UNDERSTANDING ASA PHYSICAL STATUS AS A PHASE 4 MEDICAL UNDERGRADUATE - A RETROSPECTIVE ANALYSIS

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ABSTRACT

INTRODUCTION: Competency based medical education is the latest trend in medical education enabling the medical graduates to face, focus and evolve. This format of curriculum design allows elective postings as per choice for the medical undergraduates. Anaesthesiology as an elective is wonderful and offers a complete perspective of medicine and surgery. Starting from preanesthetic clinic going through various speciality operation theatres students are exposed to wide range of experiences. The American Society of Anaesthesiologists has formed a grading system based on physical status of a patient, to classify, group and assign the patients and offers a general idea of morbidity and mortality. In this study we wish to share the understanding of this ASA system as a phase 4 medical undergraduate.

AIM: To understand the art and science of assigning the physical status scoring system of American Society of Anaesthesiologists as a medical undergraduate.

OBJECTIVES:

1. To group the patients by age, gender, system involved and comorbidities and analyse ASA scoring.
2. To evaluate clinical application of ASA scoring system.

MATERIALS AND METHODS: All patients who were presented for elective surgeries to preanaesthetic clinic during January 2025 were taken up for the respective observational study.

Age, gender, diagnosis, surgery, organ system involved, comorbidities and ASA score as guided by the consultant and as per ASA guidelines were assigned to each patient. The results were tabulated and analysed.

RESULTS: 80 patients who attended preanaesthetic evaluation clinic during one month were taken up for analysis of a foresaid parameters. 40 males belonged to ASA 2 and 18 females were ASA 2, 12 males were ASA 3 and females (50%) were assigned to ASA 3, of the organ systems 100% of CNS disorders and lung diseases were ASA 3 in our study and 50% of oncology were ASA 3. Analysis of age showed 33 in 25 percentile, 45.5 in 50th and 60 in 75th percentile. The standard deviation with ASA was 0.75 and 2.25 in 75th percentile.

CONCLUSION: American Society of Anaesthesiologist Physical Status Scoring System is a simple and effective method involving history and severity of systemic disease which throws good light on

anticipated perioperative problems. Elaborate investigations need not be thrusted on ASA 1 and 2 which may not be contributory to surgical outcome. ASA scoring is a simple tool which could be mastered by final year (phase 4) medical undergraduate which could contribute to good clinical practice on completing graduation.

KEYWORDS: ASA, CBME, Scoring Systems, Perioperative Morbidity.

INTRODUCTION
The preoperative evaluation ensures that a patient is in optimal physical condition before surgery. The patients would benefit from reliable method of pre operative assessment so that only those laboratory tests needed for perioperative care are ordered. American Society of Anaesthesiologists has formulated a strong scoring system based on physical status of the patient.[1]
A final year medical undergraduate who is exposed to such basic simple tool under the competency based medical education system often develops good perspective of perioperative challenges. This paves way to adopt good clinical practice as a medical graduate following completion of the course. In this study a variety of patients who were posted for various surgeries were evaluated organ system involvement and scoring under ASA. The statistical analysis proves the understanding and application of ASA in preoperative care in the vision of a final year medical undergraduate.

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MATERIALS AND METHODS
Study: Retrospective analysis.

