

**PRESCRIPTION PATTERN OF PREANAESTHETIC AND ANAESTHETIC  
MEDICATIONS: A RECORD BASED STUDY IN A TERTIARY CARE HOSPITAL**Vishnu T.<sup>1</sup>, Shashikala M.<sup>2</sup>, Sudesh<sup>2</sup>, Yazhini S.<sup>2</sup> and J. Andrew Gnanaprakasam\*<sup>3</sup><sup>1</sup>Principal Investigator, Pharm D, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India – 571422.<sup>2</sup>Pharm D, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India – 571422.<sup>3</sup>Assistant Professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India – 571422.**\*Corresponding Author: J. Andrew Gnanaprakasam**

Assistant Professor, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India - 571422.

Article Received on 21/08/2022

Article Revised on 11/09/2022

Article Accepted on 01/10/2022

**ABSTRACT**

Preanaesthetic medication refers to the use of drugs before anaesthesia to make it more pleasant and safe. Premedication was originally introduced to facilitate induction of anaesthesia with agents, such as chloroform and ether that are irritant and produce copious amounts of secretions. Anaesthesia is defined as a state of temporary induced loss of sensation or awareness, it may include analgesia (relief from or prevention of pain), paralysis (muscle relaxation), amnesia (loss of memory) or unconsciousness. **Objective:** To describe pattern of pre anaesthetic and anaesthetic medications being given to adults in surgery department in a tertiary care hospital. **Methodology:** This was a record-based study. The research period was about 6 months. Data were collected from the patient's case records and treatment chart who had undergone surgery in the department of Surgery in MIMS teaching hospital, Mandya. **Result:** Total 200 patients records were analysed. The male subjects were 64% more than female subjects 36%. The maximum number of subjects were found in the age group between 26-44year. As preanaesthetic medication, Alprazolam/Midazolam/Diazepam [162 (33.40%)] as Anxiolytics, Fentanyl/Tramadol/Pentazocine/Buprenorphine [66 (13.60%)] as opioid analgesics, Omeprazole/Pantoprazole/Ranitidine [132 (27.22%)] as gastroprotective agents, Ondansetron [89 (18.36%)] as antiemetics, Glycopyrrolate [36 (7.42%)] as anticholinergic. As anaesthetic medication, Bupivacaine/Lignocaine [136 (68%)] as local anaesthetic and Ketamine/Propofol/Sevoflurane/Isoflurane [44 (20%)] as general anaesthetic. **Conclusion:** Our study concluded that the prescribing pattern of preanaesthetic and anaesthetic medication in department of surgery and provides a practice protocol for the choice of preanaesthetic and anaesthetic medication.

**KEYWORDS:** Preanaesthetic medication, Anaesthesia, Surgeries, and Anxiolytic drugs, Opioid Analgesics, Anticholinergics, Gastro Protective drugs, NSAIDs.**INTRODUCTION**

**Preanaesthetic medication** refers to the use of drugs before anaesthesia to make it more pleasant and safe.<sup>[1]</sup> Premedication was originally introduced to facilitate induction of anaesthesia with agents, such as chloroform and ether that are irritant and produce copious amounts of secretions. Modern induction methods are simple and not unpleasant.<sup>[2]</sup> The major objectives of preanaesthetic medication are to decrease the stress response with preservation of hemodynamic parameters, facilitate anaesthesia induction and produce amnesia.<sup>[3]</sup> Preanaesthetic medication is also defined as a group of drugs that are used before anaesthesia to prepare the patient, administered from half an hour before the surgery to the night before.<sup>[4]</sup>

The commonly used classes of preanaesthetic medications are as follows.

- 1) Opioids: Morphine, Pethidine, Fentanyl & its congeners
- 2) Sedative-antianxiety drugs: Diazepam, Lorazepam, Alprazolam, Midazolam, Promethazine
- 3) Anticholinergics: Atropine, Hyoscine, Glycopyrrolate
- 4) Neuroleptics: Chlorpromazine, Trifluromazine, Haloperidol
- 5) Histamine H<sub>2</sub> blockers: Ranitidine, Famotidine, etc
- 6) Proton pump inhibitors: Omeprazole, Pantoprazole, etc.
- 7) Antiemetic's: Metoclopramide, Domperidone, Ondansetron, Granisetron

**Anaesthesia** is defined as a state of temporary induced loss of sensation or awareness. It may include analgesia (relief from or prevention of pain), paralysis (muscle relaxation), amnesia (loss of memory) or unconsciousness.<sup>[5]</sup>

