To Study Demographical and Clinical Profile of Patients Visiting Pre-Anesthetic Clinic of Tertiary Care Centre Of Central India

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Abstract

Aim: To study demographical and clinical profile of patients visiting PAC clinic in tertiary care Centre LN Medical College Bhopal to improve the perioperative care, reduce mortality and morbidity and to reduce perioperative cost.

Method: Epidemiological cross sectional study was done with 2112 pt. coming for surgery in different specialties undergoing preanesthetic checkup at our institute between April2019 to July2020.

Results: The data was analyzed using SPSS software version 20. In our study, majority of the study subjects belonged to the age group of 31-40 years i.e., 271. Among the patients,66.30% were Males. In study 65.70% were Overweight BMI between 18.5 to 23 kg/m^2, most of the patients 33.30% were from General surgery. Predominance of Tobacco chewing addiction 38.30% was observed. Amongst comorbidities primarily hypertension 28.60% & out of the total 286 cases of Hypertension, 103 (36.01%) were newly diagnosed of having Hypertension in our Pre-anesthetic check-up. Clinically Decompensated morbidity of 6% observed. Out of 157 cases who had history of previous surgeries, 54 (34.90%) had history of complications during or after surgeries. MET score between ≥4 to 10 was seen among 695 (69.50%). However, 538 (53.80%) belonged to ASA class 1. Optimization was needed among 367 (36.70%). Rejection was seen in 23 (6.27%) of the total 367optimized cases.

Conclusion: In our study in PAC Clinic before undergoing surgery at our institute majority of the study subjects were males, 31to 40 age group, General Surgery subspecialty overweight, most common comorbidity observed was hypertension , tobacco addiction, MET of >4, ASA grade 1. These results may support to improve plans for perioperative care for safe anesthesia undergoing elective surgery and related morbidity and mortality.

Keywords: MeSH Terms Hyperglycemia, Risk Factors ,Sleep Apnea , Obesity, Hypertension, Anxiety, Pain, Postoperative, Risk Assessment Quality of Health Care Perioperative Care
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I.   Introduction :

Pre anaesthetic check-up is done on an outpatient basis to improve perioperative safety, quality of care, effectiveness and better use of hospital resources & to reduce anxiety, to identify and assess existing medical conditions, to know drug history, surgical history, complications related to previous anaesthesia plan, to review investigations, assess risks and benefit of anaesthesia plan formulated for patient (choice of drugs, intraoperative or postoperative monitoring) and establish measures for intraoperative decisions and postoperative pain management[1-5].

In today's lifestyle, anaesthesiologists encounter many patients with multiple co-morbidities presenting for elective surgeries. Long-standing hypertension is a major risk factor for stroke, myocardial infarction, congestive heart failure, renal and peripheral vascular disease[6-8]. Obesity is associated with obstructive sleep apnoea syndrome, difficult tracheal intubation, CVD & HF and are more sensitive to anaesthetic drugs[9]. Diabetics are prone to joint collagen tissue abnormality leading difficult laryngoscopy and intubation. Increased release of catechol-amines, glucagon, growth hormone in response to stress causes hyper-glycaemia and increased insulin requirement perioperatively[10]. A PAC can reduce the utilization of costly subspecialty consults without affecting patient outcome. PAC led to a significantly reduced rate of preoperative cardiology

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consultations[14]. Pre-anaesthetic evaluation & optimisation of pre-existing/recently diagnosed medical conditions plays a major role in reducing the cancellations and delays on the day of surgery[15-18].Hence, this study was carried out to evaluate effectiveness of Pre-anaesthesia clinic in our parent Medical College.

AIM: To study demographical and clinical profile of patients visiting pre-anaesthetic clinic of tertiary care centre of Central India.

OBJECTIVES:

* To study the demographic profile of the patients during Pre-Anaesthetic visit.
* To study the associated co morbidities, decompensated disease and incidence of need of optimization before surgery / anaesthesia in patients.
* To study the pattern of addictions/habits.
* To study the previous surgical/anaesthesia exposure and related complications.
* To study the incidence of rejection / postponement of procedure due to failure of fitness for surgery / anaesthesia.

