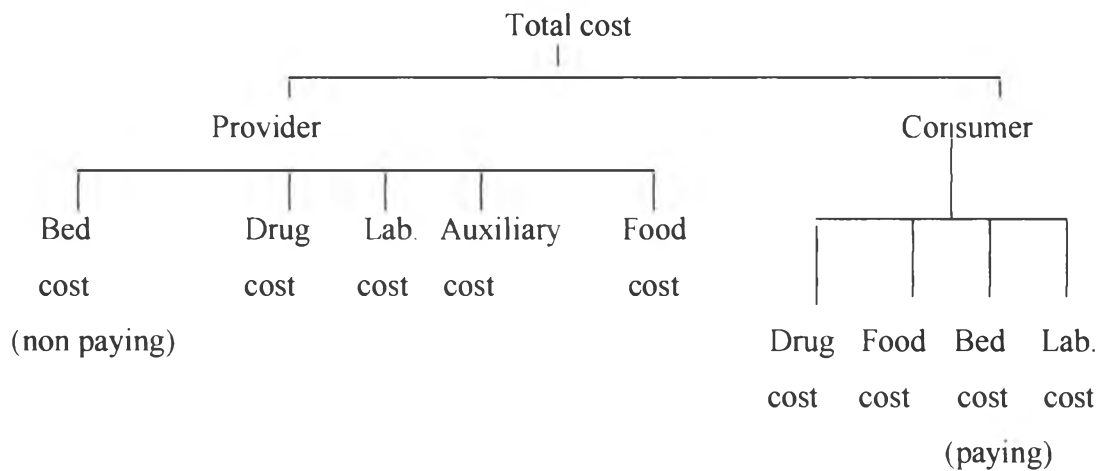
foreign currency (or lack of convertibility). Donor contributions are a way of easing foreign exchange shortages (Creese and Parker, 1994).

Cost analysis is very important from provider perspective. It is an evaluation or examination of resources, how they are being spent. From providers perspective cost analysis can help them to know and explain how resources or fund have been used and to identify the areas where expenses need to be reduced or increased.

Cost analysis can provide important useful information of all kinds of health services. It helps in assessing the use of health care delivery personnel and the efficiency of putting supplies, transport resources and other input to work (Creese and Parker, 1994).

By input costs are of two type - capital costs are those cost items that lasts longer than one year, such as building, equipment, vehicle etc., and recurrent costs are those cost items that are used up in the course of a year and usually purchased regularly (Phillips, Mills and Dye, 1993).

Figure 2.1 Provider and Consumer Costs for Management of Diarrhoeal Disease at Hospital Level.



Diarrhoeal patient when come to hospital for treatment, they incur almost all cost components. Bed, food, drugs, laboratory and auxiliary service costs are borne by the providers. Till the discharge of the patient from IPD of hospital the total process continued. Economic analysis from provider's perspective is very important, because health care delivery system directly plays a vital role in disease management.

It was cited by Creese and Parker in their books 'Cost analysis in primary health care' that in a study in India it was found that if eight patients came for treatment from a particular village in one week then transport cost would be 64 rupees (Rs), drugs a total of Rs 80 (patients on average slightly more sick than could be treated at home) and wage lost Rs 32. On the contrary if the mobile team visit the village to treat same patients, transportation cost would be Rs 20 and drug cost Rs 20.5. It was demonstrated that mobile team would save household costs and apparently delivery systems costs as well.

Higher costs to the users of health services are some times reflected in cost-effectiveness measures. If the cost to patients goes over some threshold, patients may stop using the facility, attendance will fall, and cost per treated person may well increase while resources will be underused.

A study by Abel-Smith and Rawal (1992) was undertaken for the Government of Tanzania to investigate the case for introducing user charges for health services and found that health services are 'free' in the rural district hospital causes inadequate supplies of drugs and food in hospitals means patients incurred substantial costs when using the 'free' services in addition to travel costs. The authors concluded that modest charges should be introduced and attempts should be made to exempt the poor would be more equitable than the existing situation, if the gained revenues could be used to ensure that the supplies were remains always adequate. In Bangladesh public health care services are also 'free' and at rural as well as district level similar situation existing there like Tanzanian free hospital services i.e., inadequate supplies of drugs, foods, lack of diagnostic facilities makes the patients to incur substantial costs for food, drugs in addition travel cost when rural people seeks district hospital care instead of local care. In seeking district hospital care by the rural people the biggest amount of cost incur by the patient was the opportunity cost due to earning/wage lost had been found in Begum's study in 1995. To introduce user charge on the basis of patients' solvency for diarrhoeal management following the results of this study needs a nationwide household survey to know the ability and willingness of the people.