### CURRENT PRACTICE OF PREANAESTHETICS

The practice of anaesthetic premedication in surgical patient is no longer a routine procedure today. There are several reasons to explain why we do not give medication to every patient before sending them to the operating theatre. The main reason is that the induction time of general anaesthesia in current practice is much shorter than that of ether anaesthesia. We now routinely use intravenous anaesthetics as induction agents; for most intravenous agents, onset of action occurs within 60 seconds. Patients who do not have venous access, such as children undergoing an operation in an outpatient setting, can be given sevoflurane as an induction agent via a face mask. Despite having some involuntary movements (excitement stage of Guedel's sign), these children can easily be made sleep in 1 minute due to the low blood solubility of sevoflurane. The issue of patient safety is another concern of anaesthetic premedication. When patients are premedicated, they must be put into surveillance to monitor the vital signs and the potential side effects of medication when they are in the ward, during transport to operating theater, or when they are in the waiting area of the operating theater. We usually do not monitor vital signs of patients while they are still in the waiting lounge. If premedication becomes a routine practice in a hospital, more manpower is needed to take care of these patients, leading to an increase in costs; for this reason, most of the hospitals do not perform this at present. From the viewpoint of efficacy of medication, patients will not obtain the beneficial effects of premedication if they receive their medication too early or too late prior to operation. In a busy operating theater of a medical center where a lot of patients are ready to undergo surgery, the operation is often delayed or conducted earlier, making the efficacy of premedication unpredictable. We should also take "street readiness" of patients into account. At present, more operations are performed on an outpatient service basis in medical centers. After surgery, patients need to resume their normal daily activity as soon as possible. If the side effects of a premedication affect the functional recovery following an outpatient operation, most patients will not be willing to accept the medication.

### METHODOLOGY

This was a record-based study conducted in Mandya Institute of Medical Sciences (MIMS) and Teaching Hospital, Mandya for a period of 6 months. The data was collected from records of in-patients aged 18 years or more, both male & female patients who had undergone surgery in the Department of Surgery. The sample size was 200. The study was approved by Institutional Ethics Committee, MIMS teaching hospital, Mandya. Records of in-patients less than 18 years, both male & female

patients who had undergone surgery in the surgical department and records with incomplete data was exclusion criteria. A suitably designed data collection form was used to collect the necessary data including patient's name, age, sex, address, department, diagnosis, list of preanaesthetic medications and including type of anaesthesia. The collected information was documented and subjected for analysis using suitable statistical method.

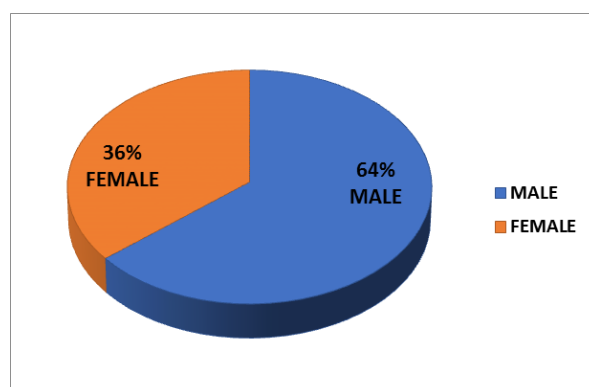
**Analysis:** For the analysis of the results, simple percentage calculation was done. Microsoft Word and Microsoft Excel are used to generate graphs and tables where ever required.

### RESULTS

The retrospective study was conducted in Medical Record Department at MIMS tertiary care teaching hospital, Mandya. A total of 200 patient's case records in MIMS were enrolled on the basis of inclusion criteria. The demographic details such as age, sex, etc and treatment details from the patient's case records with preanaesthetic records were documented in a suitably designed patient profile form.

### DISTRIBUTION OF PATIENT BASED ON GENDER

Among 200 patient's records, 128 (64%) patients were male and 72 (36%) patients were female.



**Figure 1: Distribution of number of patients based on gender.**

### CATEGORIZATION OF PATIENTS BASED ON AGE

In our study maximum number of patients were found between age group of 26-44 years (50.5%), followed by above 60 years (21%), 45-59 (19.5%) and others with 18-25 (9%) years.