II. Methodology:

This Epidemiological Cross-sectional study was conducted after taking the approval from institutional ethics committee (REG.NO.ECR/1190/INS/MP/2019) and Reference No:-LNMC&RC/Dean/2019/Ethics/036 on patient coming for pre-anaesthetic check-up prior to elective surgery from various specialties in PAC CLINIC of J.K Hospital, LNMC Bhopal from April 2019 to July 2020. Data was collected by researcher, through a data collection form which is collected from interview and examination registered in Pre-Anaesthetic Evaluation forms.

Sample size: Sample size was calculated using formula n = $(Z^2 \times P\ (1-P))/e^2$ where Z = value from standard normal distribution corresponding to desired confidence level (Z=1.96 for 95% CI). P is expected true proportion. e is desired precision (half desired CI width).

Estimated Proportion of 0.3 with desired precision of estimate to be 0.05 and Confidence level of 0.95 with population size of 2112. A sample size of 1000 cases was selected considering the time limit.

Inclusion criteria: 1) Patients giving valid consent for the surgery. **2)** Age > 18 years. **3)** Patients with ASA physical status I, II, III and IV**. 4)** Patients undergoing elective surgery. **5)** Patients with renal, cardiac and other co-morbidities endangering life.

Exclusion criteria: 1) Age < 18 years. **2)** Patients undergoing emergency surgeries.

Sampling Technique: The sample collection was done by using systematic random sampling technique.

Various guidelines used: Duke Activity Status Index, Physical status ASA grading, Diabetes ADA 2018 criteria[2], Dyslipidaemia[4].

Laboratory investigations that were done at admission, during hospital stay and on discharge are 1)Haematological a)Haemoglobin % b)Total count and differential count c)Bleeding time d)Clotting time e)Random blood sugar level f)Blood urea g)Serum creatinine h)HIV and HBsAg i)Liver function tests 2)Urine examination: for sugar albumin and microscopy 3)12-lead ECG 4) Chest x-ray PA view.

Data entry and Analysis: Data collected in this study was entered in the computer using Microsoft excel 2013 spreadsheet and statistically analysed using SPSS 20 statistical package. Qualitative data were represented in frequency and percentage table while Quantitative data were represented in the form of mean, standard deviation. Association between variables was done using Chi-square test.
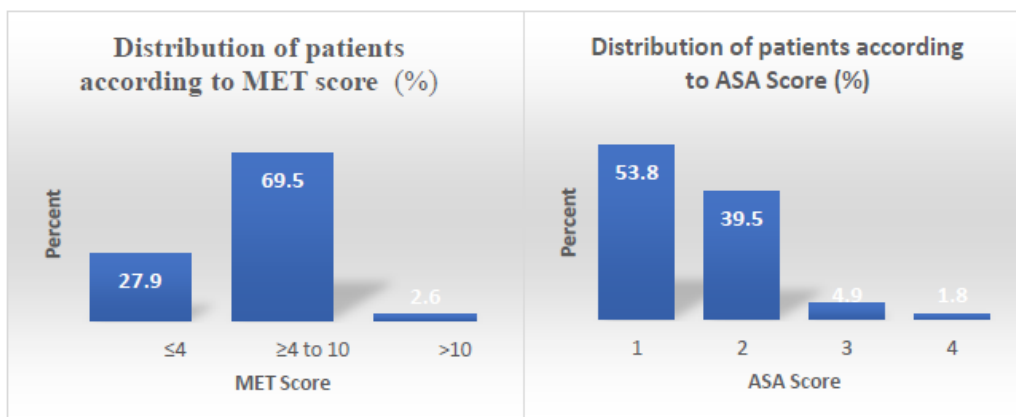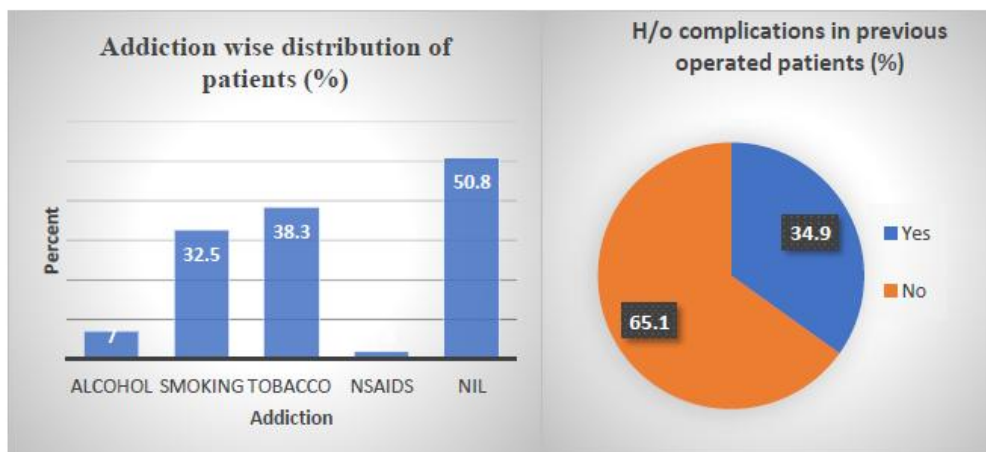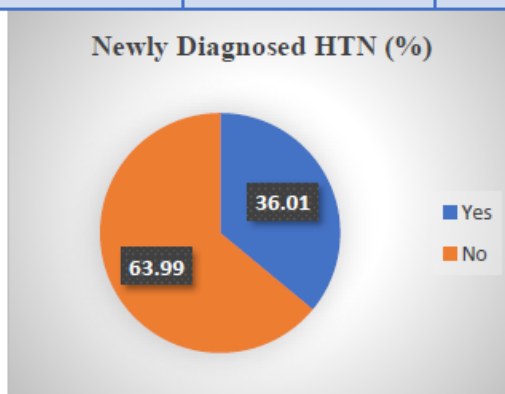
III. Observation & Results

