

Evaluation And Management of Postoperative and Post Anesthesia Concerns in Adults

Sajja Ravindra Babu, Puligari Archana, Marka Sucharitha,
Banavath Anjaneyulu, Narsing Nikhitha Sri

Department of Pharmacy Practice & Pharm D, Malla Reddy Institute of Pharmaceutical Sciences,
Maisammaguda, Secunderabad, Telangana, India- 5001

Corresponding Author: Sajja Ravindra Babu

DOI: <https://doi.org/10.52403/ijhsr.20220626>

ABSTRACT

Background: Postoperative effects are problems that can happen after undergoing surgery but which were not intended. The most common postoperative effects include fever, infection, pulmonary embolism, deep vein thrombosis, bleeding etc. Post anesthesia effects are the problems that may occur after injecting anesthesia in the body for temporary loss of sensation or awareness. Effects are treated accordingly with supportive medications.

Objective: To evaluate and manage postoperative and post anesthesia concerns in adults.

Methods: A prospective observational study, which was conducted on 60 postoperative and 80 post anesthesia patients. Data was collected by using a structured data collection from November 2021 to April 2022 and then statistically analyzed.

Result: 60 postoperative and 80 post anesthesia patients were observed. Out of 60 postoperative patients 70% of with co morbid conditions and 30% without comorbid conditions. Patients with comorbid conditions show more effects than patients without comorbid conditions. The group of above 58 years shows 34% postoperative effects and most effected. Out of 80 Post anesthesia patients, 20 were GA, 20 were LA, 20 were RA and 20 were MAC. In this, general anesthesia shows more effects than other anesthesia.

Conclusion: This study indicated that Postoperative effects in patients with comorbid conditions are more than in patients without co morbid conditions above 50 years shows more effects. In post anesthesia effects, general anesthesia shows more effects than regional, regional shows more effects than MAC, MAC shows more effects than local anesthesia. Postoperative and post anesthesia effects are treated with supportive medications.

Keywords: Postoperative concerns, Post anesthesia concerns, Management, General anesthesia, Local anesthesia, Regional anesthesia and MAC/Sedation.

INTRODUCTION

Postoperative means occurring after a surgical procedure. Postoperative concerns are the effects that happen after surgery which are undesirable. The effects of post-operation are-

Immediate Effects: Bleeding from the wound or internally, lung blockage, shock, heart problems, pulmonary embolism, severe infection, acute kidney injury.

Early Effects: Pain, confusion, nausea, vomiting, fever, bleeding, wound breakdown, bruising, deep vein thrombosis, constipation, bowel problems, infections.

Late Effects: Bowel blockage, persist sinus, thickening or tightening of scar, original problem coming back.

Females are more affected than males with postoperative concerns. Female patients are experiencing more postoperative pain than male patients at 24

hrs^[1]. Age has greater effect on postoperative effects after surgery^[2]. Comorbid conditions of the patient had an impact on postoperative effects, increased the risk of hospital re-admissions and mortality^[3]. Many patients experience pain post-discharge than pre-discharge^[4].

Anesthesia derived from word 'aesthesia' which means without sense. Post anesthesia concerns are adverse events which occurs after introducing anesthesia in to the body. Different types of anesthesia are general anesthesia, regional anesthesia, monitored anesthesia care \sedation and local anesthesia.

GENERAL ANESTHESIA: It is a kind of anesthesia that makes the complete body and brain of the patient unconscious(sleep) during which the patient stays unaware of any feeling of the surgery.

Examples: Desflurane, Halothane, Enflurane, Isoflurane, Methoxyflurane, Nitrous oxide, Xenon, Sevoflurane, Alfentanil, Fentanyl, Remifentanil, Barbiturates- Amobarbital, Methohexital, Thiomytal, Thiopental. Benzodiazepines- Diazepam, Lorazepam, Midazolam; Etomidate, Ketamine.

GENERAL ANESTHESIA EFFECTS: Nausea and vomiting, sore throat, postoperative delirium, muscles ache, itching, chills and shivering, damage of teeth, lacerations to the lips, tongue, gums, throat, nerve injury, anaphylaxis or allergic reactions, aspiration pneumonitis, respiratory depression; Serious complications: Malignant hyperthermia, cognitive dysfunction, stroke, hypoxic brain injury, cardiovascular collapse or cardiac arrest, death. Agitation is caused due to catheters, intubations and preexisting mental health issues^[5].