Study Population: All patients attending surgical preanaesthetic clinic for evaluation before elective surgeries over a period of one month.
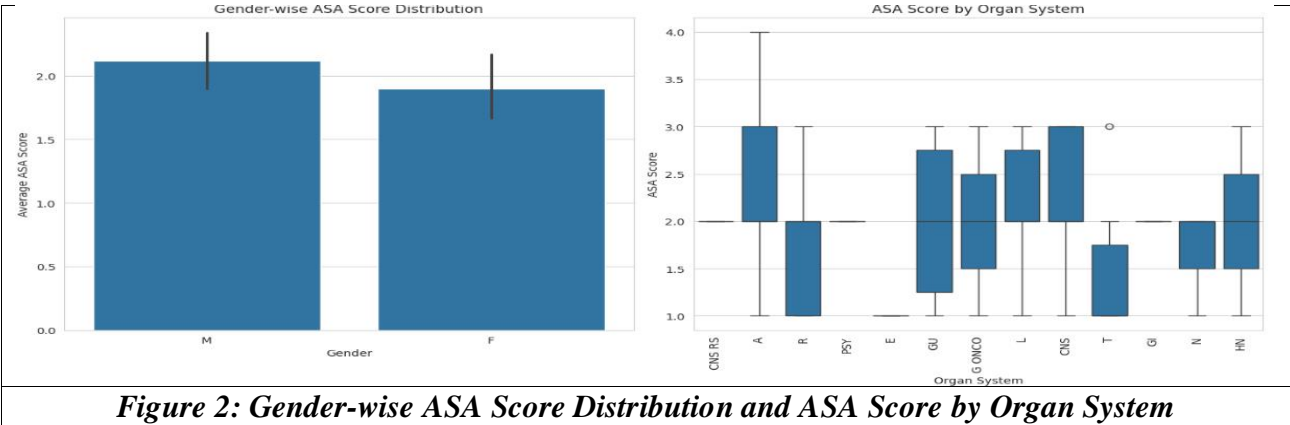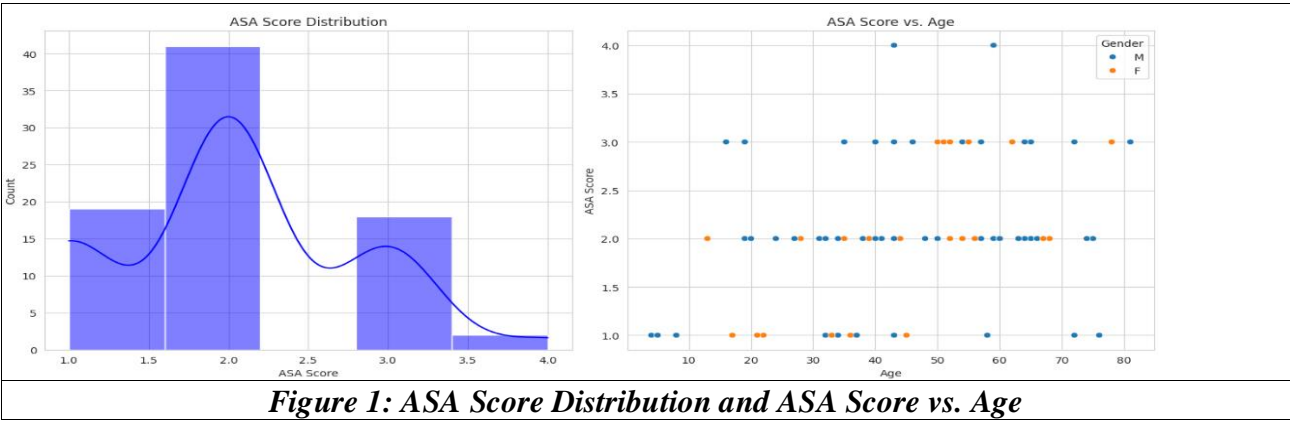
Study Sample: 80

