



IJPPR

INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals

ISSN 2349-7203



Human Journals

Research Article

October 2016 Vol.:7, Issue:3

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ABC Analysis of Pharmacy Store of an Ayurveda Institute



IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals

ISSN 2349-7203



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Submission: 10 October 2016
Accepted: 15 October 2016
Published: 25 October 2016

Keywords: ABC Analysis, Inventory, Budget, Supervision, Pilferage, Strategies

ABSTRACT

About one-third of the hospital budget is spent on purchasing various materials and supplies including medicines. This necessitates the effective and efficient management of medical store by keeping a close supervision on important drugs, prevention of pilferage, and priority setting in purchase and distribution of drugs. Analysis of medicine expenditures in Ayurveda hospitals is rarely reported since most hospital pharmacy departments do not do it as part of the routine annual evaluations. Specifically, it is not well known as to what extent the ABC approaches are employed in these hospitals as part of their pharmaceutical management strategies. Analysis of medicine expenditures has an impact on the inventory management particularly on the type of medicines to be ordered and hence it has the direct impact on the quality of service provided. It also has an effect on the management of financial resources, especially on budget allocation. A small study on ABC Analysis of pharmacy store of an Ayurveda Institute is presented as an important tool in inventory management.



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INTRODUCTION

Ch. Brahm Prakash Ayurved Charak Sansthan is an Autonomous State of Art modern Ayurveda Institute under Govt. of NCT Delhi, situated at Khera Dabur near Nazafgarh on outskirts of Delhi. It constitutes a Medical college and 210 bedded hospital. Medicines for OPD and IPD dispensing are procured from govt. agencies through fixed rate contract on quarterly basis. As more than one thousand patients are visiting the hospital daily and IPD is also fully occupied throughout the year, rate of medicine consumption is very high. Medicines which are very frequently prescribed vanish off the shelves quickly. Being a government hospital, a patient not only expects a reliable consultation but also expects free medicines. And if he doesn't get medicines he is not satisfied and questions the purchase policy of the hospital. Such conditions where in spite of spending too much on procurement of medicines why patients are not able to get even essential medicines lead to this small study.

Study Rationale

The results of this study may be used to improvise inventory management system, also adds knowledge of categorization and identification of medicine items that consume large part of the budget hence requiring special inventory management as well as on how funds are being spent in procuring medicines so that the principles of good pharmaceuticals procurement strategic objectives are achieved. The findings of study will also be useful in proposing areas of improvement in procurement of medicines and its management. It also suggests measures to facilitate better performance of pharmacy regarding assessment of plan and priorities on purchasing medicines, increase efficiency in resource use at the hospital and enhance accountability and hence improve quality of health care.

Types of Inventory Management Techniques

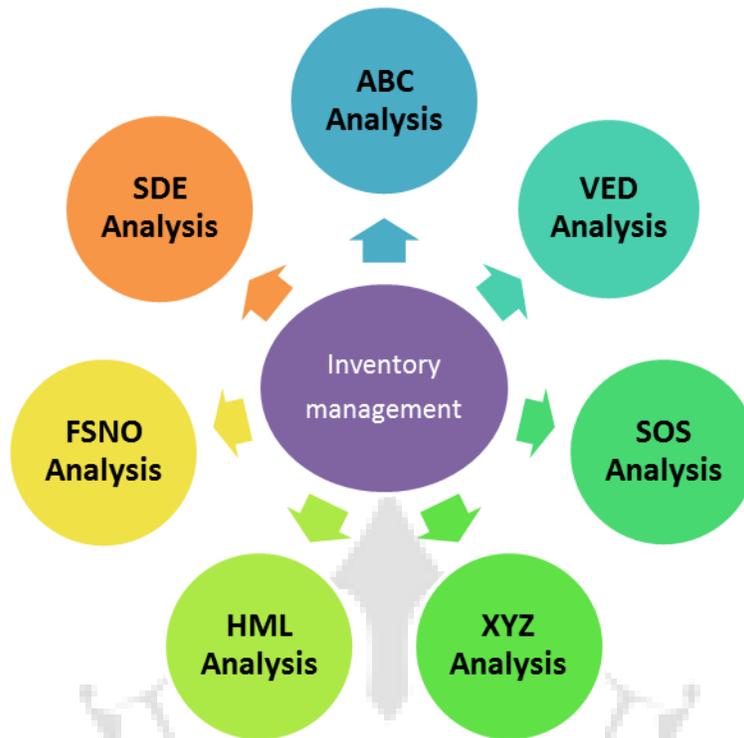


Figure: 1 Types of inventory management techniques

ABC:- This would depend upon annual consumption cost of items and not on unit price of the items. This is control on cost basis.