**Table 1: Distribution of patient based on Age.**

Age Group (In Years)	Number of Patients	Percentage (%)
18-25	18	09%
26 – 44	101	50.5%
45– 59	39	19.5%
60 above	42	21%

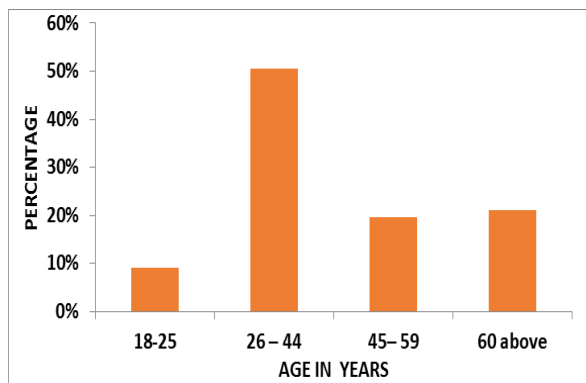


Figure 2: Categorization of patients based on age.

### VARIOUS DISEASE CONDITIONS OF THE PATIENTS

Among 200 patients, majority were diagnosed with hernia (30%), appendicitis (13.5%), cancer (9%) and other diseases(22.5%) which include Stricture urethra, varicose vein, head injury, Obstructive phimosi, Epidural cyst.

Table 2: Various disease condition of patients.

Disease	Frequency	Percentage (%)
Hernia	60	30%
Appendicitis	27	13.5%
Cancer	18	9%
Hemorrhoids	13	6.5%
Cholestasis	11	5.5%
Fissure	10	5%
Calculus	10	5%
Pancreatitis	6	3%
Other	45	22.5%

### PRESCRIBING PATTERN FOR VARIOUS DISEASE

#### Prescribing pattern for hernia

Among 60 hernia patients, (60.74%) had given preanaesthetic medication followed by (26.38%) anaesthetic medication and (12.88%) of patients with miscellaneous drugs.

Table 3: Prescribing pattern for hernia.

PREANAESTHETIC		ANAESTHETIC		MISCELLANEOUS	
Drugs	Frequency	Drugs	Frequency	Drugs	Frequency
Alprazolam	27	Bupivacaine	38	Clonidine	7
Omeprazole	20	Ketamine	4	Prucalopride	6
Ondansetron	19	Lignocaine	1	IVF	5
Fentanyl	11			Acetaminophen	1
Midazolam	9			Diclofenac	1
Pantoprazole	3			Epinephrine	1
Ranitidine	3				
Glycopyrrolate	2				
<b>Total</b>	<b>99</b>		<b>43</b>		<b>21</b>
<b>Percentage (%)</b>	<b>60.74%</b>		<b>26.38%</b>		<b>12.88%</b>

#### Prescribing pattern for Appendicitis

Among 27 Appendicitis cases, majority were prescribed with preanaesthetic medication (62.69%) followed by

(26.87%) anaesthetic medication and (10.44%) were prescribed with miscellaneous drugs.

Table 4: Prescribing pattern for appendicitis.

PREANAESTHETIC		ANAESTHETIC		MISCELLANEOUS	
Drugs	Frequency	Drugs	Frequency	Drugs	Frequency
Ondansetron	15	Bupivacaine	18	Clonidine	3
Alprazolam	9			Prucalopride	2
Fentanyl	5			Diclofenac	1
Omeprazole	4			Acetaminophen	1
Midazolam	3				
Pantoprazole	3				
Pentazocine	2				
Tramadol	1				
<b>Total</b>	<b>42</b>		<b>18</b>		<b>7</b>
<b>Percentage (%)</b>	<b>62.69%</b>		<b>26.87</b>		<b>10.44</b>

#### Prescribing pattern for Cancer

Among 18 cancer patients, majority were prescribed with preanaesthetic medication (64%) followed by (25.33%)

anaesthetic medication and (10.67%) were prescribed with miscellaneous drugs.

**Table 5: Prescribing pattern for cancer.**

PREANAESTHETIC		ANAESTHETIC		MISCELLANEOUS	
Drugs	Frequency	Drugs	Frequency	Drugs	Frequency
Omeprazole	11	Propofol	7	Prucalopride	3
Alprazolam	11	Lignocaine	6	Dexamethasone	2
Midazolam	8	Bupivacaine	3	Isoprenaline	2
Glycopyrrolate	7	Ketamine	3	Atracurium	1
Fentanyl	4				
Ondansetron	4				
Pentazocine	2				
Ranitidine	1				
<b>Total</b>	<b>48</b>		<b>19</b>		<b>8</b>
<b>Percentage (%)</b>	<b>64%</b>		<b>25.33%</b>		<b>10.67%</b>

**Prescribing pattern for Haemorrhoids**

Among 13 hemorrhoid patients, majority were prescribed with preanaesthetic medication (69.23%) followed by

(28.21%) anaesthetic medication and (2.56%) were prescribed with miscellaneous drugs.

