

# **THE COSTS AND FINANCING OF HEALTH CARE**

**Experiences in the  
Voluntary Sector**

**Case Study 2 : SEWA-Rural, Jhagadia**

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**CASE STUDY 2**  
**SEWA-Rural, Jhagadia<sup>a</sup>**  
**Bharuch District, Gujarat**

**Ford Foundation, New Delhi**

**November, 1990**

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## THE AIMS OF THE SERIES

A rich variety of private voluntary organizations has been complementing the work of the government in making basic services available to 800 million Indians. Though limited in resources and scale of impact, many of these agencies have experimented with innovations devised through years of dedicated field experience.

Information about these small, private, and widely dispersed projects has been limited. The lack of descriptive information and project analysis has prevented the many lessons learned from these efforts from reaching the broader audience of policy-makers, program managers, academics, social activists and the interested public.

The Anubhav<sup>1</sup> series is designed to reduce this gap in information, by synthesizing the experiences of selected private voluntary organizations implementing community based health and family planning programs. It aims to disseminate information on innovative projects providing health, nutrition and family planning services in India.

A crucial part of this experience involves the agencies' attempts at reconciling expenditure with revenue. The Costs and Financing of Health Care reviews, through a series of case studies, the costs and financing experiences of selected voluntary health projects from the Anubhav series.

More specifically, the aims of the costs and financing case studies are:

- (i) to describe the sources of financing of programs, and in particular, any innovative efforts at self-financing;
- (ii) to develop cost estimates of certain service programs;
- (iii) to highlight any financial constraints within which voluntary agencies operate and explore the options for improvement; and
- (iv) to share the varied experiences of voluntary agencies in health costs and financing, and to discuss the wider implications of financing issues arising from the research findings.

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<sup>1</sup> Anubhav: Experiences in Community Health, The Ford Foundation, New Delhi, 1987-88.

## INTRODUCTION

SEWA-Rural (Society for Education, Welfare, Action Rural) is a voluntary organization which provides a comprehensive and integrated package of health and development activities to the rural, predominantly tribal population of Jhagadia block in Bharuch District, Gujarat state. The Society's programs can be classified into those that are directly medical and health related, and those activities with the broader aim of improving general socio-economic conditions. In the former category, basic curative, preventive and promotive health care is provided at community sub-centers. More specialized medical care is available at a 50-bed hospital. Environmental afforestation, youth training and women's income generation are examples of the more broad based activities of the Society.

The SEWA-Rural project was founded on the belief that the state has the main responsibility of providing health services to the population. SEWA-Rural perceives the role of a voluntary agency as that of an innovator and facilitator of health development. The organization, in spite of its overall conformity to the government pattern of health service delivery, departs from the pattern in several ways. The provision of mobile services, the incentive related reimbursement of peripheral health workers and the levying of fees for hospital services are examples of this departure.

The financial implications of these innovations need to be examined. For example, what is the cost of the mobile strategy? How is the hospital fee system operationalized? And in particular, how are the poor protected?

This study focuses mainly on the costs and finances of the hospital and community based project, although the other development activities are considered in relation to the consolidated financial situation of SEWA-Rural. Specifically, the study:

- (i) examines the overall picture of financing and costs of SEWA-Rural and assesses the present financial position;
- (ii) analyzes the revenue structure of health services;
- (iii) estimates the total costs of health services and analyzes the distribution of their cost components;
- (iv) generates unit cost data of individual programs and services; and

(v) discusses the implications of financing issues arising from the study results.

The report is divided into five main parts. Part 1 provides the background to the study. It describes the administrative structure of the organization and briefly outlines the main program services.

Part 2 examines the consolidated structure of finances and costs of the Society. The patterns of income and expenditure of separate projects are analyzed and their financial performance assessed. The overall performance of the Society is then evaluated. The proportionate allocations of health versus non-health related activities is examined, and within health activities, the proportionate allocations of the hospital versus the community based project.

Part 3 undertakes a detailed analysis of the hospital. On the revenue side, average patient cost recovery for various hospital services is estimated. On the expenditure side, the total costs of service departments are estimated by cost allocation methods. Average costs are then calculated using the number of service contacts as a measure of service output.

Part 4 examines the structure of finances and costs of the Community Health Project. A cost analysis of a sample of sub-centers is undertaken. The total and average costs of center health activities are calculated, and variations in sub-center service costs are noted to help identify any inefficiencies in program operation.

Part 5 draws together the main findings of the report and discusses the financing issues arising from the study.

## PART 1

## SEWA-RURAL : BACKGROUND

The activities of SEWA-Rural can be divided into two major categories: those that are directly "Medical and Health" related; and those that are more broad based development activities, labelled "Economic and Education". (See Figure 1 for the administrative structure of SEWA-Rural.)

## MEDICAL AND HEALTH PROGRAMS

Medical and health services are delivered through a four tier system:

- i) Peripheral Level Workers: Community Health Volunteers (CHVs), dais and Anganwadi Workers (AWWs) form the first level of care, by providing village based outreach health services.
- ii) Middle Level Workers: Female Health Workers (FHWs) and Male Multi-Purpose Workers (MPWs) based at the health sub-center provide basic curative, preventive and promotive care. The health workers also conduct field visits to provide care, and supervise the peripheral workers. The FHW and MPW are in turn supervised by health supervisors.
- iii) A Mobile Dispensary: A doctor visits each sub-center with the mobile dispensary, approximately twice a month to provide curative and supervisory support to lower level workers.
- iv) A Referral Hospital: This provides more specialized tertiary level services.

The first three tiers (i - iii) of this health delivery system are termed the "Community Health Project" (CHP); the last (iv) the "Kasturba Maternity Home" (KMH) Hospital.

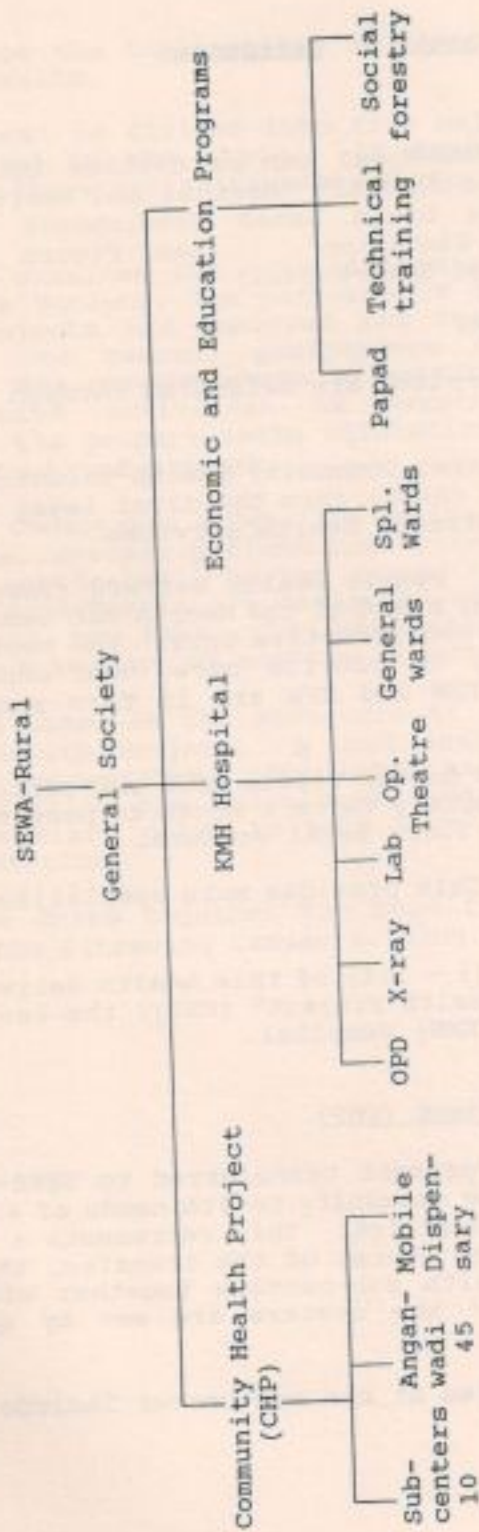
### 1. The Community Health Project (CHP)

In 1984, the state government transferred to SEWA-Rural the responsibility of meeting the community health needs of 40 villages in Jhagadia block, Bharuch district. This represents a catchment population of 35,000. In the course of the transfer, the Society inherited 10 government health sub-centers together with staff. The operational expenses of the centers are met by government grants.

Health service activities at the sub-center include:



**Figure 1** ADMINISTRATIVE STRUCTURE OF SEWA-RURAL



- (i) Maternal Services: These consist of pre-natal and post-natal care, including the administration of tetanus toxoid vaccine and folic iron supplementation.
- (ii) Family Planning Services: These comprise the distribution of oral contraceptive pills and condoms, as well as IUD insertion.
- (iii) Treatment of minor ailments, TB and malaria treatment and surveillance.
- (iv) Immunization of children below the age of five, including BCG, Measles, Polio and triple antigen vaccines.
- (v) Health education, and environmental hygiene and sanitation.

In addition to its operational responsibility for the government sub-centers, the Society has also been delegated the task of implementing the government program called the Integrated Child Development Scheme (ICDS). SEWA-Rural is currently managing 45 pre-school nurseries or anganwadis, all of which are fully government funded. Each anganwadi is staffed by one Anganwadi Worker (AWW) and one helper. Activities at the anganwadi include supplementary feeding of children, pregnant women and lactating mothers, growth monitoring of children below the age of five, vitamin A prophylaxis and folic iron supplementation, as well as pre-school education.

Thus maternal and child health services are provided at both the health center and anganwadi, and the two facilities are, as a result, inextricably linked.

## 2. KMH Hospital

The hospital in Jhagadia serves as a referral center, providing tertiary support to the sub-centers. There are, at present, 50 beds; the number will soon be increased to 70. Specialized services cover general surgery, obstetrics, paediatrics and ophthalmology. Other facilities include an outpatient department, an intensive care unit, an x-ray unit, a laboratory and private wards. In December 1987, the number of private or special beds was increased from one to nine special and semi-special beds. The hospital also has a dispensary which stocks basic drugs.

## 3. Medicine Shop

This is operated by the Society on a non-profit, non-loss basis. On April 1, 1989 it was converted into a cooperative society. Drugs are sold directly to hospital patients (both indoor and outdoor) as well as the general public, at cost price plus a small mark up to cover overhead costs. The hospital also purchases drugs that are not available in its own dispensary on behalf of patients who cannot afford them.

