WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 12, 668-674. Research Article ISSN 2277–7105

ASSESSING COST-EFFECTIVENESS: ANALGESIC UTILIZATION IN POST-OPERATIVE CARE IN A TERTIARY CARE HOSPITAL

Dr. Varghese C. Joseph*[1], Dr. Parvathi C. M.[2], Dr. Maneesha Mariam Manoj[3], Cijo George[4] and Dr. Beena P.[5]

[1,2,3]Pharm D, KVM College of Pharmacy, Cherthala, Kerala.

[4]Associate Professor, KVM College of Pharmacy, Cherthala, Kerala.

[5]Principal, KVM College of Pharmacy, Cherthala, Kerala.

Article Received on
25 April 2024,

Revised on 15 May 2024,
Accepted on 04 June 2024

DOI: 10.20959/wjpr202412-32704

***Corresponding Author**
Dr. Varghese C. Joseph
Pharm D, KVM College of Pharmacy, Cherthala, Kerala.

ABSTRACT

Pain assessment is a broad concept involving clinical judgement based on observation of the type, significance and context of the individuals pain experienced. Pain assessment is crucial for pain management to be effective, which can be challenging due to the subjectivity and multidimensional nature of pain**.** The aim of the study was to evaluate the cost-effectiveness of analgesics prescribed in the department of orthopaedic for ensuring efficient pain management. A prospective longitudinal study was conducted for over a period of six months in Orthopaedicdepartment of SH medical centre, a tertiary care hospital in Kerala in India. A total of 100 patients satisfying the inclusion criteria were analysed to study the prescription pattern of analgesics among postoperative patients in orthopaedic department. All the relevant and necessary data of the patients were collected with consent from the patients case records, by interviewing the patient or patients caregiver, prescription of patient and were reviewed for demographic data, clinical presentations, investigations and management, data analysis was conducted. Cost minimization analysis shows a potential reduction in cost of prescription, if there was an intervention. The overall cost of prescription was reduced to 14.42% if the proposed alternate 1 category of brands were used and 26.33% reduction with alternate 2 category of brands. The study provided an insight into the costs of analgesics being used in the hospital in the orthopedics department. The total cost reduction of 14.42% and 26.33% with alternate brandsof drugs shows that effective cost reduction strategies could reduce the cost of therapy which will in turn improve patient compliance and reduces the economic

burden.

KEYWORDS: Analgesics, Prescription, Orthopedics, Pain, Cost.

INTRODUCTION

Pharmacoeconomics may be defined as balancing the cost with the consequences (outcomes) of pharmaceutical therapies and services. As a type of outcomes evaluation, pharmacoeconomics looks beyond just the direct or acquisition cost of a pharmaceutical by including its impact on total health resource utilization and costs.[1]

Outcomes research attempts to answer the question, What difference does the pharmaceutical make in patient outcomes under real-world conditions? The economic, clinical, and humanistic outcomes (ECHO) model for a pharmacoeconomic evaluation views the drug as some combination of its clinical, economic, and humanistic attributes.[2]

Safety and effectiveness are no longer the only salient attributes of a drug; the effect on total health resource utilization, cost, and quality of life must also be evaluated. The four types of pharmacoeconomic methods are cost-minimization analysis, cost-benefit analysis, cost-effectiveness analysis, and cost-utility analysis.[4]

As disease state management continues to emerge as a cost-management, quality assurance strategy, formularies perse will wane in importance and pharmacoeconomic and outcomes data will increase in relevance as health professionals endeavor to find the most efficient and effective combinations of medical care.[1]

Pharmacoeconomics as a component of outcomes research will help pharmacists decide which clinical circumstances, patient characteristics, and practice settings are most suitablefor particular interventions.[3]

The economic evaluation of pain management is essential because of its important role in health care. Cost-benefit analysis is used to determine which pain management strategies best achieve their objectives despite the scarcity of monetary resources.[5]

The costs of chronic pain control are expected to increase in the coming years because survival of these patients is improving. There are very few economic analyses that evaluate the cost-effectiveness of the various methods of cancer-related pain management. Economic

studies on acute pain therapy indicate that patient-controlled analgesia offers superior results compared with conventional pain regimens.[2]

Nonsteroidal anti-inflammatory drugs have the advantage of being good candidates for interventions to promote cost-effective drug use. This paper discusses the influence of cost considerations on managing patients with different types of pain problems.[5]

MATERIALS AND METHODS

Study Design: Prospective Longitudinal study.