REGIONAL ANESTHESIA: It is the use of local anesthesia to block sensations of pain from a large area of the body such as an arm or leg or the abdomen. Regional anesthesia allows a procedure to be done on an area of the body while not being unconscious. Two types of regional anesthesia:- EPIDURAL ANESTHESIA- It

is given in the lower back or lumbar region with a needle introduced in between the vertebrae of the spinal column right to the epidural space. Examples: Bupivacaine, Chloroprocaine, Lidocaine.

SPINAL ANESTHESIA- It is also given in the lumbar region with a needle. It is given to those who are operated for gynecologic and urologic surgeries. Examples: Lidocaine, Lignocaine, Bupivacaine, Tetracaine.

REGIONAL ANESTHESIA EFFECTS: Regional anesthesia has some advantages reducing pain, less nausea and vomiting, lung complications, blood transfusions and death^[6]. Nerve damage, brachial plexus block, pain, post dural puncture headache, hypothermia, respiratory failure, urinary retention, meningitis, spinal or epidural hematoma, nerve or spinal cord damage, paralysis.

MONITORED ANESTHESIA CARE (MAC) OR SEDATION: It is a type of mild sedative that is introduced in to the nerve to relax and relieve anxiety while procedures such as biopsies and colonoscopies, require local anesthesia that numb surgical part.

Examples: Midazolam, Fentanyl, Propofol.

SEDATION EFFECTS: Headache, nausea, drowsiness, minor back pain due to insertion of a needle into the back, difficulty in urinating, hematoma; serious effects- pneumothorax, nerve damage. High sedation may lead to respiratory depression or obstruction of the respiratory tract^[7].

LOCAL ANESTHESIA: Local anesthesia are drugs that is used to prevent or relieve pain in specific regions of the body without loss of consciousness. They act by blocking nerve conduction.

Examples: Short duration and low potency- Procaine, Chloroprocaine; Medium duration and potency- Lidocaine, Prilocaine; High duration and potency- Tetracaine, Bupivacaine, Cinchocaine, Ropivacaine.

LOCAL ANESTHESIA EFFECTS: Edema, tissue blanching, tissue swelling at the site of injection, dizziness, numbness of mouth, hypotension, methemoglobinemia.

Nerve irritation, paresthetic pain in the leg, epidural hematoma, neck pain are effects of local anesthesia^[8].

Management of postoperative and post anesthesia concerns- Effects are treated with medications like antiemetics for nausea and vomiting^[9], antipyretic, analgesics, diuretics, anticoagulants, antihistamines, blood transfusion and iron supplements for anemia, deep breathing exercises for lung blockages, plenty of water and analgesics for headache, dantrolene for malignant hyperthermia, dexmedetomidine and meperidine for shivering^[10], antibiotic therapy or operation and lifelong suppressive antibiotic therapy for infections^[11], oxygen supply for shock and anti-hypertensives for hypertension.

METHODOLOGY

It is a prospective observational study involving 60 subjects of postoperative and 80 subjects of post anesthesia cases from a tertiary care hospital during a period of six months i.e., Nov 2021 to April 2022 after approval from the ethical committee from the Malla Reddy Narayana Multispeciality Hospital.

Inclusion Criteria: Patients of age above 18 years, all kinds of surgeries, all types of anesthesia and their effects and patients with comorbid conditions.

Exclusion Criteria: Patients of age below 18 years, anesthesia used for minor suturing and anesthesia used for dental procedures.

Statistical Analysis

The results of effects of different types of anesthesia were obtained as Mean.

Mean = sum of observations \ total number of observations

RESULTS

**POSTOPERATIVE CONCERNS
GENDER WISE DISTRIBUTION**

Table 1: Gender wise distribution of patients with postoperative concerns.