In this study, 2112 cases scheduled for surgeries from various sub and super specialities visiting pre-anaesthesia clinic of our tertiary care hospital during the study period were selected and studied. Following observations were noted.
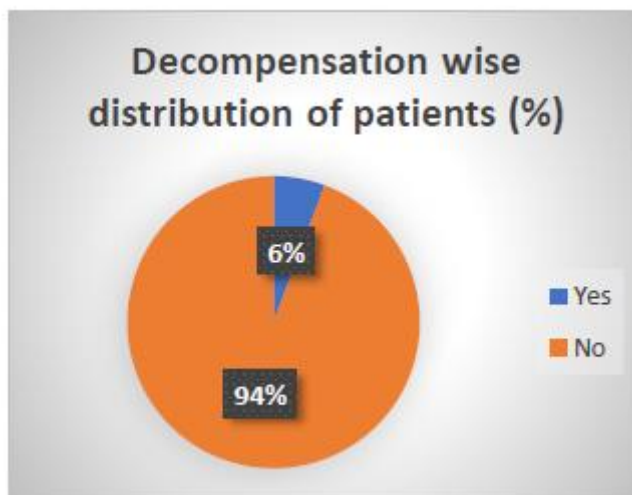
Characteristics	Age Group		Total n (%)	P value
	18-59 years	>60 years		
Gender:				
Male	581	82	663	<0.001
Female	305	32	337	
BMI:				
Underweight	8	4	12	
Ideal	167	19	186	<0.001
Overweight	591	66	657	
Obesity	120	25	145	
ADDICTION:				
YES	423	69	492	<0.001
NO	463	45	508	