#### 4. T.B. Center

The center, situated in the hospital, provides treatment for T.B. on both an inpatient and outpatient basis. It also provides support for field level T.B. monitoring and surveillance activities. All center expenses are met by a private trust.

#### ECONOMIC AND EDUCATION PROGRAMS

In the year 1987-88 the three major economic and education programs were as follows.

- a) **Papad Making:** This is a pilot scheme currently operating in a few of the project villages. It aims to provide rural women with village based employment opportunities. The SEWA-Rural input into the scheme has been to provide the raw materials for papad preparation, to organize and train women, and to provide production and marketing assistance.
- b) **"Gram Tekniki Kendra":** This technical training center, located near the campus in Jhagadia, provides training for rural youth in skills such as welding, fitting, automobile maintenance and repair, and carpentry. The center also helps trainees with subsequent job placement.
- c) **Social Forestry Project:** Through the project, landless laborers and small and marginal farmers have been given, with government approval, a few hectares of degraded forest land for re-forestation. SEWA-Rural's input into the project has been to provide the materials for planting as well as technical advice.

#### FINANCIAL MANAGEMENT

Each of the projects has a separate bank account, in addition to the General Society account which meets all joint project expenses such as general administration, and some repair and maintenance costs. All donations that are not earmarked enter the Society account where they help meet project deficits. This transfer to projects is called the "SEWA-Rural contribution". At the end of the financial year, all project accounts are brought to the general account, the final income and expenditure balance sheet drawn up for auditing, and then published. In addition to the General Society account, a special purpose fund serves as a sort of clearing account for channelling funds.

## PART 2 THE CONSOLIDATED STRUCTURE OF REVENUE AND COSTS

To examine the income and expenditure patterns of all SEWA-Rural projects, the sources and levels of income of each project are first described. The total costs of projects are then estimated and their cost components examined. Finally, costs and revenues are reconciled to evaluate the financial performance of individual projects, as well as the overall performance of the Society.

### REVENUE STRUCTURE

The total revenue from all five sources (see Figure 2) was Rs.40,08,084 in 1987-88. Government grants represent the single largest source, accounting for 53% of total income. Donations, both foreign and domestic, comprise, at 30%, the second major source. Collections made directly from patients account for 9%, income from employment schemes 5%, and interest earnings represent less than 0.1%.

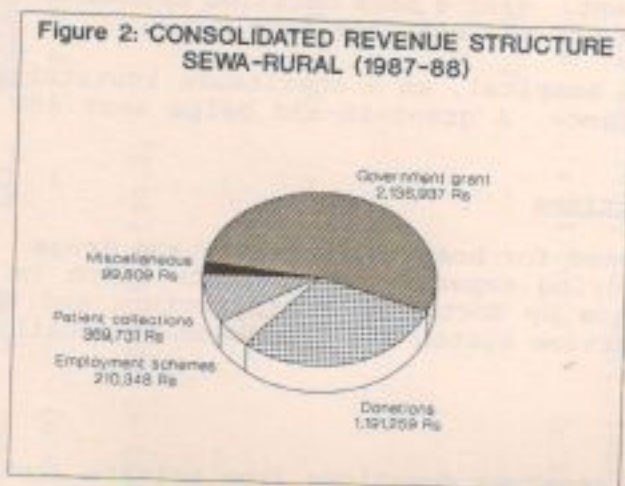


Table 1 examines the revenue structure of individual projects: for medical and health related activities, the proportionate revenue contribution of government grants rises to 73%, patient collections account for 13%, donations 13%, interest earnings 0.1%, and miscellaneous 0.9%. For the economic and education programs, donations and the income from employment schemes are the major funding sources, representing 52% and 41% respectively. Donations not earmarked for a specific activity are pooled in the general account, and serve to cover any program deficits. These transfers are called the SEWA-Rural project contribution.

Examining the total revenue of individual projects, the Community Health Project receives the largest net income, 41%; the KMH Hospital 17%; the General Society 15%; and the T.B. Center 4%. Other projects received progressively less funding. Each source of income is described briefly.

### 1. Government Grants

The Government of India and the United States Agency for International Development (USAID) provide joint financial assistance to the CHP project. The pattern of funding assistance is 75% (GOI/USAID) : 25% (voluntary organization). The funding commitment, for a period of five years, is to aid the expansion of community health services. Assistance terminates in March 1989, from when the state government has agreed to meet all recurrent center expenses.

At present the state government provides financial assistance for specific health activities. For example, the ICDS program for the entire block is managed by SEWA-Rural and is financed fully by the state government. (For a more detailed breakdown of government assistance to the CHP project, see Part 3.)

The referral hospital, as a charitable institution, receives government assistance. A grant-in-aid helps meet 60% of hospital expenditure.

### 2. Patient Collections

Fees are levied for hospital services and drugs. Charges are related to the paying capacity of patients which is judged on a discretionary basis by doctors. Fee structure and the operation of the fee-for-service system are discussed in detail in Part 3 of the report.

### 3. Donations

The Society receives donations from private institutions, individuals, charitable trusts and overseas donors. Donated funds not earmarked for a specific activity are pooled together in the general project account. In addition, the Society organizes fund raising events, such as cultural programs.

### 4. Income from Employment Schemes

There are two sources of income, the youth employment scheme and the sale of papad. The former represents revenue generated from paid commercial work that trainees undertake, such as carpentry or welding jobs.

Table 1 CONSOLIDATED REVENUE STRUCTURE

SEWA-RURAL (1987-88)

Sources	MEDICAL AND HEALTH ACTIVITIES (Rs.)						Sub-total Med.&Hlth (%)
	KMH Hospital (%)	CHP (%)	TB Center (%)	Medicine Shop (%)			
Patient collections	186,258 (26.9)	-	7,057 (1.8)	176,416 (99.8)			369,731 (12.8)
Government grant	494,315 (71.4)	1616,945 (99.2)	-	-	-	-	2111,260 (73.1)
Foreign donations	-	-	-	-	-	-	-
Domestic donations	-	-	377,114 (97.1)	-	-	-	377,114 (13.1)
Income from employment schemes	-	-	-	-	-	-	-
Interest	-	-	-	2,385 (0.6)	-	-	2,385 (0.1)
Miscellaneous	11,756 (1.7)	12,187 (0.8)	1,850 (0.5)	362 (0.2)			26,155 (0.9)
<b>Total</b>	<b>692,329 (100)</b>	<b>1629,132 (100)</b>	<b>388,406 (100)</b>	<b>176,778 (100)</b>	<b>2886,645 (100)</b>		<b>(100)</b>
<b>Total (%)</b>	<b>(24.0)</b>	<b>(56.4)</b>	<b>(13.5)</b>	<b>(6.1)</b>			
<b>G.Total (%)</b>	<b>(17.3)</b>	<b>(40.6)</b>	<b>( 9.7)</b>	<b>(4.4)</b>			

Note: Excludes previous year's balance

## ECONOMIC AND EDUCATION

Table 1 (Contd.)

	Social Forestry (%)	Technical Training (\$)	Papad (%)	Sub-Total Eco. & Edu. (%)	General (%)
Patient collections	-	-	-	-	-
Government grant	11,842 (36.6)	13,835 (4.2)	-	25,677 (5.0)	-
Foreign donations	20,120 (62.2)	248,143 (75.9)	-	268,263 (52.2)	104,011 (17.1)
Domestic donations	-	6,310 (1.9)	-	6,310 (1.2)	435,561 (71.7)
Income from employment schemes	-	58,542 (17.9)	151,806 (98.5)	210,348 (41.0)	-
Interest	-	-	-	-	-
Misc.	384 (1.2)	323	2,252 (1.5)	2,959 (0.6)	68,310 (11.2)
<b>Total</b>	<b>32,346 (100)</b>	<b>327,153 (100)</b>	<b>154,058 (100)</b>	<b>513,557 (100)</b>	<b>607,882 (100)</b>
<b>Total (%)</b>	<b>(6.3)</b>	<b>(63.7)</b>	<b>(30.0)</b>	<b>(100)</b>	
<b>G/Total (%)</b>	<b>(0.8)</b>	<b>(8.2)</b>	<b>(3.8)</b>		<b>(15.2) (100)</b>

Note: Excludes previous year's balance

## 5. Interest

Interest earned on fixed deposits represents a negligible proportion of the total income.

## COST STRUCTURE

Table 2 examines the total costs and distribution of cost components of the health and non-health projects. Total expenditure in 1987-88 was Rs.40,85,722. This figure represents both the direct costs of service provisions as well as support costs (e.g. management staff) plus research and training cost. Drugs/supplies, and salaries together consume the largest share of the expenditure, 31% and 38% respectively. For the medical and health related programs, the drug and salary costs are approximately equal at 38% and 41%; other costs are considerably less. In terms of total cost, the medical and health programs account for 81% of expenditure, economic and education programs 14%, and the General Society 5%. The largest program is the community health project, which represents 44% of all expenditure. The hospital accounts for 23% of costs.

### Cost Components

Expense heads are largely self explanatory. The line item "Materials (economic and education)" represents the cost of raw materials used in these programs, for instance, in the preparation of papad or the cost of saplings in the Social Forestry Program.

## FINANCIAL PERFORMANCE

Table 3 reconciles the revenue and costs of different projects and assesses their operational performance. It shows that all projects, except the technical training scheme, operated at a deficit. In fact, even this does not represent a real surplus because of the carry over of funding into the next financial year. The deficit of each project represents the portion of expenditure to be met by the Society account, i.e. the "SEWA-Rural contribution". The last column of Table 3 indicates the size of the deficit in each project as a percentage of the total expenditure. It shows that 26% of hospital expenditure was to be met by the Society account. For the community health project, the SEWA-Rural contribution was 9% of expenditure.