Age	No. Of Subjects	Percentage
18-28	2	3.4%
28-38	4	6.6%
38-48	9	15%
48-58	12	20%
58-68	15	25%
68 and above	18	30%

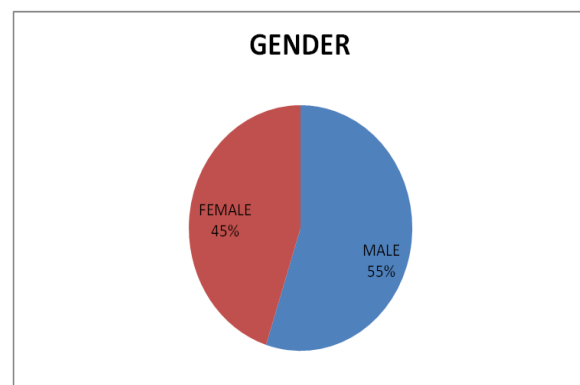


Figure 1: Pictorial presentation of the gender wise distribution.

In our prospective study, a total of 60 cases were collected in 6 months of which 55% were females and 45% were males. Females are more affected than male.

AGE WISE DISTRIBUTION

Table 2: Age wise distribution of subjects

Age	Frequency	Percentage
Female	27%	55%
Male	33	45%
Total	60	100%

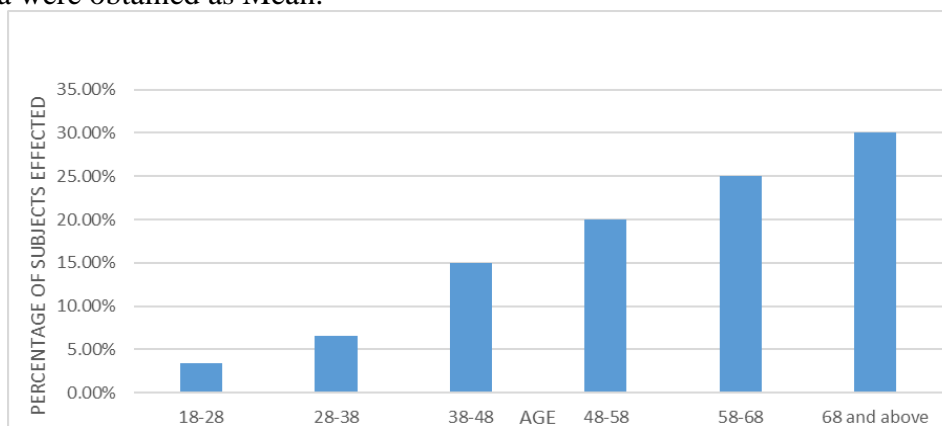


Figure 2: Graphical representation of Age wise distribution of subjects.

Out of the 60 patients who have experienced postoperative concerns in the tertiary care hospital recording the age wise distribution of subjects, it was seen that the majority of subjects belong to the age group of 68 years and above, accounting for 30% of the total.

COMORBID CONDITIONS

Table 3: Distribution of patients based on co morbid conditions.

	With comorbid conditions	Without comorbid conditions
No. of subjects	39	21
Percentage	65%	35%

Of the 60 postoperative cases collected, it was seen that 65% of co morbid conditioned patients had experienced postoperative effects and 35% of patients without co morbid conditions had experienced postoperative effects. Hence, co morbid conditioned patients are more affected postoperatively than patients with co morbid conditions.

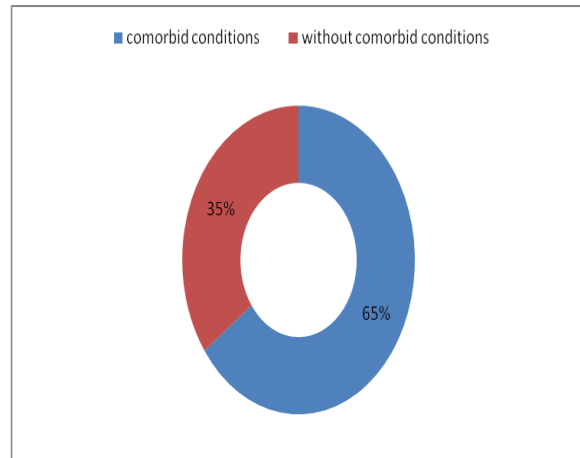


Figure 3: Pictorial presentation of distribution of patients based on co morbid conditions.

POST ANESTHESIA CONCERNS AGE WISE DISTRIBUTION

Table 4: Age wise distribution of subjects.