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DECOMPENSATED DISEASE: YES NO	 51 835	 6 108	 57 943	 <0.001
PREVIOUS SURGERY: YES NO	 131 755	 26 88	 157 843	 <0.001
FUNCTIONAL CLASSIFICATION (MET): <4 METs 4-10 METs >10METs	 179 681 26	 100 14 0	 179 695 26	 <0.001/
PHYSICAL STATUS (ASA): ASA I ASA II ASA III ASA IV	 515 318 38 15	 23 77 11 3	 538 395 49 18	 <0.001
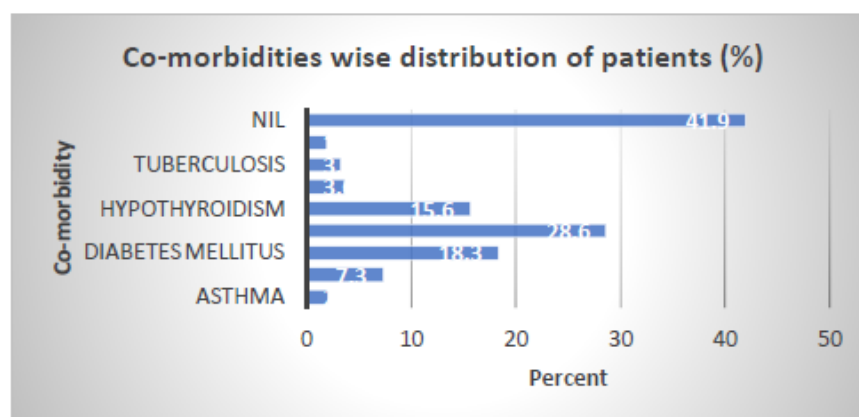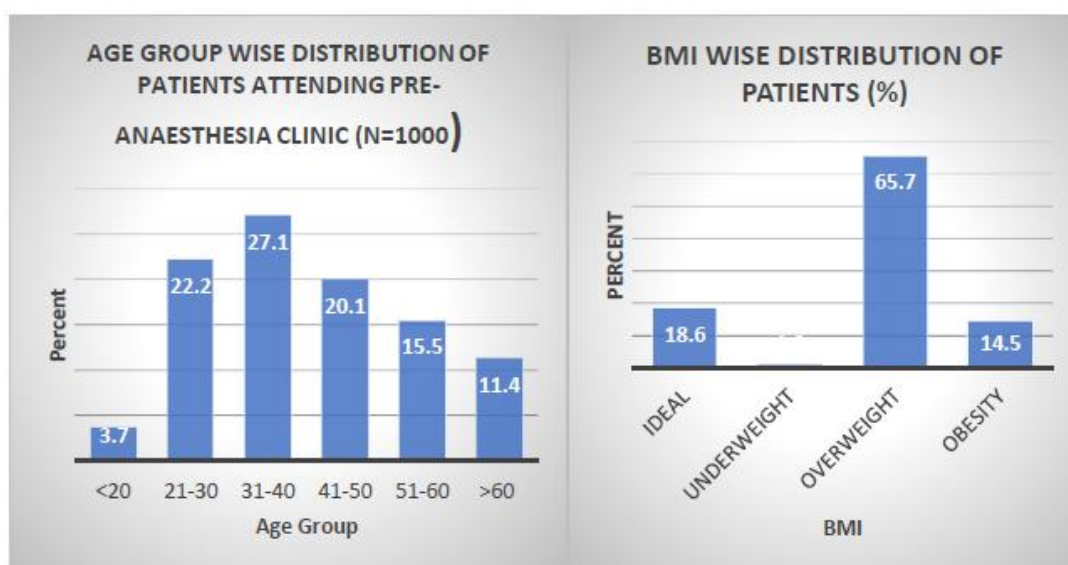
Sr. No.	Newly diagnosed HTN	No. of cases	Percent (%)
1.	Yes	103	36.01
2.	No	183	63.99
Total		286	100

Newly Diagnosed HTN (%)

Addiction wise distribution of patients (%)

H/o complications in previous operated patients (%)

Distribution of patients according to MET score (%)

Distribution of patients according to ASA Score (%)

Incidence of Optimization among the patients (n=1000):

Sr. No.	Optimization	No. of cases	Percent (%)
•	Yes	367	36.7
•	No	633	63.3
Total		1000	100
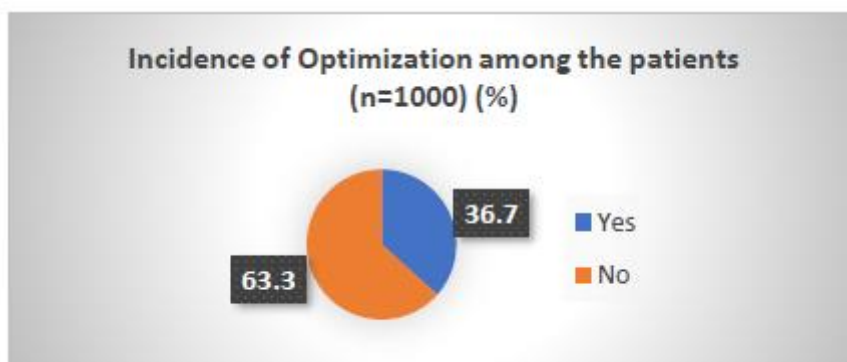
Incidence of Rejection among the optimized patients (n=367):