TABLE 2 CONSOLIDATED COST STRUCTURE OF SEWA RURAL 1987-88 (RECURRENT)

Expense Head	MEDICAL AND HEALTH ACTIVITIES (RS.)					Sub- Total	(\$)
	KMH Hospital	CHP	TB Center	Medicine Shop	Total		
Drugs/X-ray/Supplies	3,36,504	4,76,401	2,83,293	1,64,107	12,60,305	(37.9)	
Salaries	3,87,904	8,80,280	47,424	41,088	13,56,696	(40.8)	
Consumables	15,062	-	-	-	15,062	( 0.4)	
Repair & maintenance	45,332	28,730	252	47	74,361	( 2.2)	
Electricity & water	31,228	9,275	-	1,247	41,750	( 1.3)	
Diet	37,797	-	6,071	-	43,868	( 1.3)	
Materials (economic & education programs)	-	-	-	-	-	( - )	
General admin.	37,444	37,496	4,411	2,141	81,492	( 2.4)	
Linen/laundry/uniform	26,906	-	-	-	26,906	( 0.8)	
Travel/vehicle	5,672	1,41,620	44,534	235	1,92,061	( 5.8)	
Misc. training/education	-	22,969	-	-	22,969	( 0.7)	
FP expense	5,010	1,30,065	-	-	1,35,075	( 4.1)	
Other	7,167	64,654	2,422	1,079	75,322	( 2.3)	
<b>Total</b>	<b>9,36,026</b>	<b>17,91,490</b>	<b>3,88,407</b>	<b>2,09,944</b>	<b>33,25,867</b>	<b>(100)</b>	
<b>Sub-Total (%)</b>	<b>(28.1)</b>	<b>(53.9)</b>	<b>(11.7)</b>	<b>(6.3)</b>	<b>(100)</b>	<b>-</b>	
<b>Grand Total (%)</b>	<b>(22.9)</b>	<b>(43.8)</b>	<b>(9.5)</b>	<b>(5.1)</b>			

Table 2 (contd)

## ECONOMIC AND EDUCATION ACTIVITIES AND ADMINISTRATION

Expense Head	Social Forestry	Technical Training	Papad	Sub-Total	(%)	General	Grand Total	(%)
Drugs/X-ray/Supplies	-	-	-	-	-	-	1,260,305	30.8
Salaries	22,736	126,082	45,578	194,396	(34.2)	11,014	1,562,106	38.2
Consumables	-	11,507	4,202	15,709	(2.7)	-	30,771	0.8
Repair & maintenance	469	4,793	622	5,884	(1.0)	11,453	91,698	2.2
Electricity & water	-	6,218	-	6,218	(1.1)	2,753	50,721	1.2
Diet	-	-	-	-	-	-	48,868	1.2
Materials (economic & education programs)	14,803	58,628	159,563	232,994	(41.0)	-	232,994	5.7
General admin.	423	12,073	2,672	15,168	(2.7)	30,196	126,856	3.0
Linen/laundry/uniform	-	-	-	-	-	-	26,906	0.7
Travel/vehicle	1,933	7,313	13,322	22,568	(4.0)	58,576	273,205	6.7
Misc. training/education	-	15,141	-	15,141	(2.7)	32,205	70,315	1.7
FP expense	-	-	-	-	-	-	135,075	3.3
Other	4,669	54,996	494	60,159	(10.6)	45,421	180,902	4.4
<b>Total</b>	<b>45,033</b>	<b>296,751</b>	<b>226,453</b>	<b>568,237</b>	<b>(100)</b>	<b>191,618</b>	<b>4,085,722</b>	<b>(100)</b>
<b>Sub-Total (%)</b>	<b>(7.9)</b>	<b>(52.2)</b>	<b>(39.9)</b>	<b>(100)</b>				
<b>Grand Total (%)</b>	<b>(1.1)</b>	<b>(7.3)</b>	<b>(5.6)</b>			<b>(4.7)</b>		<b>(100)</b>

**Table 3 FINANCIAL PERFORMANCE OF INDIVIDUAL PROJECTS  
(1987-88)**

Project	Revenue	Expenditure	Performance (+/-)	% Deficit of total Expenditure
KMH Hospital	6,92,329	9,36,026	-2,43,697	26
Community Health Project	16,29,131	17,91,490	-1,62,358	9
TB Center	3,88,407	3,88,407	--	-
Medicine Shop	1,76,778	2,09,944	- 33,166	16
Social Forestry	32,346	45,033	- 12,687	28
Technical Training	3,27,153	2,96,751	+ 30,402	-
Papad	1,54,058	2,26,453	- 72,395	32
General	6,07,882	1,91,618	+4,16,264	-
<b>Total</b>	<b>40,08,084</b>	<b>40,85,722</b>	<b>- 77,638</b>	<b>2</b>

The medicine shop, which operates on a non-profit, non-loss basis, actually ran a deficit in 1987-88. This is due to a miscalculation on the part of the management, and it is unrepresentative of the performance in previous years. The costs of the T.B.Center are met entirely by a private trust. The SEWA-Rural percentage cost input to the social forestry and papad projects were 28% and 32% respectively.

The deficits of all projects combined was greater than the "net revenue" of the General Society (which covered 10% of total costs). Thus there was an overall operational deficit of Rs.77,638 in 1987-88, or 2% of total expenditure. This deficit was carried over to the next financial year.

The deficit of Rs.77,638 excludes the annual cost of depreciation on buildings, vehicles and equipment. For the hospital alone the depreciation is valued at 1.23 lakh rupees. Thus, the deficit increases considerably if depreciation costs are included.

The expenditure of Rs.1,91,618 under the "General" head includes the cost of administrative staff, vehicles, travel and other support costs. These represent joint costs that are shared by all the departments. To capture the true total costs of projects, this administrative cost needs to be apportioned. Table 4 allocates the joint expenditure to separate projects in relation to the proportionate total costs of projects. The total cost of the CHP project increases from 17.9 lakhs to 18.8 lakhs (or from 44% total cost to 46%), and that of the hospital from 9.4 lakhs to 9.9 lakhs.

TABLE 4  
TOTAL COST OF PROJECTS (1987-88)

Expense Head	PROJECT (Rs.)				Sub- Total	(\$)
	KMH Hospital	CHP	TB Centers	Medicine Shop		
Drugs/X-Ray/ Supplies	336,504	476,401	283,293	164,107	1,260,305	(36.2)
Salaries	390,658	886,531	47,761	41,380	1,366,330	(39.2)
Consumables	15,062	-	-	-	15,062	(0.4)
Repair & maint.	51,802	32,831	288	53	84,974	(2.4)
Elect. & water	33,020	9,807	-	1,319	44,146	(1.3)
Diet	37,797	-	6,071	-	43,868	(1.2)
Materials (eco. & educ. programs)	-	-	-	-	-	-
General admin.	49,141	49,209	5,789	2,810	106,949	(3.1)
Linen/laundry/ uniform	26,906	-	-	-	26,906	(0.8)
Travel/vehicle	7,220	180,271	56,688	299	244,478	(7.0)
Nurse/trg/ed.	28,377	26,797	-	-	55,174	(1.6)
FP expense	5,010	130,065	-	-	135,075	(3.9)
Other	9,570	86,330	3,234	1,441	100,575	(2.9)
Total	991,067	1,878,242	403,124	211,409	3,483,842	(100)
(%)	(24.2)	(46.0)	(9.9)	(5.2)	(85.3)	

Table 4 (Contd.)

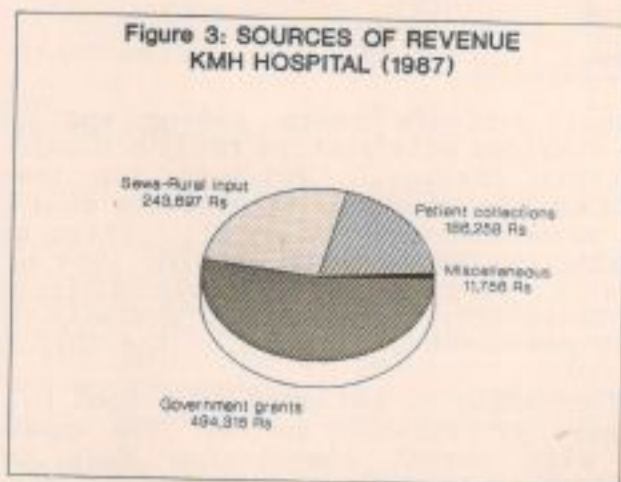
Expense Head	Social Forestry	Technical Training	PROJECT		Total	Grand Total(%)
			Papad	Sub-Total		
Drugs/X-Ray/Supplies	-	-	-	-	1,260,305	(30.9)
Salaries	22,897	126,977	45,902	195,776	1,562,106	(38.2)
Consumables	-	11,507	4,202	15,709	30,771	(0.8)
Repair & maint.	536	5,477	711	6,724	91,698	(2.2)
Elect.& Water	-	6,575	-	6,575	50,721	(1.2)
Diet	-	-	-	-	43,868	(1.1)
Materials (eco.& edu.programs)	14,803	58,628	1,59,563	2,32,994	232,994	(5.7)
General admin.	555	15,845	3,507	19,907	126,856	(3.1)
Linen/laundry/Uniform	-	-	-	-	26,906	(0.7)
Travel/Vehicle	2,460	9,309	16,938	28,707	273,185	(6.7)
Nurse/trg/ed.	-	15,141	-	15,141	70,315	(1.7)
FP expense	-	-	-	-	135,095	(3.3)
Other	6,234	73,433	660	80,327	180,902	(4.4)
Total	47,485	322,892	231,483	601,860	4,085,702	(100)
(%)	(1.2)	(7.9)	(5.6)	(14.7)	(100)	

### PART 3 FINANCING SPECIFIC HEALTH ACTIVITIES: COSTS AND FINANCES OF THE KMH HOSPITAL

This section examines the revenue and cost structures of the hospital. The cost recovery from inpatient and outpatient services are analyzed, and the total costs of different hospital departments estimated by cost allocation. The average cost of each service department is then calculated.

#### REVENUE STRUCTURE

The total revenue for 1987 was Rs.9,36,026. Part 2 of the report identified three main sources of hospital income -- government grants, patient collections and the input from SEWA-Rural (Figure 3).



The SEWA-Rural input (consisting of donated funds) represents the deficit of expenditure over income. The government grant under the charitable hospital/government pattern of funding agreement should meet 60% of costs. In 1987-88, the grant covered only 53% of costs, because the hospital costs included some non-committable items of expenditure. SEWA-Rural met its portion of funding commitment through donations and patient collections. Patient collections comprise revenue generated through user fees.

#### Fee-for-service

Fees are levied for both outpatient and inpatient services. A general outpatient consultation is provided free of charge. There is, however, a nominal case registration fee. Specialist outdoor and indoor consultations carry a fee of Rs.10. Routine

drugs purchased on prescription at the hospital dispensary cost one rupee per day. Non-routine drugs that are not stocked by the hospital dispensary can be purchased at the medicine shop at full cost. All additional services, such as x-rays and laboratory tests, carry a charge per item of service.