Age	No. Of subjects effected	Percentage
18-28	3	3.75%
28-38	10	12.5%
38-48	14	17.5%
48-58	16	20%
58-68	17	21.25%
68 and above	20	25%

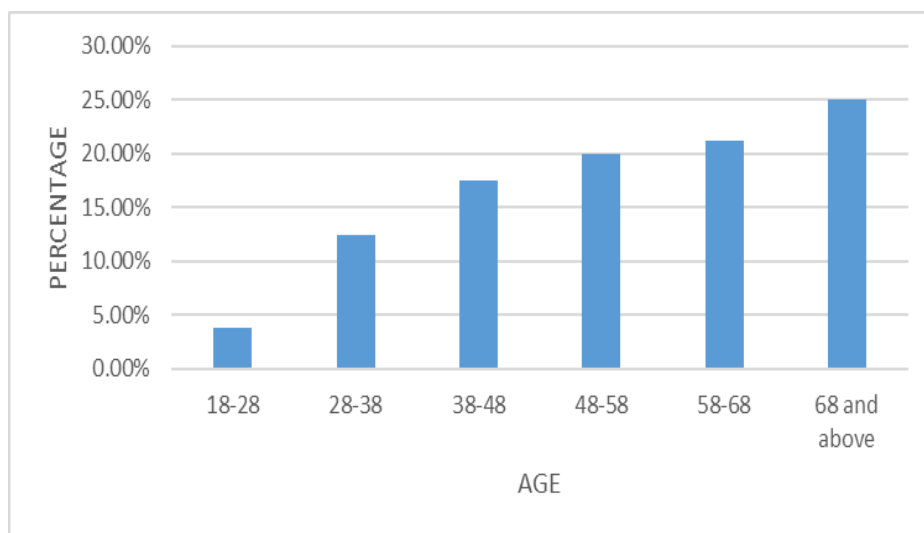


Figure 4: Graphical representation of the age-wise distribution of subjects

Out of the 80 patients who have experienced anesthesia effects in the tertiary care hospital recording the age wise distribution

of subjects, it was seen that the majority of subjects belonged to 68 years and above, accounting for 25%.

EFFECTS OF DIFFERENT TYPES OF ANESTHESIA

Table 5: Effects of different types of anesthesia

EFFECTS	GENERAL ANESTHESIA	REGIONAL ANESTHESIA	LOCAL ANESTHESIA	MAC
Fever	17	13	0	4
Nausea and vomiting	12	8	0	1
Headache	13	16	3	5
Constipation	11	12	0	0
Respiratory rate	9	8	0	3
Pulse rate	10	6	0	1
Blood pressure	13	15	0	2
Chills	6	3	4	3
Shortness of breath	5	3	0	4
Burning micturition	3	1	0	0
Longer sedation	10	5	6	8
Erythema	0	0	11	0
Itching	0	0	9	0
Dizziness	16	13	2	9
Dry mouth	8	12	0	2
Cardiac respiratory deression	2	1	0	3
Total	135	116	35	45
Mean	8.43	7.25	2.18	2.81
Percentage	42.15%	36.25%	10.9%	14%