**Table 6: Prescribing pattern for haemorrhoids.**

PREANAESTHETIC		ANAESTHETIC		MISCELLANEOUS DRUGS	
Drug	Frequency	Drug	Frequency	Drug	Frequency
Omeprazole	10	Bupivacaine	11	Clonidine	1
Alprazolam	10				
Ondansetron	6				
Glycopyrrolate	1				
<b>Total</b>	<b>27</b>		<b>11</b>		<b>1</b>
<b>Percentage (%)</b>	<b>69.23</b>		<b>28.21</b>		<b>2.56</b>

**Prescribing pattern for Cholelithiasis**

Among 11 cholelithiasis patients, majority were prescribed with preanaesthetic medication (68.89%)

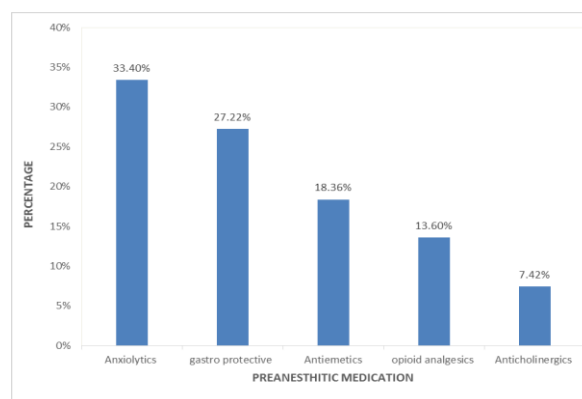
followed by (17.78%) anaesthetic medication and (13.33%) were prescribed with miscellaneous drugs.

**Table 7: Prescribing pattern for cholelithiasis.**

PREANAESTHETIC		ANAESTHETIC		MISCELLANEOUS DRUGS	
Drugs	Frequency	Drugs	Frequency	Drugs	Frequency
Omeprazole	7	Propofol	3	Prucalopride	3
Alprazolam	7	Bupivacaine	3	Dexamethasone	1
Fentanyl	5	Lignocaine	1	Clonidine	1
Midazolam	4	Ketamine	1	Atracurium	1
Glycopyrrolate	4				
Ranitidine	3				
Ondansetron	1				
<b>Total</b>	<b>31</b>		<b>8</b>		<b>6</b>
<b>Percentage (%)</b>	<b>68.89%</b>		<b>17.78%</b>		<b>13.33%</b>

**DRUG PRESCRIBING PATTERN OF VARIOUS PREANAESTHETIC MEDICATIONS**

Among 200, out of which 33.40% of patients taken Anxiolytics followed by gastro protective (27.22%), Antiemetics (18.36%), opioid analgesics (13.60%) and Anticholinergics (7.42%).

**Figure 3: Distribution of preanaesthetic medications.**

## DISTRIBUTION OF PREANASTHETIC MEDICATIONS

### Anxiolytic medications

In our study, 162 patients had taken anxiolytic medications, out of which 69.75% of patients were on

alprazolam followed by Midazolam (27.78%) and diazepam (2.47%).

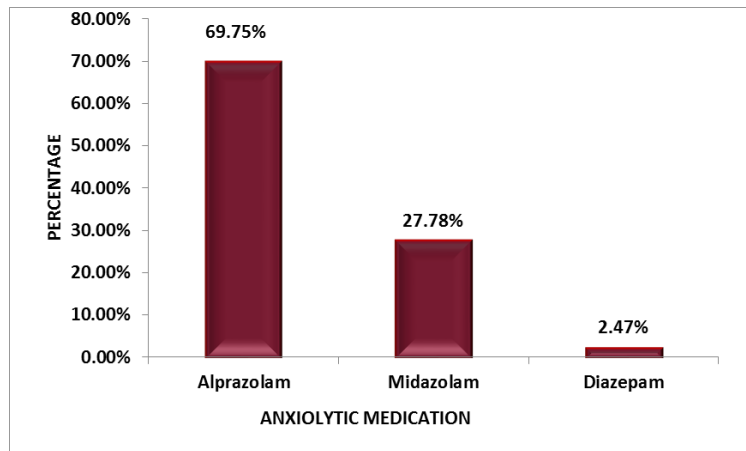


Figure 4: Distribution of anxiolytic medication.

### Opioid analgesics

In this study, 66 patients had taken opioid analgesics, out of which 77.28% of patients were on Fentanyl followed

by tramadol (13.63%), Pentazocine (7.58%) and Buprenorphine (1.51%).