The daily bed charge in the general ward is Rs.7. This fee includes the cost of routine drugs, and, for some poor patients, the cost of food. As for outdoor services, there is a charge per item of indoor service. Income from surgery consists of theatre rent, operation and anesthesia fee. The daily bed charge for special and semi-special wards are Rs.25 and Rs.12 respectively. These charges cover the cost of additional nursing staff in the special wards, as well as the cost of routine drugs. Special ward patients are charged 50% more than other patients for all indoor services. Non-routine drugs are purchased directly from the medicine shop by special ward patients. Hospital staff and government employees are entitled to use the private wards at concessionary rates.

#### Method of Patient Billing

All hospital patients (both indoor and outdoor), are presented with an itemized bill listing fully all services rendered and their respective charges. Patients are then requested, according to their paying capacity, to meet the full cost of care, part of the cost, or no contribution at all. There are thus three categories of paying patients: those meeting 100% of their bill; those meeting one per cent to 99% of their bill; and those not paying at all. In reality, the bulk of patients in the second category generally pay about 20% to 70% of the full cost.

The paying capacity of patients is judged by the hospital doctors on a purely discretionary basis. The appearance of the client together with casual questioning form the basis of assessment. Ultimately, the level of patient contribution is determined through a process of negotiation and bargaining between the doctor and patient. In some cases, if cash is not readily available, treatment may be granted on credit.

The hospital reimburses the medicine shop for any non-routine drugs purchased on behalf of free or partially free patients. This amount is not indicated on the bill, but it can be ascertained from patient case notes.

#### Cost Recovery Estimates

This section estimates the level of cost recovery achieved from outpatient and inpatient services, that is, the percentage of costs covered by service fees.

(i) Outpatient Services: Outpatient billings were sampled for a period of one month. The composition of receipts for this period is as follows.

**Table 5 COST RECOVERY ESTIMATES FROM KMH OUTPATIENTS**

<u>Fee-service</u>	Full billed	
	<u>amount</u>	<u>%</u>
	(Rs.)	
Registration	909	( 2.7)
Drugs/injection	15,898	(46.7)
Dressings	342	( 1.0)
Consultations	3,680	(10.8)
Scanning	69	( 0.2)
X-Ray	6,200	(18.2)
Lab tests	6,622	(19.4)
Others	355	( 1.0)
Total billed amount	34,075	(100.0)
Free care	25,833	
Actual costs recovered	8,242	
% Actual cost recovery	(24)	

Over the month, only 24% of total costs were recovered from outpatients. A day by day analysis of cost recovery indicated that in any one day the percentage of costs recovered did not exceed 40%. Total recovery represents the combined income from patients paying total costs, as well as those paying partial costs.

Drugs represent the most expensive charge item on the outpatient bill at 47% of total charges. X-ray and laboratory charges are approximately equal at 19%.

The average number of outpatient contacts per month is 3,600, of which approximately 60% are totally free. The remaining 40% comprise total and part paying patients. The average receipt per paying outpatient contact is therefore calculated to be Rs.5.7. Excluding the income from x-rays and laboratory tests, the average receipt per contact is Rs.3.5.

(ii) Inpatient Services: Table 6 shows cost recovery estimates for general and special ward patients. It displays the proportionate distributions of individual charge items as a percentage of the full billed amount, and the actual overall recovery achieved in the month. Figure 4 compares the structures of the general and special ward patient bill by individual charge items.

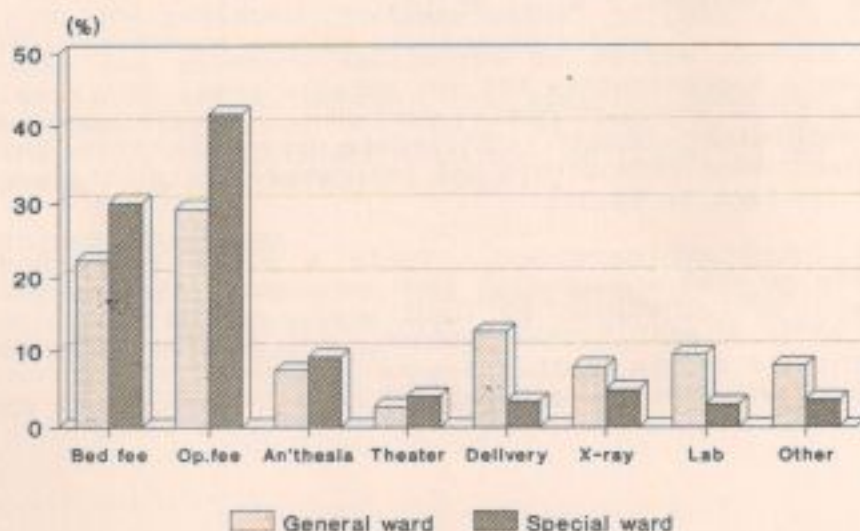


**Table 6 COST RECOVERY ESTIMATES FROM KMH INPATIENTS**

Fee Item	General Ward		Semi/Special Ward	
	Full billed amount (1 month)	(%)	Full billed amount (2 months)	(%)
Bed charge	4,360	(22.3)	1,181	(30.0)
Operation	5,731	(29.3)	1,638	(41.7)
Anaesthesia	1,452	( 7.4)	362	( 9.2)
Op. theatre rent	536	( 2.7)	161	( 4.1)
Delivery	2,465	(12.6)	135	( 3.4)
X-ray	1,555	( 8.0)	193	( 4.9)
Lab. tests	1,880	( 9.6)	119	( 3.0)
Consultations	830	( 4.3)	120	( 3.1)
Other	746	( 3.8)	22	( 0.6)
<b>Total billed amount</b>	<b>19,555</b>	<b>(100)</b>	<b>3,931</b>	<b>(100)</b>
Free care	15,276		1,216	
Actual costs recovered	4,279		2,715	
% Actual cost recovery	(22)		(69)	

General ward receipts are based on a one month sample of patients' bills. The sample indicates that only 22% of costs were recovered, and that 78% were totally waived. The composition of different categories of patients in the sample month was: totally free, 70.6%; full payment, 23.3%; and partial payment, 6.1%. Partial payment varied between 20% and 70% of the full charge.

**Figure 4: COMPARISON OF GENERAL AND SPECIAL WARD BILLS BY CHARGE ITEM**



The total number of general bed days in the month was 872, of which paying patients (both full and partial) comprise 29.4% or 256 days. Thus the average daily receipt from the paying category is Rs.22.3. This includes income from operations, x-rays and laboratory tests, as well as the bed charge. The bed charge comprises 22.3% of income, or Rs. 5.0 per patient per day. The average length of stay in the general ward is 4.5 days.

Operation charges are the most expensive item on the general ward bill; they represent 29% of total charges. Bed charge is the second highest at 22% of total charges. The cost of routine drugs is covered by the bed charge. Special drugs purchased from the medicine shop on behalf of free general ward patients are not included. For the same month, expenditure on routine drugs is estimated at Rs.3,517.

Special and semi-special ward receipts are based on a two month sample of patient bills (one month prior to the expansion in December and one month after).<sup>2</sup> Only 69% of total fees charged were recovered in the period, because one of the months sampled included a large number of subsidized special ward patients. They were either government employees, hospital staff or family planning cases. The total number of special bed days during the two months was 70, resulting in an average daily receipt per patient of Rs.38.8. Excluding the subsidies provided, the average daily receipt rises to Rs.56.2. Of the daily receipt of Rs.56.2, 30% (or Rs.16.9) represents income from bed charges; and 41.7% (or Rs.23.4) from operations (special and semi-special wards combined).

In comparison to the general ward, a large proportion of special ward patients are surgical cases and their average length of stay is longer, at 5.75 days.

## COST STRUCTURE

Part 2 estimated the total cost of KMH Hospital in 1987-88 at Rs.9,91,067, and examined the overall distribution of cost components. This section disaggregates the hospital expenditure further and estimates the costs of individual departments. The method of cost allocation to departments is described and its rationale explained. The average costs of hospital departments are then estimated, using a measure of service output.

The cost composition of hospital departments is displayed in Table 7. The cost centers are: the Outpatient Department (OPD), the X-Ray Unit, the Laboratory, the General Wards, the Semi and

<sup>2</sup> The number of special beds in the hospital changed during the year 1987-88, from one special bed before December 1987 to 9 semi/special beds since.

Special Wards, the Operating Theatre and Administration. Each expense item is analyzed in turn.

### Salaries

Salaries take the lion's share of the hospital budget at 39% of the total expenditure. This comprises the wages of all medical staff -- full time and part-time doctors, nurses, ancillary staff, technicians and administrative support staff. In addition, the hospital receives, on a continual basis, the free services of two intern doctors. They are paid a monthly honorarium by the government. On including the value of their services, the wage bill rises to 41% of total expenditure.

A useful breakdown of the personnel cost is by the mix of manpower utilized, to indicate the proportion of medical to support staff. In KMH the manpower mix is as follows: doctors, 24%; nurses, 24%; technicians, 12%; ancillary staff, 24%; and administrative staff, 14%. Thus personnel providing direct services command the largest cost.

In Table 7 the total salary cost is apportioned to individual hospital departments. The method of apportionment is explained. The salaries of staff serving in one department only, in the x-ray unit or in administration for example, are allocated directly to that department. The salaries of staff working in more than one department, such as doctors attached to the OPD, general wards and special wards, are apportioned in relation to the time spent in each department. If a doctor, in an average day, spends approximately 60% of his/her service time in the OPD, 30% in general ward rounds and 10% in the special wards, then his/her salary is apportioned accordingly. Service time distribution was determined with the help of the hospital Regional Medical Officer (RMO) and was based on his familiarity with staff assignments.

The table shows that "salaries" comprise differing proportions of total cost in each department. In the x-ray unit, personnel cost constitutes only 7% of total cost; while in the special wards it is a substantial 60%.

### Drugs

Drugs consume 24% of total hospital expenditure. The drug cost of individual departments is estimated in Table 7. OPD drug cost represents actual expenditure in the department during the year, as does drug usage in the operating theatre. The costs of the general and special wards are combined under the present accounting structure. Independent drug costs of these wards were estimated by the following method.