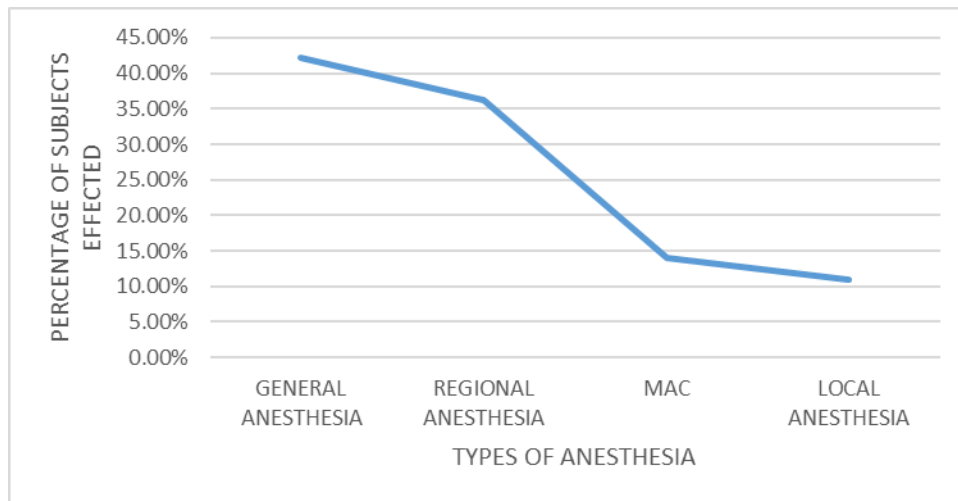


Figure 5: A plot of effects of different types of anesthesia

Out of the 80 patients, 20 were taken general anesthesia, 20 were taken regional anesthesia, 20 were taken, MAC and 20 patients were taken local anesthesia. The effects of general anesthesia was found to be 42.15%, regional anesthesia effects was found to be 36.25%, effects of MAC was found to be 14% and local anesthesia effects was found to be 10.9%. General anesthesia shows more effects than regional anesthesia, MAC and local anesthesia.

MANAGEMENT OF POSTOPERATIVE AND POST ANESTHESIA CONCERNS:

Infection- Cefazolin, Vancomycin, Metronidazole, Gentamycin.

Fever- Antipyretics like paracetamol (Acetaminophen).

Headache- Ibuprofen, Naproxen, Acetaminophen, Plenty of water, Caffeine.

Constipation- Stool softener such as docusate (Colace).

Dry Mouth- Staying hydrated and using a humidifier.

Respiratory Failure- Non-invasive ventilation.

Itching- Antihistamines like Benadryl, Apply ice pack.

Edema- Apply ice pack, Elevate the area of swelling.

Malignant Hyperthermia- Pantoprazole, Apply ice pack

Shivering- Magnesium

Hypertension- Labetalol, Nicardipine, Nitroglycerin, Clonidine.

Deep Vein Thrombosis- Anticoagulant like Rivaroxaban, Dabigatran.

Hemorrhage- Intravenous fluids or blood plasma, Blood transfusion.

Shock- Oxygen, Intravenous fluids, Diuretics, ACE inhibitors, Calcium channel blockers.

Lung Complications- Breathing and coughing exercises.

Pain- Opioids like hydrocodone, oxycodone; NSAIDs like Ibuprofen, Diclofenac.

Anemia- Blood transfusion, Iron supplements.

Urinary Retention- Catheter insertion into bladder to drain.

Pulmonary Embolism- Anticoagulants like heparin, Thrombolytic agents like streptokinase.

Nausea And Vomiting- Antiemetics like ondansetron.

CLINICAL OUTCOMES

Table 6: Indicating the outcomes of patients

Outcome	Recovery	Morbidity
Percentage	87%	13%

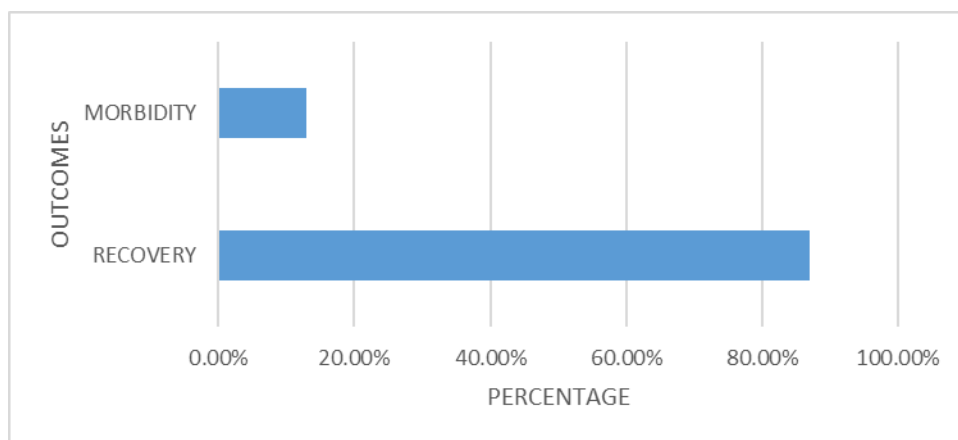


Figure 6: Graphical representation indicating the outcomes of patients.

DISCUSSION

This study was done at the surgery department and ICU where the data was gathered from the MRD. This study included patients with postoperative and post anesthesia effects.

