

Diet cost of patient in Base Hospital Eravur, Sri Lanka

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ABSTRACT

Healthcare Services are free of charge at the point of delivery to all citizens in Sri Lankan public health institution. It includes free meals for inward patients and Health service assistants. It is must to do costing studies to assess the efficiency of providing these services free of charge. This study assesses inward patients' diet cost at Base Hospital Eravur which is one of the secondary care hospitals in Batticaloa region. This is retrospective descriptive cross-sectional study. Secondary data extraction was done for the month of December 2020. Step-down costing method was used to calculate the diet cost. Statistical analysis was done using SPSS 25 and MS Excel. Cost for the kitchen cost center (without raw material) was Rs 162,338.57. The unit cost per patient per meal was Rs. 127.15. Operating expenses for diet for Base Hospital Eravur is in medium percentage. Recommended to introduce an a program to all Hospitals in RDHS division Batticaloa for awareness to highlight cost per diet per patient.

I. INTRODUCTION

Sri Lanka is one of the few developing countries which has achieved highest milestone in preventive and curative sectors, compared to the many others all over the world and neighboring South Asian countries. Sri Lankan public health system provides healthcare for free of charge to all individuals at the point of delivery, in healthcare institutions is the main strategy of health sector development plan (1).

Sri Lankan government has allocated 223 billion rupees for Healthcare Services in 2021, to deliver free health care at the point of delivery. Demand for healthcare increases annually and the government has necessity to increase its budget allocations on various aspects of health sectors. However, drop of 4 billion rupees was noticed compared to previous year (2).

With the increasing population and demand of health care services, with new technologies which changes rapidly with time, the sustainability of free health care will be a major challenge especially not only world, but also Sri Lanka faces the pandemic situation since March 2020 till now (3). Healthcare Services in Sri Lanka provide free meals for patients 3 meals (breakfast, lunch and dinner) per day and two meals (breakfast and lunch) for Healthcare assistants who are deducted 10 Sri Lankan rupees per month from their salary.

Therefore, cost effectiveness of providing diet in Healthcare institution is a very important domain that needs to be addressed. Objective of this study is to analyze the cost of single diet in Base Hospital Eravur.

II. METHOD

Study design

Retrospective descriptive Cross-sectional study was carried out with analytical component.

Study setting

Base Hospital Eravur is one of the secondary care hospital in Batticaloa district out of 4 Base Hospitals (BH). This hospital consists 100 beds with 127 staff.

Data Collection

Data were collected by secondary data extraction from the following sources: data collection sheets, check lists, hospital records, accounting reports, vouchers and diet records. Furthermore, interviews were conducted with relevant staff (e.g. Medical Superintendent, Administrative Officer, Matron, Overseer of BH Eravur and Accountant of Regional Director of Health Services (RDHS) Batticaloa,).

Method of cost calculation

The main Aim of this research was to analyze single diet cost of patients in BH Eravur. As an initial step, cost centres were identified and categorized into overhead, intermediate and final cost centers. Considering these cost centers separately, all direct costs (e.g.: salaries, stationary, consumables) were added and sum value were calculated. The administrative cost center was apportioned according to the number of staff working in different units and the overhead costs were apportioned appropriately to final cost centers.

1. Overhead cost centers: Not directly related to patient care. However, they are needed for the smooth functioning of intermediate and final cost centers.
2. Intermediate cost centers: There are no intermediate centers considered in this study. As there are no intermediate cost centers for kitchen cost center.
3. Final cost centers: Cost centers which were directly involved with patient care delivery. (Kitchen)

Cost centers in BH Eravur were shown in Table 1.

Table 1: Identified cost centers in BH Eravur

Overhead	Final
Medical Superintendent's office	
Administrative Officer's office	
Matron's office	
Overseer's office	
Water	Kitchen
Electricity	
Telephone	
Security	
Cleaning	

Overhead costs

Overhead costs were calculated by apportioning Indirect costs appropriately to each cost center as described below. Cost for the electricity, cost of telephone and charge for water were apportioned according to the square feet area of the unit, number of extensions and number of taps available in a unit respectively. However, Security and cleaning charges were calculated as per the number units functioning in institute.

Ethical and administrative considerations

Written authorization was obtained from Regional Director of Health Services, Batticaloa and Medical Superintendent, BH Eravur. Confidentiality of the information was assured.

III. RESULTS

Salaries of the staff whom categorized as overhead cost center were added and summed (Table 2)

Table 2: Overhead salary of overhead staff in December 2020

Administrative charges	Number of staff	Salary	Total
Medical Superintendent's office			
Medical Superintendent	1	287,136.25	287,136.25
SKS	1	39,775.00	39,775.00

Administrative Office

Administrative Officer	1	73,740.30	73,740.30
Management Assistant	3	51,848.75	155,546.25
Development Officer	1	46,532.00	46,532.00

Matron's office

Matrons	2	193,242.00	386,484.00
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Overseer's office

Overseers	2	46,150.00	92,300.00
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Total			1,081,513.80
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To calculate the total cost of kitchen cost center, total salary of the kitchen staff (Table 3), consumables and stationery used in the kitchen were separately calculated. A development officer who was working in diet steward has other responsibilities as well. Therefore, only her half of the salary was taken into account for calculation.

