



## Unit cost of Magnetic Resonance Imaging Scan at a tertiary care teaching hospital in India

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### Abstract

Cost control programmes are not aimed at cutting the quality or quantity of services provided to the patient. They are aimed at increasing the performance efficiency of the healthcare team. Knowledge of unit cost is needed to assist planning for recurrent budget as an indicator of efficiency and to enforce pricing of services.

The study revealed that the unit cost for MRI scan is Rupees 7432.7.

**Keywords:** MRI, Unit Cost, Manpower Cost, Utility cost, Material cost

## INTRODUCTION

Cost control is a process of limiting the expenditure either on the production or on distribution, so that the goods may be made available to the ultimate consumer at affordable cost. It is well known that the escalation of costs for advanced technology has been dramatic and it has been labeled as one of the culprits for great increase in healthcare costs [1].

Imaging equipment is very complex now than ever and choice is extensive. The medical institution and the administration of health care institutions are forced to pay close attention to the management of a new kind of technology in a very efficient manner. The importance of imaging modality of investigation has assumed great significance in the past two decades [2].

Newer imaging technologies, MRI are replacing older ones in the evaluation of patients. The impact of this change would be useful in justifying the increase in use of these new technologies and decreasing their inappropriate use should be a priority in efforts that focus on controlling imaging expenditure [3].

As the MRI a costly investigations and an important component of patient care. Hence in planning and managing patient care, attention should be focused on cost and quality of these investigations. The current study was conducted to find out the Unit Cost of MRI investigations at a tertiary care teaching Hospital Unit cost is an important tool in planning of services.

### Objective

Calculations of Unit Cost of MRI scan

### Methodology

**Study Design:** A prospective study was carried out.

**Study duration:** Study was carried for a period of three months.

**Study setting:** MRI unit

**To study the Material Cost**

Cost of films and disposables utilized and purchased from hospital was calculated by taking the rate list from the central store. General consumable items cost was directly calculated by seeing the consumption register of the store and cost of item was calculated.

**To study the Manpower Cost**

Cumulative salary of all the members for one month was worked out. The data was entered on a predesigned performa

**To study cost incurred on utilities**

Major utility services which were studied include water, electricity, Manifold services, laundry services, CSSD services and dietary services.

**Machine Depreciation cost:** Cost of machine when commissioned was found out. Using Straight line diminishing balance method, the deprecation value of machine for the study period was calculated.

**Maintenance Cost:** The rate maintenance contract was found.

**Data analysis**

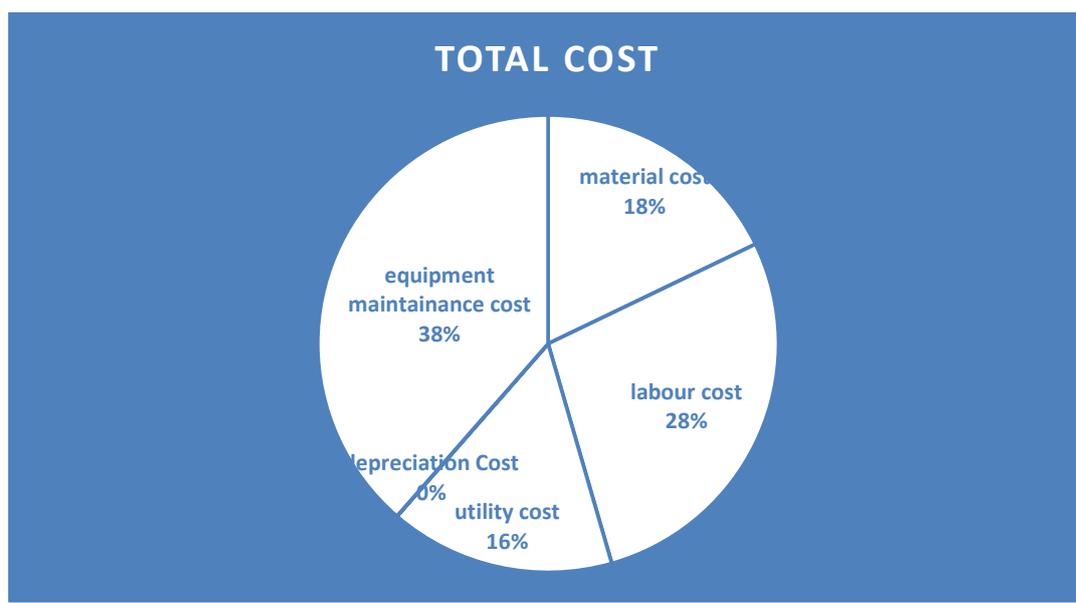
The data was received from the answered questionnaires and was plotted on excel 2013. The data was analyzed statistically with the help of statistical software SPSS v19. All the continuous variables of the study were represented by the descriptive statistics and all the categorical variables in the term of frequency and percentage.

**RESULTS**

The unit cost of one scan was determined by adding Labour Cost, Material cost, Utility Cost, Depreciation Cost and Equipment Maintainence cost incurred per scan.

**Table 1: Unit cost of MRI Scan**

Entity	Unit Cost (In Rupees)
Material cost	900.7
Labour Cost	1400
Utility Cost	802
Depreciation Cost	2380
Equipment Maintainence cost	1950
Total Cost	7432.7



**Unit cost of MRI Scan**

## Utility cost

**Table 2: Showing Breakup of utility cost**

<u>Entity</u>	<u>Cost per patient per day( In Rupees)</u>
<u>CSSD</u>	<u>80</u>
<u>Linen &amp; laundry</u>	<u>40</u>
<u>Dietetics</u>	<u>275</u>
<u>Manifold</u>	<u>80</u>
<u>Electricity</u>	<u>4</u>
<u>Water</u>	<u>2</u>
<u>Total cost</u>	<u>802</u>

## DISCUSSION

Escalating health care expenditure has become a global problem. In most countries cost on health has increased as compared to growth in economy. As users of the hospital services have become conscious and aware of the cost factor, so hospitals need to have health administrators who can work on cost containment in health care without compromising effectiveness of services particularly in these times of competition [4]

In our study it was revealed that the actual cost incurred by the hospital to provide MRI was Rupees 7432.7 while as cost charged to the patient is Rupees 2500.

In a study conducted by Rehana K et al in 2013, 1 unit cost was found to be Rupees 4497.5 while as in a study by Satyashankar et al.5, the unit cost of MRI was Rupees 5339.67 .The difference in the two can be attributed to inflation of costs over years.

### Summary

The study revealed that the unit cost for MRI scan is Rupees 7432.7.

Depreciation of equipment and maintenance cost were major components of the cost.

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