Sr. No.	Rejection	No. of cases	Percent (%)
•	Yes	23	6.27
•	No	344	93.73
Total		367	100
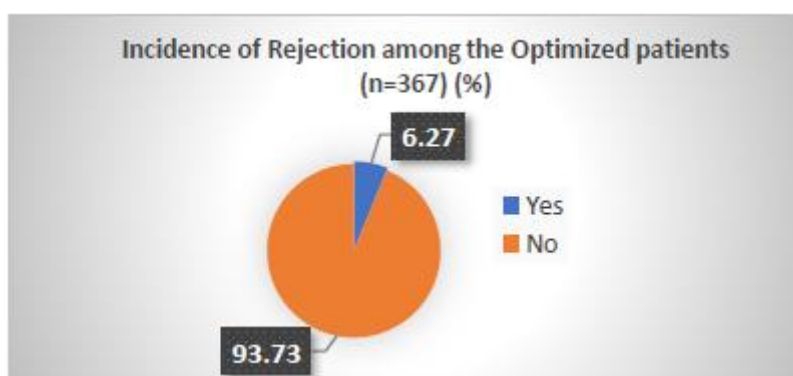
IV. Discussion:

Pre-anaesthetic check-up includes history taking, proper physical examination and laboratory investigations. The aim of preanesthetic check-up is to optimize a patient before surgery, reduce the side-effects of anaesthesia and surgery as far as possible and improve outcome, to discuss any queries or fears regarding anaesthesia. The task of anaesthesiologist becomes more difficult, if a patient shows a lack of interest during pre-anaesthetic check-up or tries to rush through it resulting into patient being inadequately optimized before surgery. And it is a well-established fact that both the patient's preoperative physical status and surgical procedure affects morbidity and mortality during surgery[19]

The present Hospital based cross sectional study was conducted in a Pre-anaesthetic clinic of JK Hospital, LNMC Bhopal, during January 2019 to July 2020. A total number of 2112 patients visiting Pre-anaesthetic clinic (PAC) which runs regularly in our tertiary care Hospital catering patients coming for pre-anaesthetic check-up prior to elective surgery from various specialties were studied using a standard PAC form.

In our study, majority of the study subjects belonged to the age group of 31-40 years i.e. 27.10% followed by 22.20% from the age group of 21-30 years. The mean age of the study subjects was 41.49 years (SD 11.38).In a similar study conducted by Singla D. and Mangla M[20]; out of total of 1000 patients aged between 18–60 years, coming to pre-anaesthesia clinic, 32.6% of the patients were less than 30 years of age while 27.5% were between 30 and 45 years of age.

From among the patients 66.30% were Males and 33.70% were females. In a similar study conducted by Sagün et al[21] to know the awareness about the anaesthesia among the patients attending the pre-anaesthetic clinic, 59% were females and 41% were males. In another study conducted by Mathew Jacob et al, out of 5,124 patients, 52.86 % were male and 47.13 % were female[22].

As per WHO recommendations for Asians having BMI18.50 to <23 kg/m^2 are termed as Ideal individuals. BMI<18.50 are underweight, BMI 23 to <27.50 kg/m^2 are overweight and >27.5 kg/m^2 are obese.

In our study it was found that majority of the patients i.e. 65.70% of the study subjects were Overweight, 1.20% were 18.6% were having Ideal BMI 18.5-23 kg/m^2 and 14.50% were obese having BMI >27.5 kg/m^2 which is one of the risk factors for developing a non-communicable disease like Hypertension or Diabetes Mellitus. In a similar study conducted by Santos M, Novaes CDO et al, 67.2% were overweight, with 38.3% in the overweight group and 28.9% in the obese group (grade I, II, and III)[1].

From among the patients, General surgery was planned in most of the patients, i.e., in 333 (33.30%) of the cases, followed by Orthopaedics surgery in 207 (20.70%) of the cases, Urological surgery in 124 (12.40%) cases, ENT surgery in 86 (8.60%), Gynaecological surgery in 68 (6.80%), Plastic surgery in 62 (6.20%), Obstetrics surgery in 59 (5.90%) cases and remaining cases were from other departments. In a similar study conducted by Mathew Jacob et al, General-surgery followed by gynaecology were the most commonly performed surgeries[22]. In another study conducted by Hariharan et al[23] among the adult patients visiting the pre-anaesthesia clinic, general-surgery patients were the largest group to attend the pre-anaesthetic clinic (80%) followed by urology (11%) and orthopaedic surgery (10%).