VED:- Vital, Essential, Desirable. It is based on vital and critical items availability like oxygen, anesthetic drug, life-saving drugs and many consumables are vital for hospitals, the stock out of such vital items is not acceptable.

FSN:- Fast moving, Slow moving and Nonmoving. It is based on issues from stores.

SDE:- Scarce, Difficult, Easy to obtain classification based on availability of items.

HML:- High, Medium and Low based on unit price.

XYZ:- Based on value analysis. Used in analysis of slow moving items.

SOS:- Season Off Season. Based on seasonal requirement.

AIMS AND OBJECTIVES:

AIMS:

To analyze medicine expenditure with the help of Inventory Control management techniques at Ch. Brahma Prakash Ayurved Charak Sansthan.

OBJECTIVES:

General Objective:

- To do an economic analysis of medicines of Pharmacy with the help of ABC Analysis for the year 2014-15.

Specific Objective:

- To categorize medicines that require higher inventory control monitoring by using ABC Analysis.
- To reduce the carrying cost due to large amount of inventory.
- To ensure the patient's requirement timely, effectively, efficiently and smoothly.
- To analyze and prepare a fresh Hospital Drug Formulary.

METHODOLOGY:

STUDY DESIGN:

A Hospital based descriptive, observational study conducted by using ABC Analysis, a method of inventory management to analyze the annual medicine expenditures and then they were categorized in A, B and C class items.

STUDY PERIOD:

Study was conducted between April and May 2015.

STUDY AREA:

The study was conducted at Ch. Brahma Prakash Ayurved Charak Sansthan, which is an upcoming Modern Ayurveda Institute with 210 bedded hospital and Medical college.

Patients from all over India and Referred patients from other Ayurveda units of CGHS, MCD, NDMC, ESI and Govt. of NCT Delhi visits this institute for specialized Ayurved treatments. Its hospital receives 1000-1400 patients daily.

DATA COLLECTION TOOLS:

Data was collected through Documents Review like Stock registers of the concerned financial year, Detailed report of Annual consumption of medicines, purchase orders, Final Rate Contract lists.

STUDY VARIABLES:

- Proportion of medicine items categorized as class A, B and C as per ABC Analysis.
- Proportion of budget costed by class A, B and C items.

Data collection procedure and Data analysis:

Quantitative data

Analysis of the quantitative data was done by using Microsoft Excel spreadsheets.

The ABC analysis:

The process of analysis was done through following steps-, (Table 1)

1. All the items procured in the financial year which started from 1st April 2014 to 31th March 2015 were extracted from the hospital pharmacy records, checked and edited for any inconsistency. This applied for all medicine items so as to avoid any invalid comparisons

2. The unit cost for each medicine and the total quantities received were used to calculate the value of each item. For the same items but procured from different suppliers with different unit costs, an average unit cost of those items was calculated.
3. The value of consumption was furthermore calculated, by multiplying the unit cost by the number of units of each medicine purchased to obtain the total value.
4. Then the percentage of total value represented by each medicine was also calculated, by dividing the value of each medicine to the total value of all medicines. The results for each item was entered under the heading `percent of total value`
5. The list was then rearranged, the items or rather medicines were ranked in descending order by total value, starting at the top with the highest value. This also yielded a list that is also ordered by percentage of value.
6. Cumulative percentage of total value for each medicine was calculated; starting with the first item at the top, adding the percentages up to the last item.
7. Cut-off points or boundaries for Class A, B and C medicines were chosen.

These steps are summarized in the table below:

Item No.	Medicine name	Annual Consumption (in pcs.)	Per unit cost	Total Value (in Rs.)	% of total value	Cumulative % of total value
1.						
2.						