Study Setting: SH Medical Centre, Kottayam.

Study Duration: 6 Months.

Study Population

The study population included all the patients satisfying the inclusion criteria. A minimum sample size of 100 patients were required to meet the objectives for our study to get a statistically significant data. Sample size was calculated by the Cochran formula.

$$N = \frac{(Z_{1-\frac{\alpha}{2}})^2 \, p \, q}{E^2}$$

Where Z = 1.96 (95%), p = 0.19, q = 0.81, E= 0.08 (8%).

Study Sample Size

A minimum sample size of 100 patients were required to meet the objectives for our study to get a statistically significant data.

Criteria for Patient Selection

Inclusion Criteria

- Patients admitted in orthopaedic department.
- Post-operative patients.
- Patients who are cooperative.
- Patients who are more than 18 years of age.
- Cases with at least 3 days of hospitalization.

Exclusion Criteria

- Patients who have undergone traumatic surgery and cannot comply withthe study.

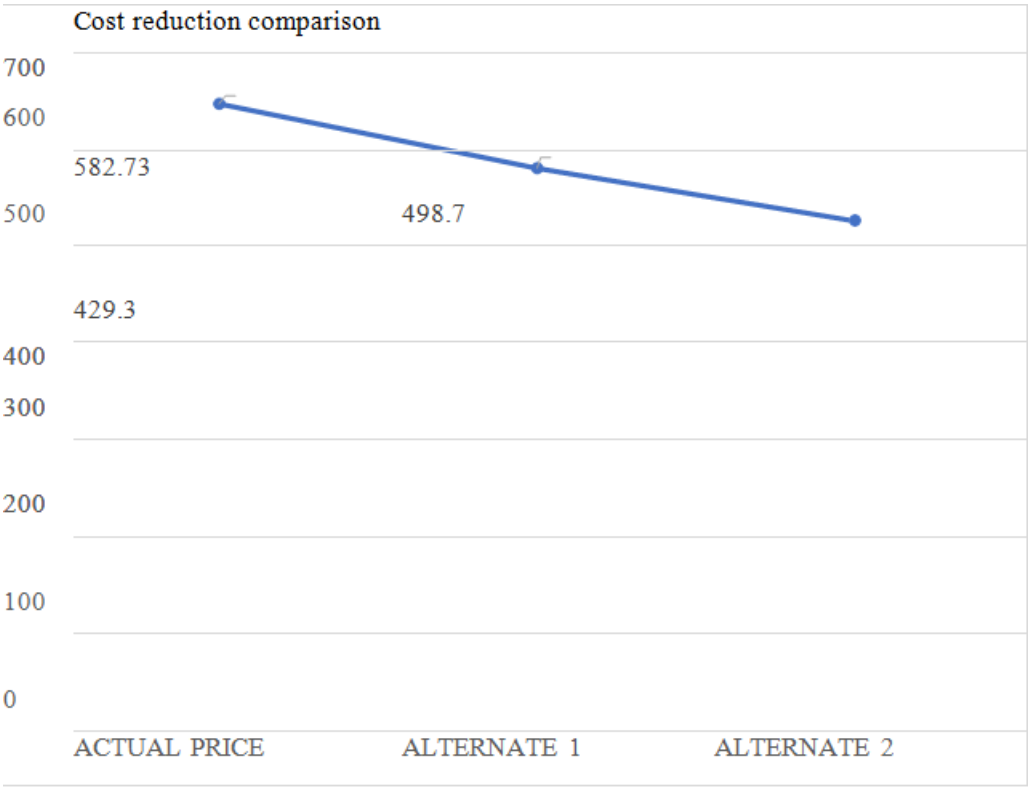
- Patient case charts which does not contains analgesics and pain score
- Patients who are referred from other departments