TABLE 7 COST STRUCTURE OF INDIVIDUAL DEPARTMENTS, KMH HOSPITAL (1987-88)

Expense Head	Departments (Rs.)							
	OPD	(%)	X-Ray	(%)	Lab	(%)	Genl. Ward	(%)
Salaries	87,664	(49.1)	5,665	(6.8)	15,470	(41.0)	115,752	(35.6)
Drugs	84,183	(47.1)	-	-	-	-	102,023	(31.4)
X-Rays	-	-	75,210	(90.0)	-	-	-	-
Chemicals	-	-	-	-	20,976	(55.5)	-	-
Consumables/ Gen.Admin	-	-	-	-	-	-	-	-
Repairs/maint. buildings	3,210	(1.8)	399	(0.5)	192	(0.5)	8,739	(2.7)
Repair/maint. equipment	1,007	(0.6)	2,043	(2.4)	975	(2.6)	3,734	(1.1)
Elect./water	2,463	(1.4)	307	(0.3)	146	(0.4)	6,706	(2.1)
Diet	-	-	-	-	-	-	37,797	(11.6)
Linen/laundry	-	-	-	-	-	-	24,532	(7.5)
FP operation	-	-	-	-	-	-	-	-
Nurse training	-	-	-	-	-	-	25,874	(8.0)
Other	-	-	-	-	-	-	-	-
Total	178,527	(100)	83,624	(100)	37,759	(100)	325,157	(100)
₹	(18.0)		(8.4)		(3.8)		(32.8)	
Total Cost	229,820		107,650		48,608		418,579	
Service Depts.	(23.2)		(10.9)		(4.9)		(42.2)	

Table 7 (contd)

Expense Head	-----Departments (Rs.)-----						Intern Cost	(\$)
	Semi/Spl. ward	Operating Theatre	Admin.	Total	(\$)	(\$)		
Salaries	25,666 (60.5)	40,785 (39.8)	99,656 (45.1)	390,658 (39.4)			19,200 (41.4)	
Drugs	5,327 (12.6)	48,785 (47.6)	-	240,318 (24.3)				
X-Rays	-	-	-	75,210 (7.6)				
Chemicals	-	-	-	20,976 (2.1)				
Consumables/Gen. Admin.	-	-	-	71,423 (32.3)			(7.2)	
Repairs/maint buildings	-	1,635 (1.6)	21,378 (9.6)	35,553 (3.6)				
Repairs/maint. equipment	772 (1.8)	4,944 (4.8)	2,774 (1.2)	16,249 (1.6)				
Elect./water	5,752 (13.6)	1,225 (1.2)	16,391 (7.4)	33,020 (3.3)				
Diet	-	-	-	37,797 (3.8)				
Linen/laundry	2,334 (5.6)	-	-	26,906 (2.7)				
FP operation	2,503 (5.9)	5,010 (4.9)	-	5,010 (0.5)				
Nurse training	-	-	-	28,377 (2.9)				
Other	-	-	9,570 (4.3)	9,570 (1.0)				
Total	42,394 (100)	102,414 (100)	221,192 (100)	991,067 (100)				
\$	(4.3)	(10.3)	(22.3)	(100)				
Total cost Service Depts	54,575	131,835	(-221,192)	991,067				
(%)	(5.5)	(13.3)	-	(100)				

The aggregate drug cost of the general and special wards includes the cost of routine drugs supplied to each, plus the cost of special drugs purchased from the medicine shop for general ward free group patients. First, the expenditure on special drugs for the free category of patients was estimated by sampling one month of patient case notes. The estimated annual cost of non-routine drugs was allocated in total to the general ward drug head. There is some expenditure on non-routine drugs for certain categories of special ward patients who receive concessionary care. This error, however, is considered to be marginal. The remaining joint cost of routine drugs is allocated to the general and special wards in proportion to the number of bed days in each. This is based on the assumption that routine drugs are prescribed to general and special ward patients in similar quantities.

Drug cost takes a differential share of the total expenditure in each department. In OPD, it comprises 47% of total expenditure; while in the special wards it is only 12.6%, because the special ward drug head includes only the cost of routine drugs.

#### X-rays and Chemicals

The line item, x-rays and chemicals, represents the actual expenditure on these items in the x-ray unit and laboratory. In the x-ray unit the cost of film accounts for the major slice of expenditure.

#### Consumables/General Administration

This head includes expenditure items such as phenyl, stationery, travel, etc. The cost was allocated in full to the general administrative head.

#### Repair and Maintenance of Buildings

The repair and maintenance costs of buildings were allocated to departments in proportion to the relative size of each department. This is with the exception of the special ward which was newly constructed in December 1987, and as a result received no repairs during the year.

#### Repair and Maintenance of Equipment

The cost of repair and maintenance of equipment represents the actual expenditure in each department.

#### Electricity and Water

This bill was apportioned in relation to the size of each department.

Diet

This represents the cost of feeding the free category of general ward patients who request food.

Linen and Laundry

This cost was apportioned between the general and special wards according to the number of annual bed days in each.

Family Planning Operations

These expenses appear under the operating theatre cost department.

Nurse Training

This cost was apportioned between the general and special ward in proportion to the number of personnel in each.

The cost distribution across departments, with the apportionments mentioned above, is: OPD 18.0%; X-Ray 8.4%; Laboratory 3.8%; Semi/Special ward 4.3%; General Ward 32.8%; Operating Theatre 10.3%; and Administration 22.3%.

The administrative cost, which commands a substantial 22.3% of total expenditure, can be viewed as a joint cost of all service departments, since administrative support is provided to all services. To capture the true total costs of service departments, the administrative cost is apportioned in relation to the proportionate total costs of departments. The last row of Table 7 shows the distribution of total costs of service departments. The general ward constitutes the largest service cost, at 42.2%.

Average Costs

Table 8 estimates the average cost of each department. Average cost is the total cost divided by a measure of service output; it reflects the cost per unit of output. The measure of output used for each department is the actual number of service contacts. Thus cost per OPD contact is estimated at Rs.5.5, (of which drug cost is Rs.2), average cost per x-ray taken is Rs.22.6; cost per laboratory test Rs.1.0; cost per bed day in the general ward Rs.38.4; cost per special ward bed day Rs.51.7; and cost per operation Rs.121.1.

The difference in cost between the general and special ward is largely due to the additional staff in the latter. Table 9 compares the cost structure per patient day for the general and special wards, which exhibit markedly different cost distributions.

**TABLE 8**      **AVERAGE COSTS OF KMH HOSPITAL SERVICE DEPARTMENTS**  
(1987-88)

<u>Department</u>	<u>Total cost</u> (Rs.)	<u>Output</u>	<u>Average Cost</u> (Rs.)
OPD	2,29,820	41,910	5.5
X-Ray	1,07,650	4,758	22.6
Laboratory	48,608	46,734	1.0
General Ward	4,18,579	10,914	38.4
Semi/Special Wards	54,575	1,056	51.7
Operating Theatre	1,31,835	1,089	121.1

The salary cost per general ward patient day is Rs.10.6, and that of the special wards Rs.24.3. The drug cost of special ward patients includes the cost of only routine drugs, and as a result is much lower than that of the general ward, which also includes expenditure on drugs from the medicine shop for free group patients. Non-routine drugs for special ward patients are purchased personally, either from the medicine shop or from outside. No record of this purchase exists and therefore its total volume cannot be established. The electricity and water expense is substantially higher per patient in the special ward, due to its larger size relative to the number of beds. Since nurse training is not an actual annual recurrent expense, it should not be included in average cost estimates. Omitting this expense from the cost per patient day reduces the cost for the general ward to Rs.36 and the special ward to Rs.49.3.

Not all general ward patients are fed and therefore the diet cost per patient is an underestimated figure. It is approximately Rs.7.0 per patient per day.

Finally, it should be noted that the total number of bed days in the year for general and special ward patients were estimated from average occupancy rates. The number of both special and general beds increased in December 1987, and this is incorporated into the calculation. The average occupancy of the special ward, both prior to and after expansion, was 80%. In the general ward the average occupancy is 85%.



**TABLE 9** COMPARISON OF COST PER PATIENT DAY IN THE  
GENERAL AND SEMI/SPECIAL WARD

<u>Expense Head</u>	<u>General Ward</u>	<u>(%)</u>	<u>Semi/Spl. Ward</u>	<u>(%)</u>
Salaries	10.60	(27.6)	24.30	(47.0)
Drugs	9.35	(24.4)	5.04	( 9.7)
Repair/Maint. building	0.80	( 2.1)	-	-
Repair/Maint. equipment	0.34	( 0.9)	0.73	( 1.4)
Electricity/water	0.61	( 1.6)	5.45	(10.6)
Diet	3.46	( 9.0)	-	-
Office Administration	8.57	(22.3)	11.54	(22.3)
Linen/laundry	2.25	( 5.9)	2.25	( 4.4)
Nurse Training	2.37	( 6.2)	2.37	( 4.6)
<b>Total</b>	<b>38.35</b>	<b>(100)</b>	<b>51.68</b>	<b>(100)</b>

#### A SUMMARY OF REVENUE AND COSTS

This section brings together the receipt estimates of hospital patients from the paying category, and the cost estimates, to indicate the level of cost recovery achieved in each department. Table 10 shows cost recovery estimates.

**Table 10** COST RECOVERY ESTIMATES

<u>Department</u>	<u>Average Cost</u>	<u>Average Receipt*</u>	<u>(%) recovery</u>
	(Rs.)	(Rs.)	
OPD	5.48	3.50	(63.9)
General Wards	38.35	4.97	(12.9)
Semi/Special Wards	51.68	16.85	(32.6)

\* Average receipt excludes fee income from x-rays, laboratory tests and operations. For the OPD, it represents the average receipt per paying patient contact, and for the wards the average receipt per patient day. The receipt from semi/special wards excludes the subsidy provided to government and hospital staff.

Paying patients in all the departments are not covering the full cost of care. This is to be expected in the OPD and the general wards, which includes those patients meeting only a part of their medical care costs. The special wards, however, are estimated to be covering only 32.6% of costs. This estimate,

though, excludes income from operations, x-rays and lab tests. Some extra recovery is achieved here from special ward patients, as charges for these services are 50% higher than those for other categories of hospital patients. It was estimated earlier that bed charges accounted for approximately 30% of the total daily income from a special ward patient. The remaining income comes from operation and anesthesia (51%), and x-rays, laboratory, etc. (19%). Therefore, if the income from these services exceed their cost substantially, it is likely that private ward patients may in fact be covering a greater proportion of their total costs.

## PART 4 A COST ANALYSIS OF PRIMARY HEALTH CARE: COSTS AND FINANCES OF THE COMMUNITY HEALTH PROJECT

This part of the report examines the costs and finances of the Community Health Project (CHP). The consolidated financial picture is first examined, followed by a detailed cost analysis of a sample of health sub-centers and anganwadis. The total costs of individual service programs and their average costs are calculated.