Total 233 medicine were taken for study, out of which ten are listed in below given table to understand the method of calculation :-

Table: 1 Showing steps of calculation for ABC Analysis

S.No	Name of Medicine	Annual consumption (in pcs)	Rate Per Pc.	Total Cost (in Rs.)	Cumulative consumption(in Rs.)	%
1	Yograj Guggulu-1kg	530	963.6	510708	510708	2.9
2	Navjeevan Ras-100gm	250	1750	437500	948208	5.39
3	Punarnava Guggulu-1kg	360	1197	430920	1379128	7.83
4	Triphala Guggulu-1kg	445	835.75	371908.75	1751036.75	9.94
5	Arshakuthar Ras 500gm	552	640	353280	2104316.75	12
6	Haridra Khand-100gm	15000	23.37	350550	2454866.75	13.9
7	Musali Churna-1kg	250	1355.2	338800	2793666.75	15.9
8	Sinhnad Guggulu-1kg	470	720	338400	3132066.75	17.8
9	Kaishore Guggulu-1kg	210	1600	336000	3468066.75	19.7
10	Punarnavadi Mandoor-100gm	2780	115	319700	3787766.75	21.5c ntd.

Items were classified as follows:

- Items that had highest annual usage, with only about 10% of the items that costed about 70% of the total utilized medicine budget were classified as Class A items.(Figure2,3)(Table 3)
- Class B items were those that accounted for approximately 20% of the items and used about 20% of the funds.(Figure 2,3)(Table3)
- Lastly the Class C items, these accounted approximately 70% of the items but used only 10% of the budget.(Figure 2,3)(Table 3)

Table: 2 Showing categorization of A,B,C Class

Serial No. 1 to 57	A Class
Serial No. 58 to 125	B Class
Serial No. 126 to 233	C Class

8. Lastly the results were presented in tables showing proportions of items in different classes and the proportion of budget utilized.

Table: 3 Showing proportion of items and budget utilized in different class

Medicine Analysis	Class A	Class B	Class C	Total
No. of Items (%)	58 (25%)	68 (30%)	107(45%)	233(100%)
Annual Purchasing value (in Rs.)	1,23,25,183 (70%)	35,21,481 (20%)	17,60,740 (10%)	1,76,07,404 (100%)