RESULT

Cost minimization analysis of mostly prescribed 8 analgesics

DRUGS	ACTUAL PRICE (per unit)	ALTERNATE 1	ALTERNATE 2
INJ PMOL	293	273	199
TAB ETOSHINE	15	14.1	12
INJ ROPIN	139	97	119
INJ TRAMADOL	26	21.25	19.8
INJ FENTANYL	56.4	47	42
TAB JUBIFLAM	21.65	17	14.8
TAB ENZOMAC	24.78	23.65	18
TAB INFLAM SR	6.9	5.7	4.7
TOTAL	582.73	498.7	429.3

Cost Reduction Comparison

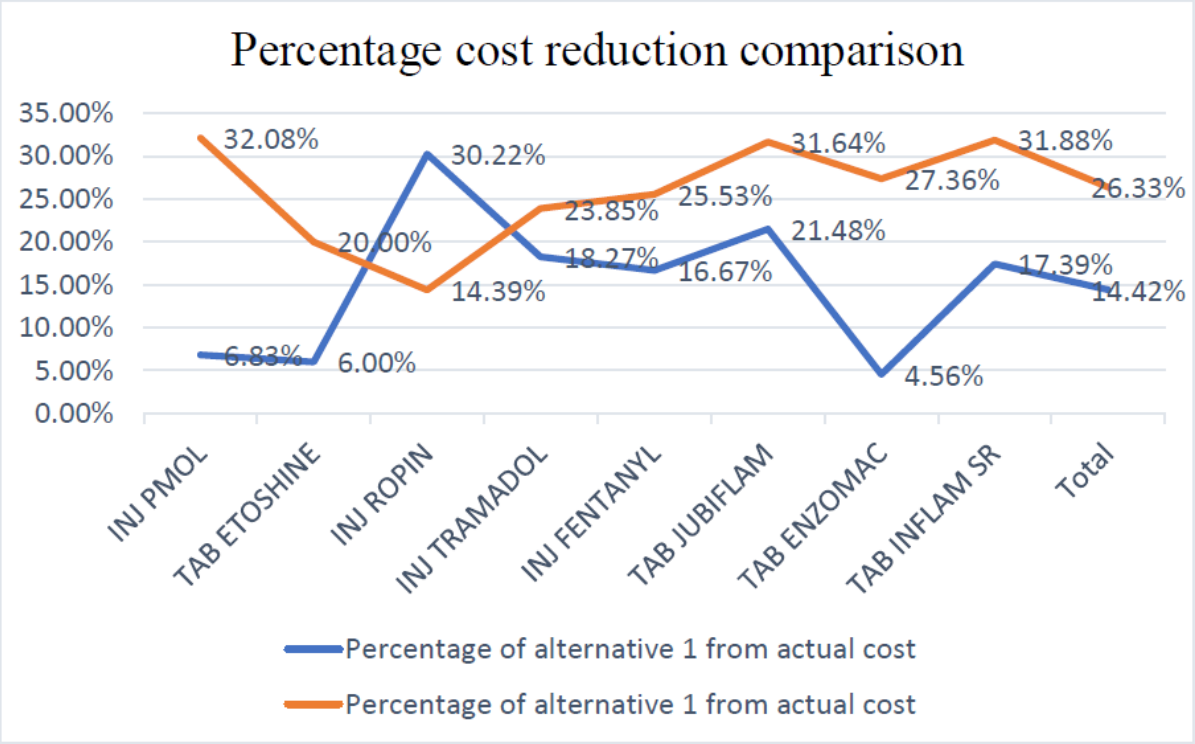


Inference: The above table 17 shows the actual cost reduction from Alternate 1 to Alternate 2. The figure 10 shows that the actual analgesic cost reduction found with respect to Alternate 1 and Alternate 2. The substantial reduction in cost of prescription can be done by performing cost minimization analysis for analgesics. Cost minimization analysis shows a potential reduction in cost of prescription, if there was an intervention**.**

