



## A STUDY ON MULTIVITAMIN UTILISATION PATTERN AND PHARMACOECONOMICS IN A MEDICAL TEACHING CARE HOSPITAL

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### ABSTRACT

The importance of various vitamins on human health depends on their ability for diverse biochemical functions. Vitamin studies have an important impact in upcoming years. Our study analyses the utilization pattern and Pharmacoeconomics of vitamins and knowledge about vitamins among common people. Objective: To analyze the prescription pattern of various multivitamin supplements along with the comparison of cost effectiveness of various vitamins used in a teaching care hospital. Material and methods: The demographic data and therapeutic details were collected prospectively for a period of six months from the patients above 18 years of age who are prescribed with vitamin supplementation admitted in the medical wards during the study period and those who are able to communicate effectively and subjects who are willing to participate in the study. The socio-demographic factors and prescription analysis were done. Results Out of 140 patients, an estimate of 46 patients (i.e. 32.86%) were prescribed with multivitamin combinations followed by vitamin B supplements (Becosules 16.43%). The least prescribed vitamin was T Biovit (1.43%) Pharmacoeconomic analysis revealed that the cost of vitamins accounted for 10-15% of the total drug expenditures. Conclusion: From our study, we observed that most of the patients are prescribed with multivitamin combinations and vitamin B supplements and the least prescribed was Biovit. The study revealed that the vitamins account 10-15% of the hospital expenses. Inj Vitamin K, Thiamine and also multivitamin combinations were found to be more costly when compared to single vitamins supplements prescribed.

**Key Words:-** Vitamin K, Thiamine, multivitamin combination, Pharmacoeconomic analysis.

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produce enough of the vitamins or it does not produce any of it. Different vitamins play different roles and are needed in different quantities (Comerford K, 2013). Thirteen vitamins and fifteen minerals are essential for the maintenance of human health (Vitamins and Anti-Vitamins, 1948).

#### MULTIVITAMIN UTILISATION IN INDIAN POPULATION

In India, as fortification of food is lacking, supplementation with the multivitamins is the only treatment of deficiency (Ward E, 2014; Charmitha B *et al.*, 2017). In our country, approximately 70-80% of healthy individuals are vitamin deficient. Low Vitamin D status is prevalent irrespective of age, gender, occupation and also regional distribution. In India, more than 6000 children below 5 years die per day, and more than half of these deaths are because of micronutrients deficiency

#### INTRODUCTION

Vitamins are required in trace amounts for the normal growth and nutrition. Human body is not able to

diseases majorly due to deficiency of Vitamin A, iron, iodine and folic acid. Micronutrient rich foods are too expensive and not locally available in india (Charmitha B *et al.*, 2017).

#### PHARMACOECONOMICS OF MULTIVITAMINS

The short term economic cost of all micronutrient is around 0.8% to 2.5% in India. The major approaches used to quantify the cost of micronutrient supplementation are done by cost analysis. It is usually said that the usage of generic MVT's rather than the branded one helps to reduce the economic burden to the patients.

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#### METHODOLOGY

This study was a Prospective observational study and was carried out in The Oxford Medical College and Research Centre located in Attibele, Bangalore. The study got approved (ICE/TOMCHRC/067/17-18) by Institutional Ethics Committee of The Oxford medical College Hospital and Research Centre, Attibele, Bangalore. The data for the study was taken from patient case records and by interviewing the patients using Standard Case Record Form (CRF) (Appendix I).

#### STUDY PROCEDURE

It mainly involved the use of some forms for data collection, documentation, and analysis of the data. It assures the willingness of patient to answer the questions being asked. It consists of detailed explanation in the local language (Kannada), about the questions. The informed consent form and the information to participant sheet were initially given to the patient prior to each interview with a patient. It contains the information regarding the study such as the title, the procedure, the possible risk and benefit. After approval and signature from the patient the study proceeded to collection of demographics of the patient [name, age, sex, weight etc] and data regarding the diagnosis, prescribed drugs (Menon A *et al.*, 2008; Chugh P *et al.*, 2016).

Results on continuous measurements are presented on Mean SD (Min-Max) and results on categorical measurements are presented in Number (%).

#### RESULTS

##### ANALYSIS OF PRESCRIPTION PATTERN

Out of 140 patients, an estimate of 46 patients (i.e. 32.86%) was prescribed with multivitamin combinations followed by vitamin B supplements (Becosules 16.43%). The least prescribed vitamin was T Biovit (1.43%).

##### PHARMACOECONOMIC ANALYSIS BASED ON AMOUNT SPENT FOR VITAMIN SUPPLEMENTS

**Table 1: Analysis of prescription pattern**

VITAMIN SUPPLEMENTS (BRAND NAMES)	GENERIC NAME	NUMBER OF PRESCRIPTIONS	PERCENTAGE
CAP BECOSULES	Vitamin-B Complex + Vitamin-C + Folic Acid	23	16.43%
NEUROBIONE FORTE	vitamin B complex	12	8.57%
VITAMIN K	VITAMIN K	5	3.57%
INJ OPTINEURONE	Cyanocobalamin, D-Panthenol, Nicotinamide, Pyridoxine, Riboflavin and Thiamine	24	17.14%
T A-Z	MULTIVITAMINS	15	10.71%
T. BIOVIT	Copper, Manganese, Selenium, Vitamin A, Vitamin C, Vitamin E and Zinc	2	1.43%
T.ZOVIT	MULTIVITAMINS	4	2.86%
T HBZ	Elemental iron+ Folic acid	3	2.14%
INJ THIAMINE	VITAMIN B1	5	3.57%
COMBINATION	MULTIVITAMINS	46	32.86%
TOTAL		140	100%