Table 3: Salary of the staff in kitchen in December 2020

Category	Number	Salary (Rs)	Total (Rs)	Cost
Cook	1	34,317.00	34,317.00	
SKS	1	46,317.00	46,317.00	
Development Officer as Diet Steward	0.5	57,707.00	28,853.50	
Total			109,487.50	

Further, apportioned costs to the kitchen cost center were taken from telephone, water, security, cleaning, electricity and administration total costs to the hospital. (Table 4)

Table 4: Apportionment of security and cleaning cost to kitchen cost center

Description	No of Staff	Salary per person	Total salary	Apportioned staff for Kitchen	Apportioned amount for kitchen
Security	6	30648.46	183890.78	0.04	7995.25
Cleaning Service	16	32024.10	512385.67	0.04	22277.64

Area of the kitchen is 1144 square feet and it is only 3.36% of the total square feet of hospital, where floor area of the buildings are 34,031 square feet. Therefore, 3.36% of total electricity bill was allot to the kitchen. For the security and cleaning costs the total cost was apportioned according to number of units available. Water was allot as per the number of taps available and the telephone cost was by available extensions. Water and telephone costs to the kitchen cost center were Rs 892.60 and Rs 51.27 respectively. Overhead administration cost to kitchen cost center was calculated according to available staff and it was Rs 17,031.71 (Table 5).

Number of meals provided for patients were 1602 and it was 2218 for Health service assistants in December 2020. Total cost of final cost center (kitchen) was calculated by summing up all costs.

Table 5: Total cost of kitchen cost center

Overhead	Final
Total salary	109,487.50
Consumable (Used in the unit)	2,020.00
Stationary (used in the unit)	200.00

Telephone		51.27
Water		892.60
Electricity		2,382.60
Cleaning		22,277.64
Security		7,995.25
Administration		17,031.71
Total		162,338.57
Diet Cost Calculations		
Total Number of meals (Staff & Patients)	2218+1602	3,820
Liquid paraffin gas (a)		6,142.00
Cost for raw materials (b)		317,240.82
Cost center allocation (c)		162,338.57
Total cost	= (a)+(b)+(c)	485,721.39
Cost per meal	=485,721.39/3820	127.15

IV. DISCUSSION

Healthcare expenditure is escalating rapidly worldwide due to many reasons. It has become burden on individuals, community and countries as well. This has become major challenge due more proportion of elders in the population than younger generation. It is very obvious elders need more healthcare than youngsters. Also, their needs are different from health needs of younger generation. Moreover, Epidemiological transition, increasing non communicable disease from communicable disease is another challenge of healthcare. Due to these and technological development countries like Sri Lanka providing free healthcare struggle to provide quality health services for their citizen. In Sri Lanka where health services are free at the point of delivery, allocation of money from budget for health needs to be increased every year. However, government expenditure is constant for many years between 3 – 3.5% GDP.

Providing food for patients and some category of staff is one of the major expenditure in Sri Lanka public health institution. Healthcare institutions' efficiency is assessed by few indicators such as Bed occupancy rate, Average length of stay, Bed turnover rate etc. Bed occupancy rate is one of the major indicator which indicates the beds (patients) occupied within the given time period and it is considered best at 80% or above. Bed occupancy rate plays a role in expenditure for food.

There is only one kitchen at BH Eravur to provide food for staff and patients. Therefore calculated cost per meal is for staff and patients. This study revealed the cost was 127.15 rupees per meal.

In this study, charges for Telephone were calculated by number of intercom available in the cost Centre. However, in the study conducted in Colombo South Teaching Hospital, Kalubowila it was calculated in different way according to direct lines and intercoms or extensions. (5) Moreover, in the study "Unit Cost of Medical Services at Different Hospitals in India" telephone charges were based on number of personnel in the cost center. (4)

Further, in this research Electricity expenses for diet was apportioned according to floor area. This is a secondary care hospital and there are not much difference between the consumption of electricity between the units. Therefore, we assume that all the units consume electricity in equal amount. This method has been used in Study conducted in Teaching hospital Kalubowila and India as well. (4) (6) However, research conducted in General hospital Ghamuria electricity consumption was measured by avometer.

Moreover, water cost were apportioned according to number of taps available in the institute. However this expenses were also calculated according to the floor area in other studies. (6)

At last capital values were not included in the calculation of diet cost in this study. There were no records or minimum record available regarding land, buildings, equipment. Cost of these are not included in diet cost calculation.

V. CONCLUSION

As shown in this study, the diet cost per patient per meal at BH Eravur is Rs 127.15. There was only one published study in the domain of diet costing in Sri Lanka which was done TH Kalubowila in 2016. It was Rs. 119. There can be many reasons for increase in cost than previous study such as increase in price of raw materials over the period of time and change in exchange rates of currency.

VI. RECOMMENDATIONS

This study recommends to introduce an awareness program to all the hospital staff and public from Batticaloa RDHS region, to highlight how much it costs per meal per patient to the government.

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