Study Period: January 2025

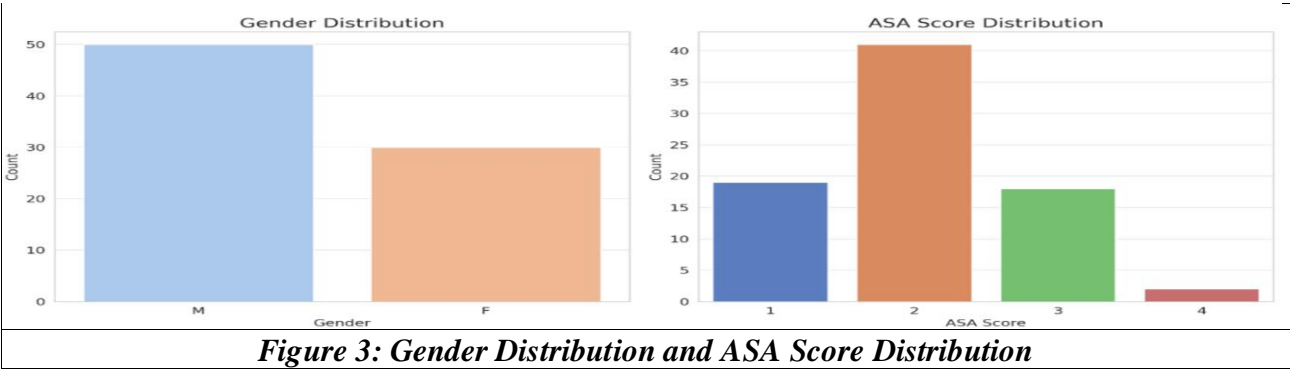**Study Place:** Dhanalakshmi Srinivasan Medical College and Hospital, Siruvachur, Perambalur.
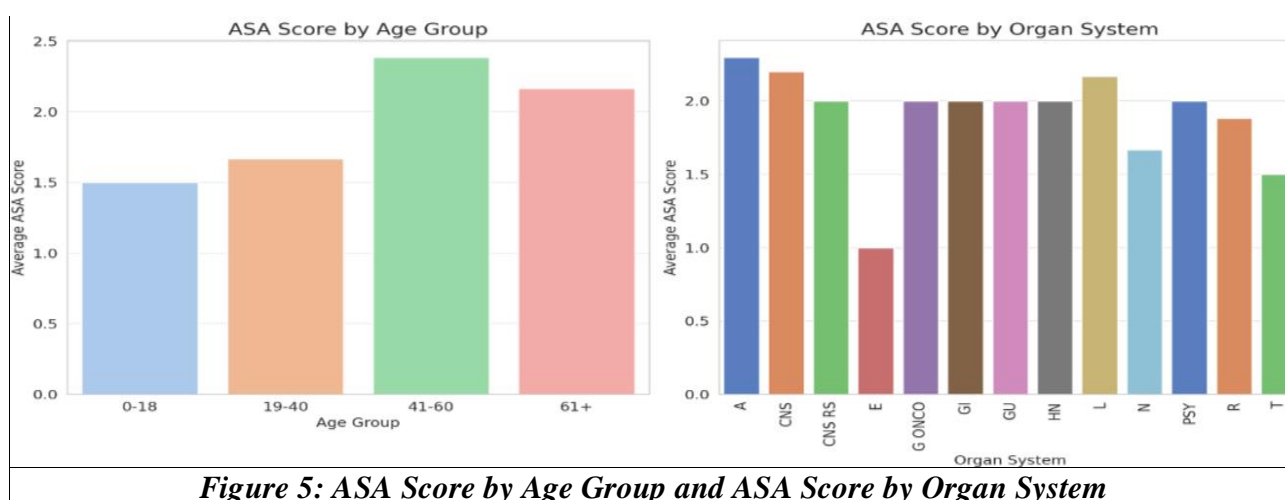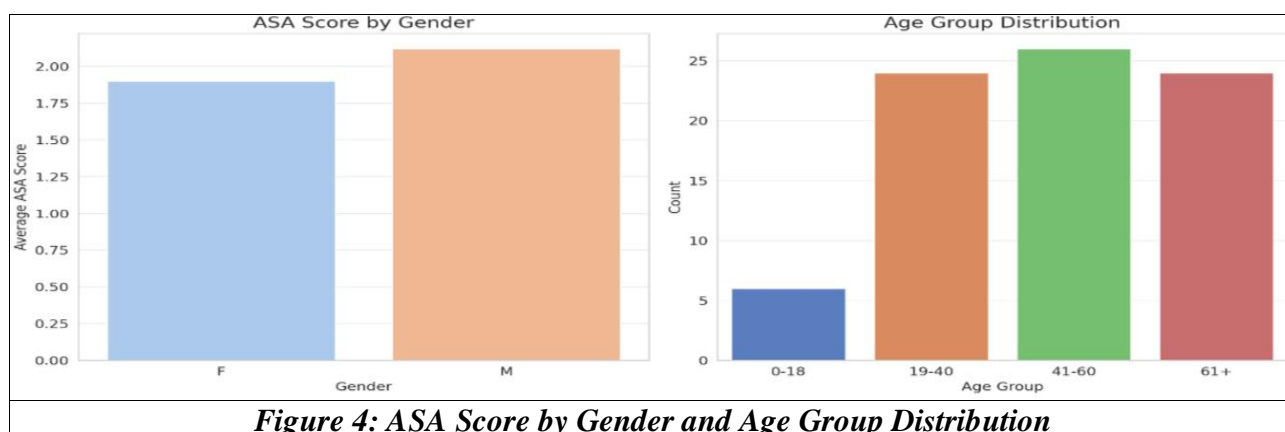
Methods
The patients posted for elective surgeries were evaluated for collection of data including age, gender, organ system involved, presence of coexisting illnesses and ASA score as per the guidelines. Patients with one organ system involvement with no coexisting illnesses were classified as ASA 1 and those with one comorbidity as ASA2, patients with two or more comorbidities were considered as ASA 3. Distribution of ASA scores scatter plots of ASA score versus age along with gender distribution, ASA scores with organ or organ system involved, percentile for 80 patients, pictorial representation of data were all evaluated and analysed.