Postoperative concerns: A total of 60 patients with postoperative effects have been studied. The participants were selected based on the criteria of inclusion and exclusion. Data from the original demography to a discharge summary were obtained for our study, which includes demographics such as age, sex, co morbidity, type of surgery performed, postoperative effects, treatment and outcomes.

Gender wise distribution showed women were most affected with 55% than men 45%. The age wise distribution of patients with postoperative effects showed that the highest number of patients

belonging to the age group of 68 years and above (30%), following the age group of 58-68 years (25%), age group of 48-58 years (20%), age group 38-28years (15%), age group of 28-38years (6.6%), age group of 18-28years (3.4%). This suggests that the majority of patients at age of 48 years and above have experienced more postoperative effects. As the age of the patient increases, the postoperative effects have also increased, comparable with the research by Kun Hwang and others.2016^[12].

From the foregoing data, the patients with existing co morbid conditions showed more postoperative effects (65%) and the patients without co morbid conditions showed less postoperative effects (35%). The postoperative effects in co morbid conditioned patients were more when compared to patients without co morbid conditions, comparable with the research by Kun Hwang and others. 2016^[12].

Post anesthesia concerns: A total of 80 patients with post anesthesia effects have been studied. The participants were selected based on the criteria of inclusion and exclusion. Data from the original demography to a discharge summary were obtained for our study, which includes demographics such as age, sex, co morbidity, type of surgery, type of anesthesia used, post anesthesia effects, treatment and outcomes.

The age wise distribution of patients with post anesthesia effects showed that the highest number of patients belonging to the age group of 68 years and above (25%), following the age group 58-68 years (21.25%), age group 48-58 years (20%), age group of 38-48 years (17.5%), age group 28-38 years (12.5%) and age group of 18-28 years (3.75%).

This suggests that the majority of patients with an age of 48 years and above had experienced more post anesthesia effects. As the age of the patient increases, the post anesthesia effects increased.

From the forgoing data, out of 80 patients, 20 patients received general anesthesia, 20 patients received regional anesthesia, 20 patients received regional anesthesia, 20 patients received local anesthesia and the other 20 patients received MAC/Sedation.

The general anesthesia received patients showed 42.15% post anesthesia effects. The regional received patients showed 36.25% post anesthesia effects. The Local anesthesia and MAC/Sedation received patients showed 10.9% and 1.4%. Post anesthesia effects respectively. This suggests that the majority of patients with general anesthesia had experienced more post anesthesia effects than other anesthesia like Regional anesthesia, Local anesthesia and MAC. MAC shows less effects compared to general anesthesia^[13].

The post anesthesia effects depends on factors like age, comorbid conditions, type of anesthesia used and duration of surgery^[14].

Management of postoperative and post anesthesia concerns. All the postoperative effects and post anesthesia effects were treated accordingly with supportive medication like Antipyretic, Antiemetic, Anticoagulants, oxygen supply, Analgesics, coughing and breathing exercises.

From the clinical results, we found that the patient's recovery rate was 87% and the patient's morbidity rate was 13%.

CONCLUSION

From the study, based on the data collected from the initial demographics of the patients till the discharge, we concluded that the frequency of postoperative effects in females was predominant over males, which means females are more affected than males.

The age group of 40 years and above had experienced more postoperative effects. Patients with co morbid conditions experienced more postoperative effects than patients without comorbid conditions.

The frequency of post anesthesia effects in females were predominant over males, which means females are more affected than males.

The majority of patients who received general anesthesia had experienced more post anesthesia effects than patients who received other anesthesia like regional anesthesia, local anesthesia and monitored anesthesia care.

All the postoperative concerns and post anesthesia concerns were treated with supportive medication accordingly.

The majority of the patients (87%) were recovered and the morbidity rate was 13%.

Conflict of interests: The authors declare that they have no conflict of interests.

Acknowledgment: We appreciate the clinical support provided for carrying out this work by the "Malla Reddy Narayana Hrudayalaya Multispecialty Hospital". We are grateful to Malla Reddy Institute of

Pharmaceutical Sciences (MRIPS) for the financial assistance for this project survey.

Author's contributions: Puligari Archana, Marka Sucharitha, Banavath Anjaneyulu and Narsing Nikhitha Sri were involved in the collection of data, preparation and editing of manuscript. Sajja Ravindra Babu was involved in the organizing and reviewing of the manuscript.