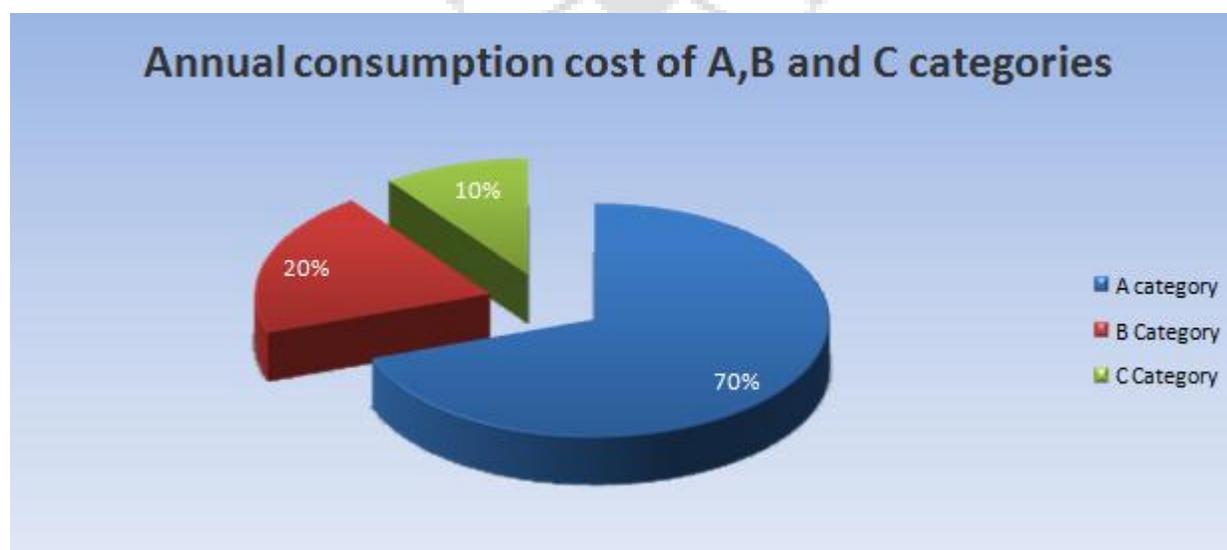


Figure: 2 Showing annual budget consumption of various class

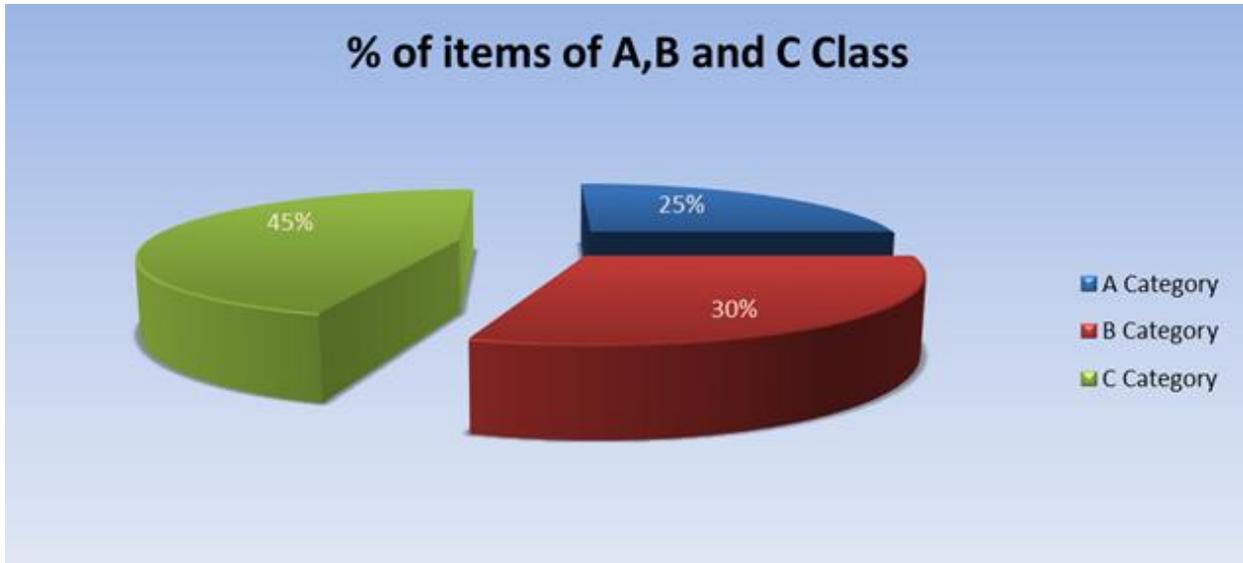


Figure: 3 Showing number of items of each class

APPLIED BENEFITS OF THE PRACTICE OF ABC ANALYSIS

S.no	Activity	Group A	Group B	Group C
1.	Frequency of purchase	More frequent	Less Frequent	Least frequent
2.	Turnover /consumption	High	Medium	Low
3.	Level of control	Tight	Moderate	Routine
4.	Estimates of requirements	Very rigid	Rigid	Moderate
5.	Safety stock	Low	Moderate	High
6.	Management level	Top	Middle	Lower
7.	Monitoring	Very strict	Strict	Moderate

The purpose of undertaking ABC Analysis is -

- It enables the material manager to exercise selective control when he is confronted with large number of items.
- It is also helpful to rationalize the number of order and reduce the overall inventory.
- Broad objective is to develop policy guidelines for selective control.

Limitation of ABC Analysis is -

- It is based on monetary value of items. Sometimes though negligible in monetary value, some items may be vital for hospital.

OBSERVATION

Analysis of medicine expenditure for financial year 2014-15 involved a total of 233 medicine items, purchased from Fixed rate contract of government firms on quarterly basis. It was observed during the study that only 25% of items were received same quantity as ordered which was not a good observation, as majority of the items the quantities received was less than the quantities ordered. Probably the reason for this could be that government firms were not able to suffice the hospital needs.