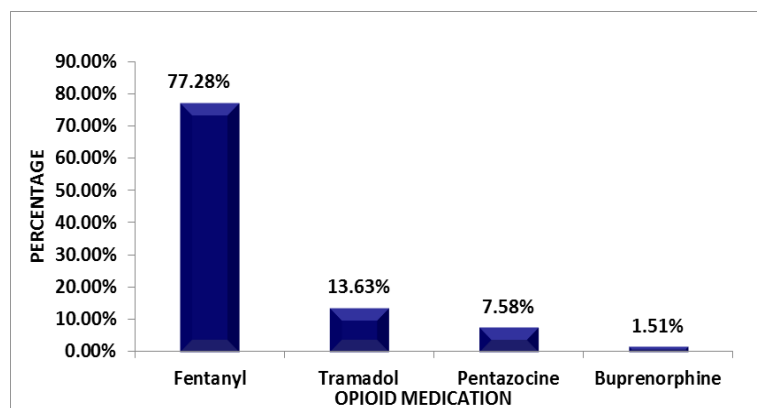


Figure 5: Distribution of opioid analgesics.

### Gastro protective agents

In this study, 132 patients had taken gastro protective agents, out of which 74.24% of patients were on

Omeprazole followed by Pantoprazole (14.40%) and ranitidine (1.51%).

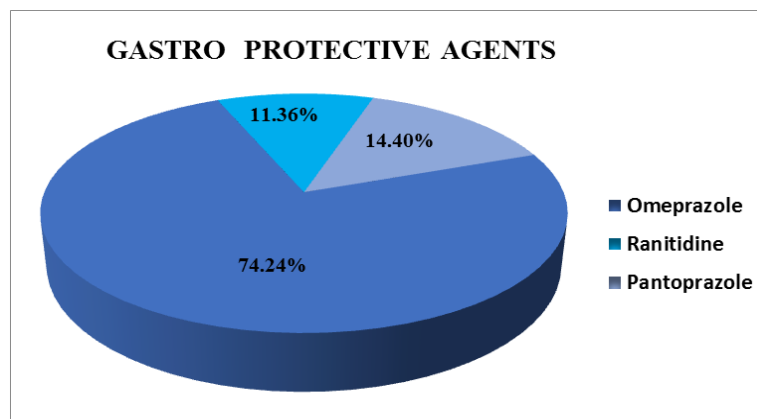
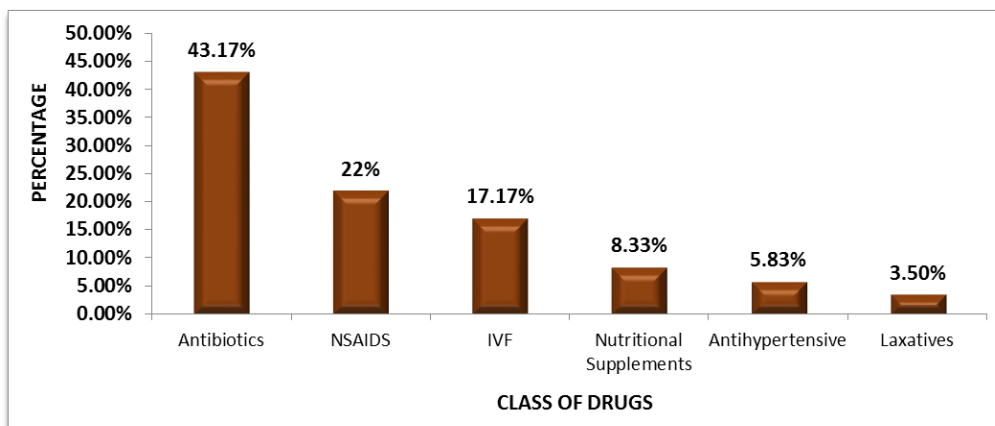


Figure 6: Distribution of Gastro protective agents.

**Miscellaneous prescribed drugs**

In our study, among 200 patients out of which, maximum number of patients were administered with antibiotics

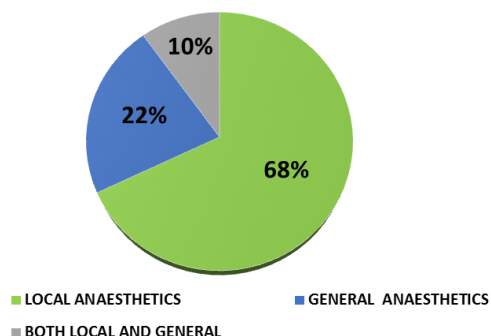
(40.14%) followed by NSAIDS (19.76%), IVF (19.76%) and nutritional supplement (7.49%).