### AN OVERVIEW OF COSTS AND FINANCES

Part 2 identified two major sources of income for the CHP - the government grant which contributed 90% of total expenditure, and the remaining 10% input from SEWA-Rural. Figure 5 displays the revenue structure. Table 11 provides a breakdown of government funds, into central and state level government grants. State funding for the ICDS program represents 43% of grant funding; the GOI/USAID grant for the voluntary organization program (VOP) 28%; and additional state assistance to meet the expenses of other health programs, such as malaria eradication and family planning, 29%.

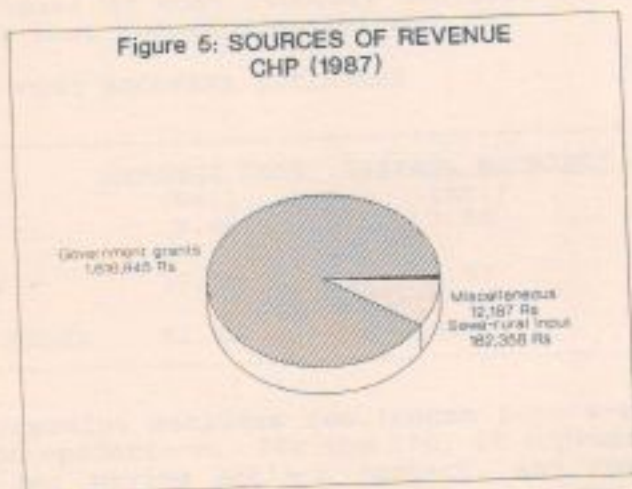


Table 12 analyzes the cost structure of the CHP divided by the ICDS program and all other programs coming under CHP. The two display different cost distributions. The largest cost item in ICDS is the food cost of the supplementary nutrition feeding program, whereas in the "other" CHP category, salaries represent the largest cost item. Vehicle and travel take 12.5% of the total cost, of which the mobile dispensary accounts for the major

proportion. As in the hospital, the CHP also receives the services of two government intern doctors. A cost is calculated for their services and included in the salary line item.

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**Table 11**                      **GOVERNMENT GRANT BREAKDOWN**  
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	<u>(Rs.)</u>	<u>(%)</u>
VOP - GOI/USAID	4,60,815	28.5
ICDS - STATE	6,91,000	42.7
CHP/FP - STATE	4,65,130	28.8
<b>Total</b>	<b>16,16,945</b>	<b>(100)</b>

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### Per-Capita Costs

The total annual cost of the ICDS program was Rs.6,53,896 and the total number of beneficiaries 4,500. The annual cost per beneficiary is therefore, Rs.145.3. All other community health programs cost Rs.11,37,594. The catchment population of the project is 35,000, resulting in an annual cost per capita of Rs.32.5. This, however, includes family planning incentive payments, and also the salary cost of personnel not directly involved in service provision. It excludes the cost of drugs supplied by the government.

### COST ANALYSIS OF CHP

This section estimates the total costs and average costs of service programs for a sample of health sub-centers and anganwadis. The distribution of program cost components are analyzed and variations in average cost between centers/anganwadis are noted. Comparative cost data are used to help identify possible sources of inefficient program operation, such as in drug use.

### Methodology

The cost accounting method used is a simplified version of that described by Sakai et al.<sup>3</sup> All service resources are translated into costs to arrive at a sum. The number of service contacts are used to calculate the cost per service output. Total costs are estimated for a period of one month; the sample month was October 1988. The service categories used in the analysis are as follows:

3. Sakai, Suomi, Najib, Mardiaty; Gani, Ascobat, "Cost Allocation Methods", Report No.3, in Gani Ascobat et al (eds.), Indonesia Rural Health Services Cost Study, Jakarta: University of Indonesia, 1988.

**Table 12**  
**COST STRUCTURE OF COMMUNITY HEALTH PROJECT**  
 (1987-88) (Rupees)

Expense head	ICDS	(\$)	Other	(\$)	Total	%	Intern Cost	\$
Salaries	215,840	(33.0)	664,440	(58.4)	880,280	(49.1)	19,200	(50.2)
Drugs*	-	-	58,102	(5.1)	58,102	(3.2)		
General Admin./ utilities/repairs	12,000	(1.8)	75,501	(6.6)	87,501	(4.9)		
vehicle/Travel	-	-	141,620	(12.5)	141,620	(7.9)		
Training/education	-	-	22,969	(2.0)	22,969	(1.3)		
FP Expense	-	-	130,065	(11.4)	130,065	(7.3)		
Supplementary Nutr.	418,299	(64.0)	-	-	418,299	(23.4)		
Other	7,757	(1.2)	44,897	(3.9)	52,654	(2.9)		
Total	653,896	(100)	1,137,594	(100)	1,791,490	(100)		
\$	(36.5)		(63.5)		(100)			

\* Excludes costs of drugs supplied in kind by government.

## 1. Health Sub-Center

(i) **Curative Care (CC):** This category covers all personal services to cure illness, and is inclusive of curative care given to pregnant women and children below the age of five, but excludes curative treatment for T.B. and malaria.

(ii) **Maternal Health Services and Family Planning (MH/FP):** These services include all pre-natal, intra-natal and post-natal care, plus tetanus toxoid immunization and iron folic supplementation. Distribution of contraceptive pills and condoms, and motivation for sterilization are among the family planning activities.

(iii) **Communicable Disease Control (CDC):** This includes screening, monitoring and treatment of T.B. and malaria.

(iv) **Immunization:** Vaccines administered include BCG, DPT, polio and measles.

(v) **Other:** These services include, for instance, record keeping, attendance of meetings and health education.

2. **Anganwadi:** This service category consists of child health care activities of the ICDS program, for example, the supplementary feeding of children and pregnant and lactating mothers; growth monitoring; vitamin A prophylaxis and iron supplementation.

3. **Mobile Service:** This provides services and support to all the sub-center and anganwadi program activities described above.

## The Centers

Three health sub-centers, Mulad, Daria and Fulwadi, were sampled for the cost analysis, and the costs of the anganwadis attached to each of these centers were also analyzed. All three centers provide identical services but differ in their staffing patterns and in the size of their catchment population (see Table 13). Daria sub-center has no Female Health Worker (FHW); her duties, concerned solely with the Maternal Health and Family Planning program, are instead performed by the Community Health Volunteers (CHVs), who receives incentive payments per MH/FP activity undertaken. The centers also differ in the number of peripheral workers providing outreach services. This is dependent on the number of hamlets attached to each center, their proximity and population size. For example, Mulad center has three hamlets, for which there are three CHVs and three anganwadi workers (AWWs), while Fulwadi has four hamlets, four CHVs and three AWWs. Each center is visited by the mobile an equal number of times a month.

**Table 13 POPULATION SIZE AND STAFF IN HEALTH SUB-CENTRES**

	Sub-Centre		
	Mulad	Daria	Fulwadi
Catchment population	2,533	3,284	3,204
FHW	1	0	1
CHVs	3	3	4
AWWs	3	6	3
Dais	10	16	10

### Cost Components

All the costs estimated for services are variable costs -- salaries, drugs and supplies, operation and maintenance, and the recurrent costs of the mobile. Fixed costs such as the value of equipment and buildings are omitted. Costs can be further differentiated on the basis of whether they are shared between programs, (joint costs), or attributed only to a single program (non-joint costs). Salary costs of staff serving in more than one program are of the former type, while cost of drugs utilized by a particular program are of the latter type.

Table 14 shows the total cost estimates for service programs in each sub-center/anganwadi. The method and rationale of cost allocation for each item of expenditure is explained in turn.

### Salaries/Honoraria/Incentives:

Salary costs were allocated to service programs in proportion to the time spent by staff on each health activity. For example, if the time spent by a FHW is distributed across activities in the proportion CC, 15%; MH/FP, 65%; Immunization, 15%; and Other, 5%; her monthly salary was apportioned between programs accordingly. The salaries of the anganwadi worker, anganwadi helper and MPW were similarly apportioned. The monthly honorarium paid to the CHVs was also apportioned according to their service time distribution.

Service time distributions of center and anganwadi staff were determined by questioning the workers themselves about their workloads. Higher level support staff were also questioned about center staff time distribution. The mean time distribution of all respondents was taken. Incentive earnings of the peripheral workers were allocated directly to the service activity for which the incentive was earned. For example, incentives paid for attending meetings were allocated to the "other" category, and MH/FP related incentives to the relevant service category, i.e. MH/FP. The salary costs of supervisory staff were allocated in relation to the proportionate total costs of the services. Thus

**TOTAL COST OF SERVICE PROGRAMS - CHP**  
**HEALTH SUB-CENTER**

<u>SERVICE PROGRAM</u>	<u>Mulad</u>	<u>(%)</u>	<u>Daria</u>	<u>(%)</u>	<u>Fulwadi</u>	<u>(%)</u>
<b>1. Curative Care</b>						
- Salaries/Honoraria/ Incentive	566.6	(31.0)	371.0	(21.7)	774.4	(34.5)
- Drugs/Supplies	341.6	(18.7)	419.0	(24.5)	552.5	(24.6)
- Operation & Maint./ Contingency	18.2	(1.0)	18.5	(1.1)	19.3	(0.9)
- Mobile	899.5	(49.3)	899.5	(52.7)	899.6	(40.1)
- <b>Total cost</b>	<b>1,825.9</b>	<b>(100)</b>	<b>1,708.0</b>	<b>(100)</b>	<b>2,245.8</b>	<b>(100)</b>
	<b>(18.2)</b>		<b>(18.2)</b>		<b>(19.3)</b>	
<b>2. Maternal Health/FP</b>						
- Salaries/Honoraria/ Incentive	524.5	(63.7)	143.6	(32.5)	551.8	(65.1)
- Drugs/Supplies	4.7	(0.6)	7.2	(1.6)	2.8	(0.3)
- Operation & Maint./ Contingency	8.0	(1.0)	4.7	(1.1)	7.1	(0.8)
- Mobile	286.1	(34.7)	286.1	(64.8)	286.1	(33.8)
- <b>Total cost</b>	<b>823.3</b>	<b>(100)</b>	<b>441.6</b>	<b>(100)</b>	<b>847.8</b>	<b>(100)</b>
	<b>(8.2)</b>		<b>(4.7)</b>		<b>(7.3)</b>	
<b>3. Immunization</b>						
- Salaries/Honoraria/ Incentive	350.7	(60.7)	147.9	(37.5)	348.5	(55.3)
- Drugs/Supplies	28.5	(4.9)	49.5	(12.5)	82.8	(13.2)
- Operation & Maint./ Contingency	5.7	(1.0)	4.2	(1.1)	5.3	(0.8)
- Mobile	193.1	(33.4)	193.1	(48.9)	193.1	(30.7)
- <b>Total cost</b>	<b>578.0</b>	<b>(100)</b>	<b>394.7</b>	<b>(100)</b>	<b>629.7</b>	<b>(100)</b>
	<b>(5.7)</b>		<b>(4.2)</b>		<b>(5.4)</b>	