In our study, Tobacco chewing was the most common form of addiction present observed among 383 (38.30%) of the cases, followed by addiction of smoking observed among 325 (32.50%) of the cases, addiction of alcohol seen among 70 (7%) cases and addiction of NSAIDs seen among 18 (1.80%) cases. Smoking and hazardous alcohol drinking are the most frequent lifestyle risk factors that can influence the outcome after surgery. The incidence of smoking is about 30% and the incidence of hazardous drinking is 7–49% for general surgical populations undergoing elective procedures and 14–38% for emergency procedures in the western world[24]. The most common perioperative complications related to smoking are impaired wound and tissue healing and wound infection, and cardiopulmonary complications. For alcohol and other drugs, postoperative infections, cardiopulmonary complications, and bleeding episodes dominate the list of complications[25]. A smoking history should also be taken as smokers are difficult to anaesthetise due to their upper airways being sensitive to the dry gases used during anaesthesia, and their risk of hypoxia is greater. Assessment and documentation of alcohol intake is required, as induction of liver enzymes by alcohol may shorten the action of anaesthetic drugs and may identify the risk of potential alcohol withdrawal[26]. The use of medications that potentiates bleeding needs to be evaluated closely, with a risk benefit analysis for each drug and with a recommended time frame for discontinuation based on drug clearance and half-life characteristics. Many individuals, in particular the elderly (who more often suffer from osteoarthritis and rheumatoid diseases), use cyclooxygenase-1&2 inhibitors (COX-1 & COX-2) NSAIDs on a regular basis. The elderly is also more likely to have had cardiac stent placements or coronary angioplasties performed and may be taking antiplatelet medications such as the thienopyridines (ticlopidine and clopidogrel) or the newer platelet glycoprotein (GP) IIb/IIIa antagonists such as abciximab, eptifibatide and tirofiban. All of these agents alter platelet function and may increase the risk of spinal/epidural hematoma formation if spinal axis anaesthesia is utilized without following proper precautions[27].

From among the patients, hypertension was the most common form of co-morbidity present observed among 286 (28.60%) of the cases, followed by Diabetes Mellitus observed among 183 (18.30%) of the cases, presence of Hypothyroidism was seen among 156 (15.60%) cases, Chronic Kidney Disease was seen among 73 (7.30%) of the cases, Stroke in 36 (3.60%), Tuberculosis in 32 (3.20%) of the cases, Asthma in 20 (2%) of the cases and HBsAg positivity was seen among 19 (1.90%) cases. In a similar study conducted by Haq ZA, Murthy P et al[28], the most frequent co-morbid illnesses in both pre-existing and newly diagnosed were Cardiac, and Hypertension was the commonest problem. Of the 60 newly diagnosed patients with Hypertension, 46 (76.7%) were of age less than 50 years. Other co-morbid conditions seen were of Endocrine 54 (17.8%) including Diabetes Mellitus and Hypothyroidism, Respiratory 15 (4.9%) which included COPD, Asthma and Interstitial Lung Diseases and others 12 (4%) including severe Anaemia. In another study conducted by Santos M et al[1], associated diseases were identified in most patients (71.3%), and the association of two or more diseases was identified in 32% of the sample. The most prevalent associated disease was systemic arterial hypertension (SAH), which affected half of the patients (50.1%), followed by diabetes mellitus (11.4%), lung disease (9.5%), and dyslipidaemia (7, 9%).

Decompensation was seen among 57 (5.7) of the total cases. In a similar study conducted by Santos M et al, decompensated disease was seen among the 18 (3.7%) out of total 491 patients[1]. In another study conducted by Bisinotto[29] which showed that 11.9% of the study population had clinical decompensation and, therefore, needed referral, particularly to cardiology.

Out of the total 286 cases of Hypertension, 103 (36.01%) were newly diagnosed of having Hypertension in our Pre-anaesthetic check-up while the remaining 183 (63.99%) of the patients had history of Hypertension prior to pre-anaesthetic check-up. In a similar study conducted by Haq ZA, Murthy P et al[28], the most frequent co-morbid illnesses in both pre-existing and newly diagnosed were Cardiac, and Hypertension was the commonest problem. Of the 60 newly diagnosed patients with Hypertension, 46 (76.7%) were of age less than 50 years.

Out of the total 1000 cases who visited pre-anaesthetic clinic, 157 (15.70%) were having history of previously done surgeries while the remaining 843 (84.30%) of the patients had no any history of previous surgeries prior to pre-anaesthetic check-up. In a study conducted by Santos M et al, history of previous surgery was in 356 (72.5%) cases and the remaining 135 (27.5%) patients had no prior surgical history among the total of 491 patients attending the pre-anaesthetic clinic[1].