**Figure 7: Miscellaneous prescribed drugs.**

**DRUG PRESCRIBING PATTERN OF VARIOUS ANAESTHETIC MEDICATIONS**

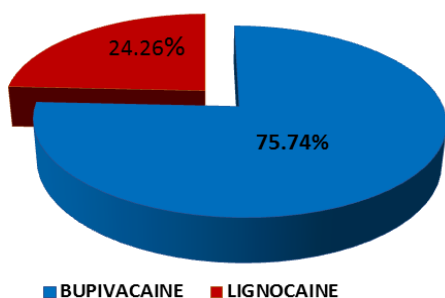
Among 200 patients, out of which maximum number of patients were administered with local anaesthetics (80%) followed by general anaesthetics (22%). It was found that 10% of the patients were administered both local and general anaesthetic medication.



**Figure 8: Distribution of anaesthetic medications.**

**Drug prescribing pattern of local anaesthetic medications**

Among 200 patients, 75.74% of the patient were administered with Bupivacaine and 24.26% with Lignocaine.



**Figure 9: Distribution of local anaesthetic medications.**

**Drug prescribing pattern of general anaesthetic medications**

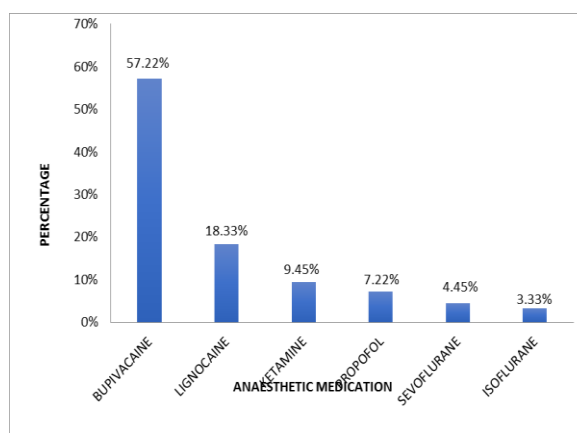
Among 200 patients, 38.64% of the patient were administered with ketamine followed by Propofol (29.55%), Sevoflurane (18.18%) and Isoflurane (13.63%).

**Table 8: Distribution of general anaesthetic medication.**

Drugs	Number of Prescription	Percentage
KETAMINE	17	38.64%
PROPOFOL	13	29.55%
SEVOFLURANE	8	18.18%
ISOFLURANE	6	13.63%

**DRUG PRESCRIBING PATTERN OF ANAESTHETIC MEDICATIONS**

Among 200 patients, majority of the patients were administered with Bupivacaine (57.22%).



**Figure No.10: Distribution of Anaesthetic medication.**

**DISCUSSION**

Drug utilization studies are important for scientific as well as administrative purposes in large hospital settings,



especially in tertiary care hospitals. Significant insights into the use of medicines, indications, side effects, and drug interactions can be obtained from such studies. There are limited data from Indian settings showing trends in the usage of preanaesthetic medications in patients undergoing surgeries. From our audit of preanaesthetic and Anaesthetic medication in surgical department we found that there is a great variability in utilization of these drugs.

Total 200 preanaesthetic records were analysed in surgical department 64% were male and 36% were female. In our study, department of surgery is taken as inclusion criteria. During study period various surgeries are performed, Hernia, Appendicitis, Cholelithiasis, Fissures, cancer. Hernia and Appendicitis are seen more in number.

Premedication for anxiolysis is important in elderly and has importance in emergence agitation in these groups of patients.<sup>[44]</sup> In the present study we found that the use of alprazolam was highest followed by midazolam in surgery department. This pattern of utilization correlates with the fact that the patients of the above department are elderly, women and patients of trauma, who have an increased incidence of anxiety states prior to elective surgery and anaesthesia. These findings differ from the study of Zeev N. Kain et al where the most commonly used anxiolytic is midazolam.<sup>[45]</sup>

Alprazolam as well as Midazolam have a additive effect with intravenous anaesthetics (propofol, fentanyl) and could prolong the sedative effects after surgery.<sup>[46-47]</sup> Therefore, a dose reduction of pre-operative alprazolam should be considered.

Preoperative opioid analgesics were used in surgery. Fentanyl was most commonly used followed by tramadol, pentazocine and buprenorphine. These findings were similar to Biswas P, et al., studies where fentanyl was the most common opioid analgesic used.<sup>[8,35]</sup> The additive sedative effects of fentanyl and general anaesthetics warrants a dose reduction of fentanyl preoperatively.