It was also observed that less than 50% of medicines arrive on time, which was justified by out-of-stock experienced most of the time by many patients.

The ABC Analysis shows that

- About 25% of the medicines belonged to Class A and they consumed about 69.6% of the money spent on medicines.
- About 30% medicine items were categorized Class B and had a purchase value of 20% of the money spent on medicines.
- The rest of the items, that is about 107 (45%) cost about 10% of the money spent on medicines and were categorized as Class C.

Related Research Studies:

1. M Devnani, AK Gupta, and R Nigah- "ABC and VED Analysis of the Pharmacy Store of a Tertiary Care Teaching, Research and Referral Healthcare Institute of India" PGIMER, Chandigarh, 2007-08.

Outcome: The ABC and VED techniques need to be adopted as a routine practice for optimal use of resources and elimination of out-of-stock situations in the hospital pharmacy.

2. Rabindra Nath Roy, Saikat Manna , Gautam.Narayan Sarker-“ APPLYING MANAGEMENT TECHNIQUES FOR EFFECTIVE MANAGEMENT OF MEDICAL STORE OF A PUBLIC SECTOR UNDERTAKING HOSPITAL” Department of Community Medicine, R.G. Kar Medical College& Hospital, Kolkata & Hospital Management PGT, Birla Institute of Futuristic Studies .2005-06

Outcome: The use of inventory control techniques need to be made a routine practice in the present health care institution. Substantial improvement could be brought about not only in patient care, but also in the optimal use of resources by judicious practice of these methods.

3. Shashi Kant, Partha Haldar, Arvind Singh, Ankita Kankaria-“ Inventory Management of Drugs at a Secondary Level Hospital Associated with Ballabgarh HDSS- An Experience from North India” Centre for Community

Medicine, AIIMS New Delhi, Comprehensive Rural Health Services Project, Ballabgarh HDSS, Faridabad, 2012-13.

Outcome: Using ABC-VED matrix could achieve both time saving and assured availability of needed drugs by closely supervising category I that comprised 40% of all drugs. ABC-VED matrix analysis system is an optimal drug inventory management system at a secondary health care setting.

4. Lt Col R Gupta, Col KK Gupta (Retd), Brig BR Jain (Retd), Maj Gen RK Garg “ ABC and VED Analysis in Medical Stores Inventory Control” Department of Paediatrics, AFMC, Pune., Military Hospital, Mathura Cantt.Ex-DDMS, IHQ of MOD, New Delhi.2003.

Outcome: The management of Category I drugs was monitored by top management resulting in better control on the annual expenses and at the same time making available the vital Category II by middle and Category III at lower managerial level. With the decentralization of procurement in AFMS, the cost factor becomes important for optimum utilization of resources .Most of the drugs used in the hospital have to be either purchased from companies, which have entered into rate contract with the central government for a specified period.

5. MS Mahatme, GN Dakhale, SK Hiware, AT Shinde, and AM Salve “Medical Store Management: An Integrated Economic Analysis of a Tertiary Care Hospital in Central India” Govt. Hospital, Maharashtra,2011-12.

Outcome: ABC-VED analysis identifies drugs requiring stringent control for the optimal use of resources. Due to inflation, total expenditure for the drugs is increased each year which supports the higher budgetary requirement for the forthcoming years. At the same time, forecasting of budget helps for better management of medical store. Hence, ABC-VED along with EOQ and integrated economic analysis optimizes the costs of medicare services besides making materials available to the patients which can increase the quality of healthcare services.

CONCLUSION

This justifies that the Class A items being few but expensive require a close day to day control. With regard to class B and class C, these need a regular and infrequent review respectively.

Provision of care in any hospitals is sensitive to the timely availability of facilities, including drugs. In case of drugs, besides the criticality factor, the cost factor must also be taken into consideration, as can be seen from this study, where about 25% of the drugs consumed about 70% of the budget of the pharmacy. This is the group requiring greater monitoring as it has fewer drugs consuming most of the money.

One of the secondary objectives of inventory management is financial forecasting for the year ahead. Knowing the financial resources which will be required to manage inventory, surely gives that extra edge to the planning exercise. It tones and braces the management in advance so that the provisions for the future are based on the sound economic data of today.

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