Cost Minimization Analysis of Actual Drugs with Alternative Brands

DRUGS	Percentage of alternative 1from actual cost	Percentage of alternative 1 from actual cost
INJ PMOL	6.83%	32.08 %
TAB ETOSHINE	6.00 %	20.00 %
INJ ROPIN	30.22 %	14.39 %
INJ TRAMADOL	18.27 %	23.85 %
INJ FENTANYL	16.67 %	25.53 %
TAB JUBIFLAM	21.48 %	31.64 %
TAB ENZOMAC	4.56 %	27.36 %
TAB INFLAM SR	17.39 %	31.88 %
Total	14.42 %	26.33 %

Percentage Cost Reduction Comparison



Inference: The table 16: shows that the overall cost of the prescription was reduced to 14.42% if the proposed alternate 1 category brands were used and 26.33% reduction with alternate 2 category brands. Careful assessment of analgesic brands has the potential to reduce the cost of analgesics.

Comparison of Cost Minimization Analysis by Using One Way ANOVA

DRUGS	ACTUAL PRICE (perunit)	ALTERNATE 1	ALTERNATE 2
INJ PMOL	293	273	199
TAB ETOSHINE	15	14.1	12
INJ ROPIN	139	97	119
INJ TRAMADOL	26	21.25	19.8
INJ FENTANYL	56.4	47	42
TAB JUBIFLAM	21.65	17	14.8
TAB ENZOMAC	24.78	23.65	18
TAB INFLAM SR	6.9	5.7	4.7
	Mean square	F value (ANOVA)	p value
Between group	7529.328	10.216	<0.001 (significant)
Within group	737.878		

Inference: The influence of CMA in analgesics were studied using ANOVA. The above table 17 shows that the difference between the alternate 1 and alternate 2 are statistically significant (F=10.216,P=<0.001).

CONCLUSION

Postoperative care is the crucial part of the healing process. It helps in assisting patients in regaining the strength and health, and enabling them to return to their everyday life. And so pain management plays a vital role. The study assisted to analyse the most beneficial approaches to pain management and gain a better understanding of patient's needs and preference. Our findings could inform healthcare professionals and healthcare organisations in the implementation of patient centered programmes aimed at optimising cost-effective pain management after an orthopaedic trauma. The total cost reduction of 14.42% and 26.33% with alternate brands of drugs shows that effective cost reduction strategies could reduce the cost of therapy which will in turn improve patient compliance and reduces the economic burden.

REFERENCES

1. C.E. Reeder, Overview of pharmacoeconomics and pharmaceutical outcomes evaluations, American Journal of Health-System Pharmacy, October 1995; 52(suppl_4, 1): S5–S8.
2. Varrassi, G., Marinangeli, F., Donatelli, F. et al. Pharmacoeconomics of painmanagement. Current Review of Pain 2, 1998; 151–156.
3. Chen Q, Larochelle MR, Weaver DT, et al. Prevention of prescription opioid misuse and projected overdose deaths in the United States. JAMA Netw Open, 2019; 2(2): e187621.
4. Michaloliakou C, Chung F, Sharma S. Preoperative multimodal analgesia facilitates

recovery after ambulatory laparoscopic cholecystectomy. Anesth Analg., 1996; 82: 44–51.

5. Tang J, Chen X, White PF, et al. Abstract effect of parecoxib, a new cyclooxygenase-2 inhibitor on the postoperative analgesia requirement. Anesth Analg., 2001; 92: S270.