Antiemetic's were given preoperatively to all surgical patients undergoing surgery. Among the antiemetic drugs, ondansetron was the only drug used. A study by Y. Fuji et al shows that antiserotonins (ondansetron, granisetron, ramosetron) are more effective in prophylaxis of PONV than traditional antiemetics (metoclopramide, droperidol) for 24 hours post-surgery.<sup>[48]</sup>

This could explain the pattern of usage of antiemetics. Gastro protective drugs are more commonly used in surgery. Omeprazole was the most commonly used than pantoprazole followed by ranitidine. The findings of the present study are contradictory to a meta-analysis by Clark K et al, which is of the opinion that H2 blockers

are more effective in reducing the gastric volume and p<sup>H</sup> compared to a proton pump inhibitor (PPI), therefore prevent aspiration to a greater extent.<sup>[49]</sup>

Anticholinergic drugs are administered to decrease respiratory secretions and to prevent bradycardia, in our study Glycopyrrolate was administered. When compared to Biswas P, et al where Glycopyrrolate was the most commonly used.<sup>[8]</sup> Glycopyrrolate being a quaternary amine, it is less likely to cause adverse CNS effects when compared to atropine. It has a lesser incidence of cardiac arrhythmias.<sup>[29,50]</sup> And has a specific effect of decreasing airway secretions, therefore it is the most preferred anticholinergic in current practice.

In our study, the various types of anaesthesia were used to perform surgeries in our hospital. The majority of the patients received local anaesthesia followed by general anaesthesia. The drug utilization pattern of anaesthesia varies with individual patients who undergo various surgeries. Majority of the patients who received local anaesthesia were given Bupivacaine (81.25%) followed by lignocaine (18.75%) as anaesthesia and co-induction with, clonidine and tramadol. Patients who received general anaesthesia were given. Ketamine (38.64%) followed by propofol (29.55%), sevoflurane (18.18%) and isoflurane (13.63%) respectively.

Some of the strengths of our study include a broad view of the current practice of premedication in a tertiary hospital of south India and our sample size of 200 cases. Our data represents both urban and rural population of South India.

## CONCLUSION

Our study gives an insight into the current practice pattern of preanaesthetic and anaesthetic medication in department of surgery in a tertiary care hospital. Also enhance the knowledge regarding the medication use in the department of surgery and also help in future management of patients.

## ACKNOWLEDGEMENT

We wish to express our sincere gratitude to Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India for providing necessary facilities to carry out our research work.

## REFERENCE

1. K D Tripathi. Essentials of medical pharmacology. 6th ed. India: Jaypee brother's medical publisher (P) LTD., 2008; 378.
2. James M Ritter, Lionel D Lewis, Timothy Gk Mant, Albert Ferro. A textbook of clinical pharmacology and therapeutics. 5th ed. Great Britain: Hodder Arnold, an imprint of Hodden Education, part of Hachette Live UK., 2008; 149-50.
3. C Abdallah, R Hannallah. Premedication of the child undergoing surgery. M.EJ. Anesth, 2011; 21(2): 165-76.