**Table 2: Pharmacoeconomic Analysis Based on Amount Spent For Vitamin Supplements**

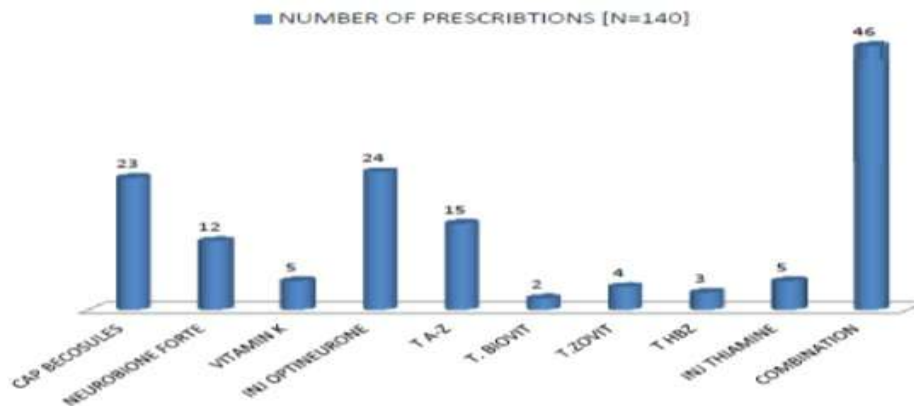
Cost analysis	Number of prescriptions	Percentage
0-100	83	59.29%
100-200	33	23.56%
200-300	11	7.86%
300-400	8	5.71%
400-500	5	3.58%
<b>TOTAL</b>	<b>140</b>	<b>100%</b>

**Table 3: Comparison with the Total Cost of Prescriptions**

Overall cost spent for vitamin / prescriptions	Number of prescriptions	Percentage
0-20%	69	49.29%
20-40%	29	20.71%
40-60%	23	16.43%
60-80%	10	7.14%
80-100%	9	6.43%

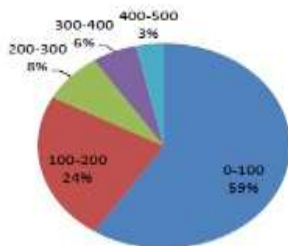
**Figure 1: Analysis of Prescription Pattern**

**ANALYSIS OF PRESCRIPTION PATTERN**



**Figure 2: Pharmacoeconomic analysis based on amount spent for vitamin supplements.**

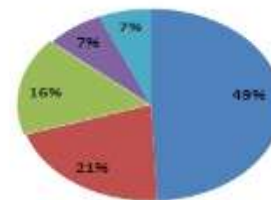
**PHARMACOECONOMIC ANALYSIS BASED ON AMOUNT SPENT FOR VITAMIN SUPPLEMENTS**



**Figure 3: Comparison with the total cost of Prescriptions.**

**COMPARISON WITH THE TOTAL COST OF PRESCRIPTIONS**

Legend: 0-20% (Blue), 20-40% (Red), 40-60% (Green), 60-80% (Purple), 80-100% (Light Blue)



## DISCUSSION

Prescribing pattern of vitamin supplements and pharmacoeconomic analysis was done during the study period in 140 patients.

➤ More number of multivitamin combinations was found in most of the prescriptions followed by the injection optineuron and capsule becosules. Oral route of administration of MVT is more preferred and used in this study. The most commonly used brand and category of MVT is OPTINEURON (17.6%) and the least used multivitamin is Tablet biovit (Copper, Manganese, Selenium, Vitamin A, Vitamin C, Vitamin E and Zinc).

➤ Charmitha et al also conducted a pharmacoeconomic study and concluded that avg. mean economic burden of 176.34 INR in female and 174.4 INR in male can be ruled out with the use of generic drugs which are equally effective to the brand drugs<sup>4</sup>. In our study majority of the patients spent within 100 INR (59.29%) for purchase of vitamin tablets during the period of treatment. 31.42% of the patients spent within 100-300 and 9.29% of the patients spent within 300-500 during the course of the treatment.

➤ Siddharth Gosavi et al also had the study which showed that the average amount that the patients spent was Rs 357.45 per month on neutraceuticals alone, maximum was Rs 557 in orthopedics and minimum was Rs 219 in medicine respectively. A 61.6% of the patients expressed their satisfaction after taking the neutraceuticals. However, 12.45% of the patients were dissatisfied even after taking the neutraceuticals<sup>6</sup>. In our study 49.29% of patients spent 0-20% of their total prescripational expenses and 20.71% spent 20-40%, 16.43% spent 40-60%, 7.14% spent 60-80% and 6.43%

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spent 80-100% of their total prescripational expenses (Stein A & Qaim M, 2007; Kawade R, 2012).

## CONCLUSION

An observational study was done to evaluate the utilization of multivitamin pattern of patients admitted in various departments in medical college teaching hospital. From our study using Optimum Nutrition Questionnaire, it showed that most of the patients were found to be deficient in vitamins due to their poor eating habits and lack of knowledge regarding the use of vitamins supplements.

When the pharmacoeconomic analysis was performed, we found out that the cost of vitamins accounted for 10-15% of the total drug expenditure. Inj vitamin and thiamine and also the multivitamin combinations were found to be more costly when compared to single vitamin supplement prescribed.

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**CONFLICT OF INTEREST-** There is no conflict of interest in our study

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