	<u>Mulad</u>	<u>(%)</u>	<u>Daria</u>	<u>(%)</u>	<u>Fulwadi</u>	<u>(%)</u>
4. <u>CDC</u>						
- Salaries/Honoraria/ Incentive	579.2	(85.2)	468.4	(82.4)	500.1	(83.5)
- Drugs/Supplies	6.5	(1.0)	5.9	(1.0)	5.0	(0.8)
- Operation & Maint./ Contingency	94.2	(13.8)	94.1	(16.6)	94.2	(15.7)
- Mobile	679.9	(100)	568.4	(100)	599.3	(100)
- Total cost (%)	(6.8)		(6.1)		(5.1)	
5. <u>ICDS/Child Health</u>						
- Salaries/Honoraria/ Incentive	1,230.3	(23.3)	2,452.0	(44.1)	1,226.2	(19.0)
- Drugs/Supplies	3,825.9	(72.3)	2,869.6	(51.6)	4,993.7	(77.3)
- Operation & Maint./ Contingency	53.2	(1.0)	59.3	(1.1)	56.0	(0.9)
- Mobile	181.1	(3.4)	181.1	(3.3)	181.1	(2.8)
- Total cost (%)	5,290.5	(100)	5,562.0	(100)	6,457.0	(100)
	(52.6)		(59.4)		(55.4)	
6. <u>Other</u>						
- Salaries/Honoraria/ Incentive	565.0	(66.4)	407.9	(58.9)	584.0	(67.3)
- Drugs/Supplies	8.3	(1.0)	7.4	(1.1)	7.3	(0.8)
- Operation & Maint./ Contingency	277.1	(32.6)	277.1	(40.0)	277.1	(31.9)
- Mobile	850.4	(100)	692.4	(100)	868.4	(100)
- Total cost (%)	(8.5)		(7.4)		(7.5)	
<b>Grand Total</b>	<b>10,048.0</b>		<b>9,367.1</b>		<b>11,648.0</b>	
	(100)		(100)		(100)	

the line item salaries, honoraria and incentives includes all the above costs.

#### Drugs and Supplies:

The "drug and supply" cost of each service program was estimated by the following method. For the curative care program, the total costs of curative drugs used by the mobile, FHW, MPW, CHVs and AWWs during the month were determined by examining the drug returns of the workers. The "drug/supply" cost of the MH/FP program represents the imputed value of tetanus toxoid vaccine administered and iron folic tablets dispensed in the month. These items are supplied in kind by the government. Similarly, the "drug/supply" cost of the immunization program represents the imputed value of each type of vaccine given during the month. The ICDS/Child Health "drug/supply" cost head represents the food cost of the supplementary feeding program. Prior to October 1988, the project supplied the anganwadis with the raw materials for food preparation. The state government is at present supplying food supplements. Thus the cost shown represents the expenditure of only 6 months. The cost of drugs used in the CDC program is not known and is therefore omitted from the calculations.

#### Mobile:

The total monthly cost of the mobile service was estimated. The cost components include the salaries of doctor/interns and driver, petrol, oil and lubricants, and repair maintenance costs. The last two cost components represent average monthly costs of actual annual expenditure. The total monthly cost represents the combined mobile service for all ten sub-centers. One tenth of this cost was allocated to the service programs of the sample centers and anganwadis, and apportioned to services according to the service time distribution of the mobile workers. Again, service time distribution was established by questioning a range of project staff.

#### Operating and Maintenance/Contingency:

Expenditure was estimated to be Rs.100 a month in each sub-center. This cost was apportioned between service programs in relation to the proportionate total cost of programs.

### RESULTS

#### Total Costs

The total costs of all services combined vary across sub-centers. The sub-center with the lowest total cost is Daria (Rs.9,376), and the highest, Fulwadi (Rs.11,648). Total cost variations between the centers are expected because of their different population densities and the number of staff employed.

The centers do not show much variation in the proportionate total cost of service programs. For example, the CC program, on an average, comprises 18.6% of total center/anganwadi costs, and Immunization approximately 5%. This is with the exception of the MH/FP program, which in Daria center accounts for only 4.2% of costs, compared to an average 7.7% in the other two centers. This is a reflection of the lower salary costs in Daria due to the absence of a FHW. In this center her duties are undertaken by the CHV. The largest program in terms of cost in all the sub-centers is the ICDS/Child Health program; on an average it accounts for 55% of total sub-center/anganwadi expenditure.

The services vary, however, in the distribution of their cost components. In the CC program for instance, the cost head "salaries/honoraria/incentives" accounts for a mean 29% of total costs (in the three centers); whereas in the "other" category this expenditure head represents 64% of costs. Proportionate drug/supply cost also varies greatly between programs. In ICDS/Child Health the cost of supplementary feeding accounts for approximately 67% in the centers, whereas this cost head represents only 2% of expenditure in the MH/FP program. The proportionate cost of the mobile varies greatly between programs. It has the lowest cost input in the ICDS/Child Health program.

#### Average Costs

The average cost represents the cost per unit of service. Average costs of service programs were estimated by dividing the total cost of the service by the output. The service output data used were the actual number of service contacts in the month, shown below for each program:

- (i) CC: number of curative contacts.
- (ii) MH/FP: all ante-natal, intra-natal and post-natal contacts. The number of tetanus toxoid vaccines administered and iron folic tablets dispensed were not included in the measure of service output to prevent duplication in counting service contacts.
- (iii) Immunization: number of actual vaccinations administered.

Average costs were not estimated for the following program categories: "Other", as there is no appropriate output indicator; "CDC", as the cost estimate is incomplete and "ICDS/Child Health", because the mix of services provided at the anganwadi are too varied for a meaningful measure.

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**Table 15**                    **AVERAGE COSTS OF SERVICE PROGRAMS**

<u>Service Program</u>	CHP (Rs.)		
	<u>Mulad</u>	<u>Daria</u>	<u>Fulwadi</u>
1. Curative care			
Total cost	1,825.9	1,708.1	2,245.8
No. of contacts	406	837	709
Average cost	4.5	2.0	3.2
2. Maternal Health/FP			
Total cost	823.3	441.6	847.7
No. of contacts	63	89	82
Average cost	13.1	5.0	10.3
3. Immunization			
Total cost	578.0	394.7	629.7
No. of contacts	52	54	94
Average cost	11.1	7.3	6.7

---

Table 15 shows the average cost (AC) estimates of services in each sub-center. ACs are seen to vary across centers for the same service program. For example, for CC, the cost per contact varies from Rs.2 in Daria center to Rs.4.5 in Mulad. In the MH/FP program the average cost varies from Rs.5 in Daria to Rs.13.1 in Mulad. The cost difference per service contact in the MH/FP program is in part due to the lower salary costs in Daria. As mentioned earlier, this center does not have a FHW. Other cost variations may be attributed to differences in service utilization and/or "drug/supply" use. Figures 6-8 display variations in service utilization across centers for the same program.

For example, Mulad has a lower number of curative care contacts and a correspondingly higher AC, compared to Daria which has a higher number of curative contacts and a lower AC. Some of the variation in service utilization is due to the different population densities of the centers. The larger catchment centers share certain fixed costs with the smaller centers, such as the mobile, and as a result they can potentially reap economies of scale. Even after accounting for this difference in catchment populations, some of the units display lower than expected service utilization relative to their population, such as Mulad center for the CDC program. The average cost is therefore a useful measure to help identify lower performing units.

Table 16 displays average cost variations in service drug/supply use across the centers. The CC program shows a small

variation in drug cost per contact. Daria has the lowest cost per contact at Rs.0.5, and Mulad the highest at Rs.0.8. Such variance in average costs can help identify possible profligate drug use and help check the prescription practices of workers. The MH/FP programs do not show marked variations in AC, because tetanus toxoid and iron folic tablets follow a strict prescription regimen. The immunization program displays a small variation in average cost, which is solely a reflection of the "mix" of vaccinations provided at each center and their differing costs. Measles vaccine is the most expensive and the center which administered the highest number of measles inoculations, Daria, also displays the highest AC.