Source of Funding: None

Ethical Approval: Approved

REFERENCES

1. K Uchiyama, M Kawai, M Tani, M Ueno, T Hama, H Yamaue. Gender difference in postoperative pain after laparoscopic cholecystectomy. *Surg Endosc.* 2006 Mar.
2. Anwar E. Ahmed, Wla R. Alanazi, Bashayr I, ALMuqbil, Wijdan A. AlJohi, Budor A. AIRasheed, Doaa A, AIBuraikan, Rayan A. Ahmed. Impact of age on postoperative complications following bariatric surgery. *Qatar Med J.* 2019.11.
3. Belene Podmore B, Andrew Hutchings. A, Jan Van der Meulen J, et al, Ajay Aggarwal, Sujith Konan. Impact of comrbid conditions on outcomes of hip and knee replacement surgery: a systemic review and meta-analysis. *BMJ Open.* 2018.
4. K Uchiyama, M Kawai, M Tani, M Ueno, T Hama, H Yamaue. Gender difference in postoperative pain after laparoscopic cholecystectomy. *Surg Endosc.* 2006 Mar.
5. A.Fields, J. Huang, D. schroder , J Sprung, T.Weingarten. Agitation in adults in the post anesthesia care unit after general anesthesia. *Br J Anaesth.* 2018.
6. M. Hutton, R. Brull and A.J.R. Macfarlane. Regional anesthesia and outcomes. *BJA Educ.* 2018 Feb.
7. Korean J Anesthesiol, Hye- min Sohn and Jung-Hee Ryu. Monitored anesthesia care in and outside the operating room. *Korean journal of anesthesiology.* 2016, Jun 22.
8. Koichi Sairyo, Tetsuya Matsuura, Kosaku Higashino, Toshinori, Sakai, Yoichiro Takata, Yuichiro Goda, Naoto Suzue, Daisuke Hamada, Goda, Naoto Suzue, Daisuke Hamada, Tomohiro Goto, Toshihiko Nishisho, Ryosuke Sato, Takahiko Tsutsui, Ichiro Tonogai, Kazuaki Mineta. Surgery related complications in percutaneous endoscopic lumbar discectomy under local anesthesia. *The journal of medical investigation.* 2014.
9. Zhaosheng Jin, Tong J Gan, Sergio D Bergese. Prevention and treatment of postoperative nausea and vomiting (PONV): A review of current recommendations and emerging therapies. *Therapeutic and clinical risk management.* 2020.
10. C.Bicer, A. Esmaoglu, A. Akin and A. Boyaci. A dexmedetomidine and meperidine prevent post anesthetic shivering. *Eur J Anaesthesiol.* 2006 Feb.
11. Joseph S Coselli, E Stanley Crawford, temple W Williams Bradshaw, D Robert Wiemer, Richard L Hazim J Saf. Treatment of postoperative infection of ascending aorta and transverse aortic arch, including use of viable omentum and muscle flaps. *The annals of thoracic surgery.* July 1999.
12. Kun Hwang, Jin Pyo Lee, Si Yoon Yoo, Hun Kim. Relationships of comorbidities and old age with postoperative complications of head and neck free flaps. A review. *J Plast Reconstr Anesthest Surg.* 2016 Dec.
13. Sarij Pani MD, John cagino MD, Paul Feustel PH. D, Sridhar Reddy Musuku MD, FRCA, Asim Rja MD, Natalie Bruno MD,Christopher Ursillo MD, Nathapong Arunkul, Constantine, Michael Wellijams-Dorof, Kevin Roberts, Mikhali Torosoft, Augustine Delago. Patient selection and outcomes of transfemoral transcatheter aortic valve replacement performed with Monitored Anesthesia Care versus General Anesthesia. *Jounal of cardiothoracic and vascular anesthesia.* 2017.
14. L.Tiret, J.M. Desmots, Hatton, G. Vourch. Complications associated with anesthesia -a prospective survey in France. *Can Anaesth Soc J.* 1986 May

How to cite this article: Sajja Ravindra Babu, Puligari Archana, Marka Sucharitha et.al. Evaluation and management of postoperative and post anesthesia concerns in adults. *Int J Health Sci Res.* 2022; 12(6):197-204. DOI: <https://doi.org/10.52403/ijhsr.20220626>