Introduction of user charge on the basis of patients' solvency to generate revenues for adequate supplies always.

A study in Thailand about unit cost of diagnostic imaging tests at the outpatient department of Chulalongkorn Hospital in the fiscal year 1991 by Dhanamun and others used simultaneous equation method to allocate indirect costs. Another similar study about unit costs of laboratory tests at the outpatient department of Chulalongkorn Hospital in the fiscal year 1991 done by Chotiwan and others used simultaneous equation method to allocate indirect costs. They calculated different unit costs of diagnostic imaging tests and laboratory tests. They classified the cost by cost center, by activity and by input. In this study cost is classified by input and the indirect costs i.e., administrative costs allocated to the patient service departments i.e., at OPD and IPD following appropriate proportion. But the difference is that study compared the unit cost at break even point and in this study unit cost estimation was not at break even point. In this study unit cost of treating the diarrhoeal patient at OPD and IPD computed from provider side in District hospital and Thana health complex. In this study cost cannot be classified by cost centers into revenue producing and non-revenue producing because the service is full free. There is no generation of revenues.

2.2 Satisfaction

Samlee (1983 cited by Begum 1995) states that in general distance is a critical reason for health service utilization in most developing countries. He thought, distance is not a critical issue for under utilization. Lack of attractive services and quality of care those contributed much more for under utilization. Begum also found similar attitude about the utilization of nearby rural health care facilities and district hospital care at a longer distance by the people in her study in 1995.

A study was done in Bangladesh about cost analysis of childhood diarrhoeal in-patients at District Hospital from patients' perspective and the perceived satisfaction of the people towards different level of health care services. It was found that the major cost for the rural patient seeking District Hospital care was opportunity cost due to wage lost. And other indirect costs were food and travel cost they incur along with direct cost (medical + non-medical cost). But still rural people use District Hospital for their health care because they are much more satisfied with the services and quality of care at District Hospital than nearby Thana Health Complexes. Rural as well as urban people are satisfied with the District Hospital care/services irrespective of their income, occupation and education. A very few percentage of rural people are satisfied only with the longer distance of District Hospital from their home. But rural peoples are satisfied 100% about the availability of doctors at District Hospital, 98.78% about doctors attention towards patient, 92.5% satisfied with the laboratory services, adequate laboratory facilities 41.25%, drug satisfaction 66.25%, waiting time to see a doctor 37.50%, nursing service 66.25%, food quality 52.50%, diet schedule 69.23% of District Hospital. On the other hand respondents are less satisfied with Thana Health Complex than District Hospital and their satisfaction about the availability of doctors at Thana Health Complex was 58.33 %, doctors attention towards patient 63.33%, waiting time to see the doctor 71.77%, drug satisfaction 25.86%, 20.37 % with laboratory services, adequacy of laboratory facilities 3.77%, diagnosis by doctors was 46.56 %, nursing service 44.44%, quality of food 18.52%, diet schedule 19.55%. As a result District Hospitals are over crowded and over utilized, other hand nearby Thana Health Complexes remains underused (Begum, 1995).

A study was done to collect information about the willingness to pay fee for certain health services by the patient and households for rural district hospital services in north-western Tanzania and it was found that the willingness to pay for district hospital services was large may because of higher satisfaction. In-patients were willing to pay less per day of admission than outpatients. A large majority of the interviewed persons were prepared to become a member of a local insurance system

and pay a certain amount per year, after which all services from the hospital would be free for that year (Walraven, 1996). The study indicates to carryout similar kind of study in Bangladesh for a clear understanding about the people willingness to pay for health care services at different level. This will be helpful for patient service planning and for introduction of appropriate amount of user charge for health care service at different level as a cost recovery measure.