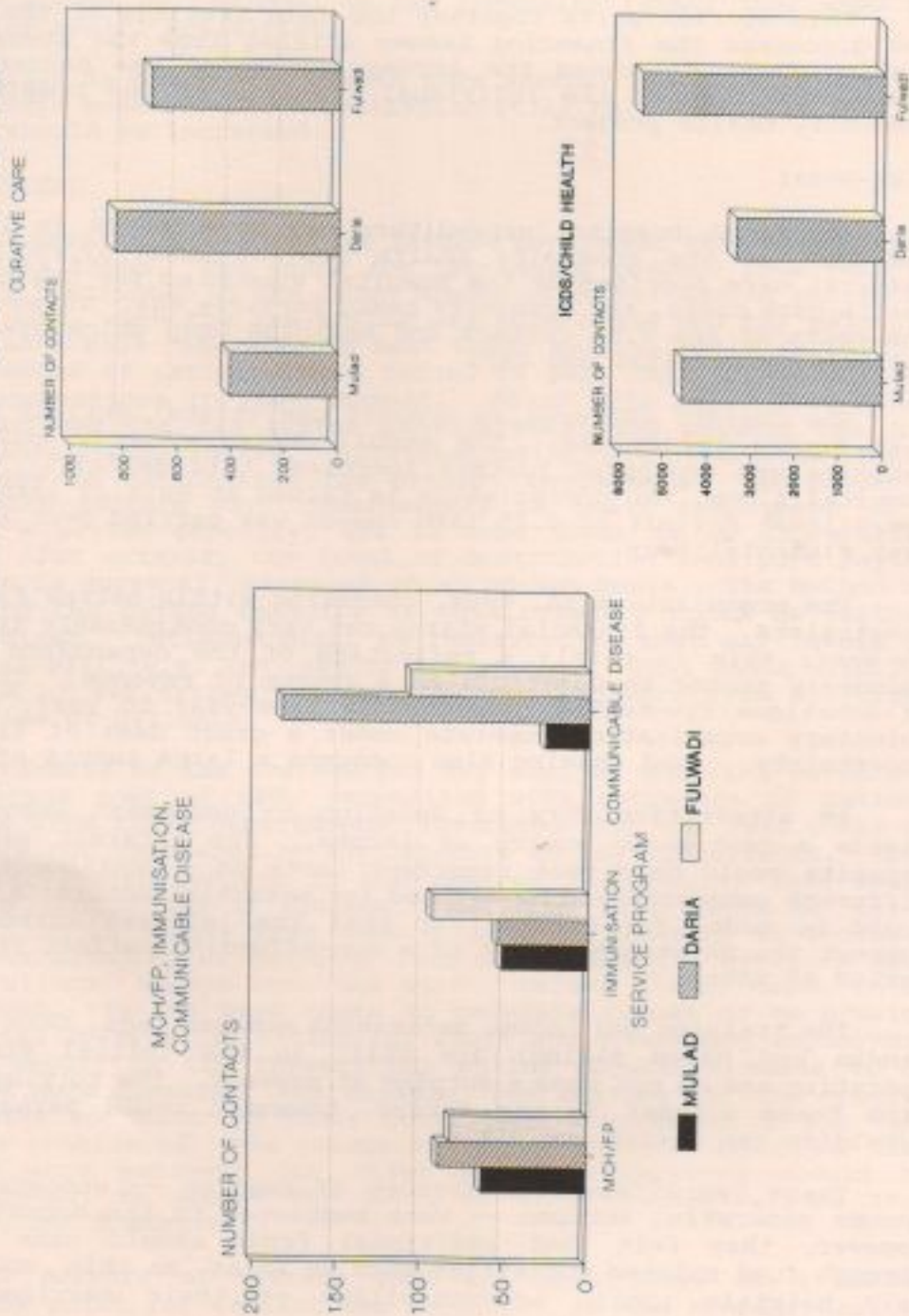
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**Table 16 AVERAGE COSTS OF DRUGS/SUPPLIES/SUP.NUTRITION/VACCINE  
 USE IN SERVICE PROGRAMS, CHP  
 (Rs.)**

<u>Service Program</u>	<u>Sub-Centre</u>		
	<u>Mulad</u>	<u>Daria</u>	<u>Fulwadi</u>
<b>1. Curative care</b>			
Cost drugs/supplies	341.6	419.0	552.5
No. of contacts	406	837	709
Average cost	0.8	0.5	0.8
<b>2. Maternal Health/FP</b>			
Cost drugs/supplies	4.7	7.2	2.7
No. of contacts	22	34	13
Average cost	0.2	0.2	0.2
<b>3. Immunization</b>			
Cost vaccines	28.5	49.5	82.8
No. of contacts	52	54	94
Average cost	0.5	0.9	0.9

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Figures 6 - 8

# NUMBER OF MONTHLY SERVICE CONTACTS



ISSUES IN FINANCING

## PART 5

This section pulls together the main findings of the report and discusses the financing issues arising from the study. The section first discusses the issues concerning the Society as a whole, and then of the individual concerns of the hospital and community health project.

## SEWA-RURAL

The total hospital expenditure was Rs.9,36,026 in 1987-88, and that of the Community Health Project Rs.17,91,490. Thus referral care provided by the hospital accounted for 34% of total health care costs, and community based services 66%. These exclude the costs of the T.B. Centers and medicine shop which are shared by both the hospital and CHP.

The Society suffered an overall operational deficit of 0.75 lakh rupees in 1987-88. The annual depreciation on buildings, vehicles and equipment further increased this deficit. For the hospital alone, the depreciation is valued at Rs.1.23 lakhs. The operational deficit of 0.75 lakh rupees was carried over into the next financial year.

The organization is, thus, operating within narrow financial constraints. The financial status can vary considerably from year to year; this is partly a reflection of the dependence of the voluntary sector on donations as a source of revenue. The level of donations fluctuates considerably from year to year, so that voluntary organizations operate under a great deal of financial uncertainty. Fund raising also consumes a large amount of time.

An alternative form of donation -- endowment deposits -- yields a continuous source of income. The interest earned on deposits could help meet recurrent costs on a continuous basis. Different schemes could be devised for potential donors; a deposit could be made, for example, so that the interest earned would support the maintenance cost of a non-affording patient for a set period of time.

The training and income generating schemes (egs. Gram Tekniki Kendra and papad making) are still in the initial stages of operation and do not show a surplus at present. The surplus income from these schemes in the future, however, could perhaps help subsidize the health activities.

These two alternative sources of funding -- endowments and income generating schemes -- were suggested to the organization. However, they felt that additional funds should come largely through fund raising activities such as melas, as this would also help maintain public accountability of their services. In

addition, they felt that any "surplus" from income generating schemes should be returned to the community rather than used to subsidize health activities.

Delays in government grants were another source of financial difficulty; however, the organization still felt that this funding source should be increased.

#### KMH HOSPITAL

The hospital commanded the largest portion of SEWA-Rural input at Rs.2.44 lakhs. The scope for increasing revenue from fees is severely restricted by the large number of non-affording patients. In the past, when the fee system was more rigid and the majority of patients were requested to meet their medical bills in full, a large number of patients were forced to sell their livestock and other possessions to meet payment. After this experience SEWA-Rural relaxed the fee system considerably, and payment has now become more discretionary. Notwithstanding this experience, there is a need to rationalize the present fee system. At present, individual doctors vary considerably in their assessment of a patient's paying capacity, and in some cases it is arbitrarily judged. For example, the level of contribution from part paying patients is currently assessed on an ad-hoc basis. The method of assessing the paying capacity of this category could be further standardized. Patients might be requested to meet set levels of the total bill, e.g. 25%, 50% or 75% of cost. This would simplify the task of estimating the level of fee recovery from different categories of patients.

Estimates of the average bed day cost of hospital wards and the average cost of OPD, reconciled with estimates of patient receipts from these departments, indicated that the full costs of care were not recovered in any category of paying patients. This is of particular concern in the case of the special ward where patients should, at a minimum, meet the full costs of care. Although it is likely that some extra cost recovery is achieved from this category of patients from other hospital services such as operations, x-rays etc, the ward's raison d'etre needs to be questioned. Is the ward there to generate income or to provide subsidized private facilities for staff and government employees? If the answer is the former, the policy objective needs to be examined more closely. For example, bed charges for the special wards were not covering their cost; thus a revision of the fees might be considered. The volume of "extra" revenue generated from private ward patients for other hospital services should be investigated, to assess the level of cross subsidization, from surgery, for instance.

The measure of average cost can help serve as a useful reference point for setting fee levels. If the average cost of an x-ray is estimated at Rs.22.6, the current charge for a small



x-ray at Rs.25 and a large one at Rs.35, the fee appears to be covering more than the cost. On the other hand, the daily bed charge for general ward patients is Rs.7 and the cost per bed day is estimated at approximately Rs.38. Again, those patients considered able to meet the full costs of their care are not doing so; hence a revision of the bed charge for this category of patients might be considered. In addition, average costs, if calculated on a regular basis, can also help monitor costs and serve as an indicator of service efficiency.

#### COMMUNITY HEALTH PROJECT

The Community Health Project (CHP) is almost 100% government funded. The joint USAID/GOI time bound funding agreement is soon to expire. When this happens the CHP block is to be assigned PHC status, and the state government will take over funding responsibility. SEWA-Rural will continue to manage the project.

The ICDS/Child Health project comprises 38% of total CHP costs, of which 64% represents the cost of the supplementary food program component. The "other" CHP category comprises 62% of total CHP expenditure. The cost analysis of a sample of health sub-centers indicated that the Curative Care program (excluding the ICDS/Child Health service program) represents the largest service in terms of cost. The cost of the mobile service represents the most expensive program input, excluding the salaries of mobile doctors and interns. The salary head accounts for the largest cost item in the other service programs.

Average costs were seen to vary across centers for the same service program. The following factors were observed to affect the average cost indicator. First, the centers' catchment population size and density affected both the number of staff employed and service utilization. For example, the larger villages showed a higher number of service contacts with a comparatively lower unit cost. Villages composed of a number of scattered hamlets are forced to employ more staff, thus increasing the salary cost and subsequent cost per contact. Even after accounting for differences in population density, some centers exhibited higher than expected average costs due to lower service utilization. Unit costs can, therefore, help identify lower performing units. Variation in costs were also attributed to health center drug usage. In the Curative Care program, there was a marked difference in the drug cost per contact, reflecting potential drug misuse. Thus the average cost indicator can be used to help monitor sub-center performance, with regard to service underutilization and drug/supply use. If estimated regularly, average costs can help gain substantial increases in productivity.

## APPENDIX

SEWA (Society for Education Welfare  
and Action) - Rural

Project directors	: Drs. Anil and Lata Desai
Location	: Jhagadia, Gujarat
Started in	: 1980
Population covered	: 45,000
Number of villages	: 40
Areas of work	: Integrated Health & Rural Development

PROGRAMME INDICATORS<sup>†</sup>

Impact Data (per 1000)	1980-81/82*	1985-86	1988-89
Infant mortality rate	164	61	93
Child mortality rate	13	4.3	10
Crude death rate	12	8	12.4
Crude birth rate	24	24	27.7
<b>Service Data (per cent)</b>			
<b>I. Maternal Health Care</b>			
Antenatal registration	NA	95	95
Antenatal care	50	60	75
Delivery by trained personnel	25	85	95
<b>II. Child Care</b>			
<b>Immunization</b>			
B.C.G.	33	83	95
DPT/DT	9	60	79
Polio	7	50	89
Measles	0	48	73
<b>Nutritional Status</b>			
Grade III & IV malnutrition	15	10	2.5
<b>III. Others</b>			
Couple protection rate	37	71	62
T.B. case holding as percent of cases registered	NA	47	56
Mass health education programme in every village (Quarterly)	0	100	100

<sup>†</sup> Data refers to 21 villages and a population of 18,000.

\* Data are drawn either from SEWA-Rural's Baseline Survey or Health Statistics of Gujarat/Bharuch District.

For further information on project, please write to:

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Society for Education Welfare & Action Rural (SEWA-Rural)  
Jhagadia 393110  
Bharuch, Gujarat

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Ashish Gram Rachna Trust, Pachod  
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