4. Preanesthetic Medication (Internet). howMed, Inc.; c2012. Preanaesthetic; [cited 2018 Mar 1]; [about 1p.]. Available from: <http://howmed.net/pharmacology/preanestheticmedication/>
5. Wikipedia [Internet]. Wikimedia foundation, Inc.; Anesthesia; [updated 2018 Mar 9; cited 2018 Mar 11]; [about 1 screen]. Available from: <https://en.wikipedia.org/wiki/Anesthesia>
6. Kulkarni M, Patil A. A cross-sectional pharmacopidemiological study of the utilization pattern of pre-anaesthetic medications in major surgical procedures in a tertiary care hospital. *Cureus*, Jun 13, 2017; 9(6): 1-10.
7. Paul F. White. Pharmacologic and clinical aspects of preoperative medication *Anesth Analg*, 1986; 65: 963-74.
8. Biswas p. Niveditha, Shivamurthy M C. A study to evaluate the pattern of pre Anaesthetic medication in various surgical specialties in a Tertiary Care Hospital. *Int J Pharm Sci Res.*, 2014; 5(6): 2441-6.
9. Michael J, Sheen, Fang-Lin Chang, Shung-Tai Ho. Anaesthetic premedication: New horizons of an old practice. *Acta Anaesthesiologica Taiwanica*, 2014; 52: 134-42.
10. K D Tripathi. Pharmacological classification of drugs with doses and preparations. 4th ed. India: Jaypee brothers' medical publisher (P) LTD., 2010; 52.
11. James M Ritter, Lionel D Lewis, Timothy Gk Mant, Albert Ferro. A textbook of clinical pharmacology and therapeutics. 5th ed. Great Britain: Hodder Arnold, an imprint of Hodden Education, part of Hachette Live UK., 2008; 108: 160-61.
12. Joon young Ji. Dexmedetomidine as an oral premedication to facilitate mask induction for general anaesthesia for pediatric dentistry. Toronto: University of Toronto, 2014; 1-56.
13. David J. Smith, Michael B. Howie. General anaesthesia: Intravenous and inhalational agents. In: Charles R. Craig, Robert E. Stitzel. *Modern pharmacology with clinical applications*. 5th ed., 307: 297.
14. Wikipedia (Internet). Wikimedia foundation, Inc.; Opioid; [updated 2018 Mar 2; cited 2018 Mar 12]; [about 1 screen] <https://en.wikipedia.org/wiki/Opioid>
15. K D Tripathi. *Essentials of medical pharmacology*. 6th ed. India: Jaypee brothers' medical publisher (P) LTD., 2008; 454.
16. Tony L. Yaksh, Mark S. Wallace. Opioids, analgesia, and pain management. In: Laurence L. Brunton, Bruce A. Chabner, Bjorn C. Knollmann. *Goodman & Gilman's The pharmacological basis of therapeutics*. 12th ed. New York: MC Graw Hill Companies, Inc., 2011; 491: 1342.
17. K D Tripathi. *Essentials of medical pharmacology*. 6th ed. India: Jaypee brothers medical publisher (P) LTD., 2008; 106.
18. William F. Wonderlin. Muscarinic blocking drugs. In: Charles R. Craig, Robert E. Stitzel. *Modern pharmacology with clinical applications*. 5th ed., 137.
19. Wikipedia [Internet]. Wikimedia foundation, Inc.; Antipsychotic; [updated 2018 Feb 25; cited 2018 Mar 5]; [about 1 screen]. Available from: <https://en.wikipedia.org/wiki/Antipsychotic>
20. Lisa M. Gangarosa, Donald G. Seibert. Drugs used in gastrointestinal disorders. In: Charles R. Craig, Robert E. Stitzel. *Modern pharmacology with clinical applications*. 5th ed., 270-83.
21. K D Tripathi. *Essentials of medical pharmacology*. 6th ed. India: Jaypee brothers medical publisher (P) LTD., 2008; 627-50.
22. Taneja R, Kumar A, Sood S. A study of patient's perception about pre anaesthesia clinic in a tertiary care hospital of a developing country. *J. Evid. Based Med. Health*, Jul. 13, 2017; 4(56): 3416-20.
23. C J Cote. Preoperative preparation and premedication. *Br J Anaesth*, 1999; 83(1): 16-28.
24. Types of anaesthesia (Internet). American society of anaesthesiologists, Inc.; From: Anaesthesia; [cited 2018 Mar 2]; [about 1p.]. Available <http://www.asahq.org/lifeline/types%20of%20anesthesia>
25. Prasanna Vadhanan, Debendra Kumar Tripathy, Kiruthika Balakrishnan. Pre-operative anxiety amongst patients in a tertiary care hospital in India – A prevalence study. *JSAN.*, 2017; 4(1): 5-10.
26. Tim Thomas Joseph, Handattu Mahabaleswara Krishna, Shyamsunder Kamath. Premedication with gabapentin, alprazolam or a placebo for abdominal hysterectomy: Effect on pre-operative anxiety, post-operative pain and morphine consumption. *Indian J Anaesth*, 2014; 58(6): 693-9.
27. Sifna Tahir, Altaf Ahmad Mir, Abdul Hameed. Effects of palonosetron and dexamethasone on postoperative nausea and vomiting in adult patients undergoing laparoscopic abdominal surgery: A randomized, double-blind, clinical trial at a tertiary care hospital. *Int J Adv Med.*, Nov, 2016; 3(4): 1048-54.
28. Kiran Savant, Rakshit Vijay Sinai Khandeparker, Vikas Berwal, Purva Vijay Khandeparker, Hunny Jain. Comparison of ondansetron and granisetron for antiemetic prophylaxis in maxillofacial surgery patients receiving general anaesthesia: a prospective, randomised, and double blind study. *J Korean Assoc Oral Maxillofac Surg.*, 2016; 42: 84-9.
29. Kongsrud F, Sponheim S. A comparison of atropine and glycopyrrolate in anaesthetic practice. *Acta Anaesthesiol. Scand* [Internet]. 1982 Dec [cited 2018 Mar 1]; 26(6): 620-5. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/7158272>
30. Jan L. De Witte, Carmen Alegret, Daniel I. Sessler, Guy Cammu. Preoperative alprazolam reduces anxiety in ambulatory surgery patients: a comparison with oral midazolam. *Anesth Analg*, 2002; 95: 1601-6.