Out of the total 157 cases who had history of previous surgeries, 54 (34.90%) were having history of complications during or after surgeries while the remaining 103 (65.10%) of the patients had no such history of previous complications prior to pre-anaesthetic check-up. In a study conducted by Santos M et al[1], history of previous surgical anaesthetic complications was seen among the 23 (4.7); out of the total 491 patients visiting the pre-anaesthesia clinic. Surgical complications occur frequently. One large study[30] documented at least one complication in 17% of surgical patients. Surgery-related morbidity and mortality generally fall into one of three categories: cardiac, respiratory and infectious complications. The overall risk for surgery-related complications depends on individual factors and the type of surgical procedure. For example, advanced age places a patient at increased risk for surgical morbidity and mortality. The reason for an age-related increase in surgical complications appears to correlate with an increased likelihood of underlying disease states in older persons[31]. Diseases associated with an increased risk for surgical complications include respiratory and cardiac disease, malnutrition and diabetes mellitus[32]. High risk surgeries like intraabdominal, intrathoracic, intracranial implies greater risk of perioperative morbidity and mortality. In addition, urgent and emergency procedures constitute higher risk situations than elective, non-urgent surgery and present a limited opportunity for preoperative evaluation and treatment.

From among the patients, MET score 4 was observed among 279 (27.90%) of the cases, a score between 4 to 10 was seen among 695 (69.50%) of the cases and in remaining 26 (2.60%) cases MET score was >10.Mean and median estimated METs by history were 5.1±1.6 and 5.5 respectively, and mean and median measured METs by the cardiac stress test were 7.8±3.0 and 7.6, respectively. One metabolic equivalent (MET) is defined as the basal oxygen consumption of a 40-year-old 70kg man[35]. The maximum amount of metabolic work that an individual can perform can be described in MET units and this corresponds to overall cardiovascular fitness. These measurements have been utilized in preoperative assessments of patients where a patient's functional capacity is described in METs and for risk stratification for perioperative complications for patients undergoing non-cardiac surgical procedures. Traditionally, a patient's maximum METs are quantified by querying them for a description of their physical activities and using activity scales, which correlates a physical activity with a quantified number of METs[36-38] It is well known that patients with low METs are at increased risk for perioperative morbidity and mortality[35, 37.] In a similar study conducted by Adam s[39] et al, Mean and median estimated METs by history were 4.9±1.6 and 5 respectively, and mean and median measured METs by the cardiac stress test were 8.3±3.0 and 7.8, respectively.

From among the patients, according to ASA classification, 538 (53.80%) belonged to ASA class 1, 395 (39.50%) belonged to ASA class 2, 49 (4.90%) belonged to ASA class 3 and the remaining 18 (1.80%) cases belonged to ASA class 4.Perioperative risk is a function of the preoperative medical condition of the patient, the invasiveness of the surgical procedure and the type of anaesthetic administered[27]. 367 patients of the study population needed optimisation before surgery for a better postoperative outcome. 23 patients were not given fitness amongst 367 patients, those who needed optimization before surgery. 10 out of these were COVID-19 suspects and hence were referred to dedicated COVID-19 centres.

The ASA grading system was introduced originally as an easy description of the physical state of a patient. Despite its apparent simplicity, it remains one among the few prospective descriptions of the patient general health which correlates with the danger of anaesthesia and surgery[40-41]. It is extremely useful and should be applied to all patients who present for surgery. Increasing physical status is associated with increasing mortality. Emergency surgery increases risk dramatically, especially in patients in ASA class 4 and 5. In a similar study conducted by Karim et al[42], out of total 352 patients, 49 (65.33%) belonged to ASA-I Physical status, 23 (30.67%) belonged to ASA-II, 03 (4%) belonged to ASA-III and no patients were belonged to ASA-IV and ASA V.

V.   Conclusion:

The study conducted at LN Medical college Bhopal in defined period resulted majority of the study subjects were males, 31to 40 age group, under General Surgery subspecialty , overweight, most common comorbidity observed was hypertension , tobacco addiction, MET of >4, ASA grade 1.These results may support the plans for perioperative care and thereby improving the quality and safety of patient care undergoing elective surgery ,will reduce surgical and anaesthesia related morbidity and mortality and to reduce perioperative cost.

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