Figure 1: ASA Score Distribution and ASA Score vs. Age

Figure 2: Gender-wise ASA Score Distribution and ASA Score by Organ System

Metric	Age	ASA Score
Count	80	80
Mean	45.73	2.04
Std Dev	18.71	0.75
Min	4	1
25th %ile	33	2
50th %ile	45.5	2
75th %ile	60	2.25
Max	81	4

Table 1: ASA Scores and Percentile

Figure 3: Gender Distribution and ASA Score Distribution

Figure 4: ASA Score by Gender and Age Group Distribution

Figure 5: ASA Score by Age Group and ASA Score by Organ System

RESULTS

80 patients who attended preanaesthetic evaluation clinic during one month were taken up for analysis of a foresaid parameters. 40 males belonged to ASA 2 and 18 females were ASA 2, 12 males were ASA 3 and females (50%) were assigned to ASA 3, of the organ systems 100% of CNS disorders and lung diseases were ASA 3 in our study and 50% of oncology were ASA 3.

Analysis of age showed 33 in 25 percentile, 45.5 in 50th and 60 in 75th percentile. The standard deviation with ASA was 0.75 and 2.25 in 75th percentile.

DISCUSSION

Physical status of patients before surgery need to be assessed for better perioperative care. In 1941, the American Society of Anaesthesiologists formulated a fundamental tool to assess and categorise the physiological status of patients before surgery.[2] Though its application requires careful consideration of various patient factors and comorbidities.

The simplicity and high predictive accuracy for postoperative outcomes outweighs the limitations of the classification system.[3]

| ASA Physical Status Classification	Definition	Examples
ASA 1	A healthy patient	A fit, nonobese, nonsmoking patient with no underlying disease and good exercise tolerance
ASA 2	A patient with systemic disease that is mild	A patient with no functional limitations and a well-controlled disease, obesity with a BMI 30-40, frequent social drinking, or current cigarette smoking
ASA 3	A patient with systemic disease that is severe but not life-threatening	A patient with some functional limitation due to poorly controlled moderate/severe disease(s), morbid obesity with BMI 40 or above, substance abuse, end-stage renal disease undergoing regular dialysis, implanted pacemaker, or remote history of coronary or intracerebral ischemic event (not within the past 3 months)
ASA 4	A patient with "severe systemic disease that is a constant threat to life"	A patient with substantial functional limitations due to severe, life-threatening diseases, such as coronary or intracerebral ischemic event within the past 3 months, severe end-organ dysfunction (cardiac, pulmonary, renal), ongoing coagulopathy, and shock states
ASA 5	A comatose patient who is "not expected to survive without the operation"	Ruptured aneurysm, multisystem trauma, or extensive intracranial hemorrhage with mass effect
ASA 6	A brain-dead patient whose organs are being procured for transplantation into another patient	

Table 2: ASA Physical Status Classification

Delahunt and Turnbull evaluated patients who were assessed for varicose vein stripping and inguinal herniorraphy. Of 803 patients who underwent 1972 tests only 63 abnormalities were uncovered where history or physical findings did not indicate the need for tests[4] similarly patients belonging to ASA 1 had no benefit from extensive investigations.

Thus though a simple tool at the outset, ASA Physical status is valuable in categorising, planning and economising and predictive of perioperative outcome.

CBME and UG Education
Competency Based Medical Education is the new Indian medical graduation strategy. This is based on Miller's prism of clinical competence. When there is only gathering of facts the student knows, when they learn through case presentations or essays, they understand interpretation that is 'know

how' column. Demonstration and performance from top of the prism while these are influenced by attitude, skills and knowledge.

Figure 6: Levels of CBME
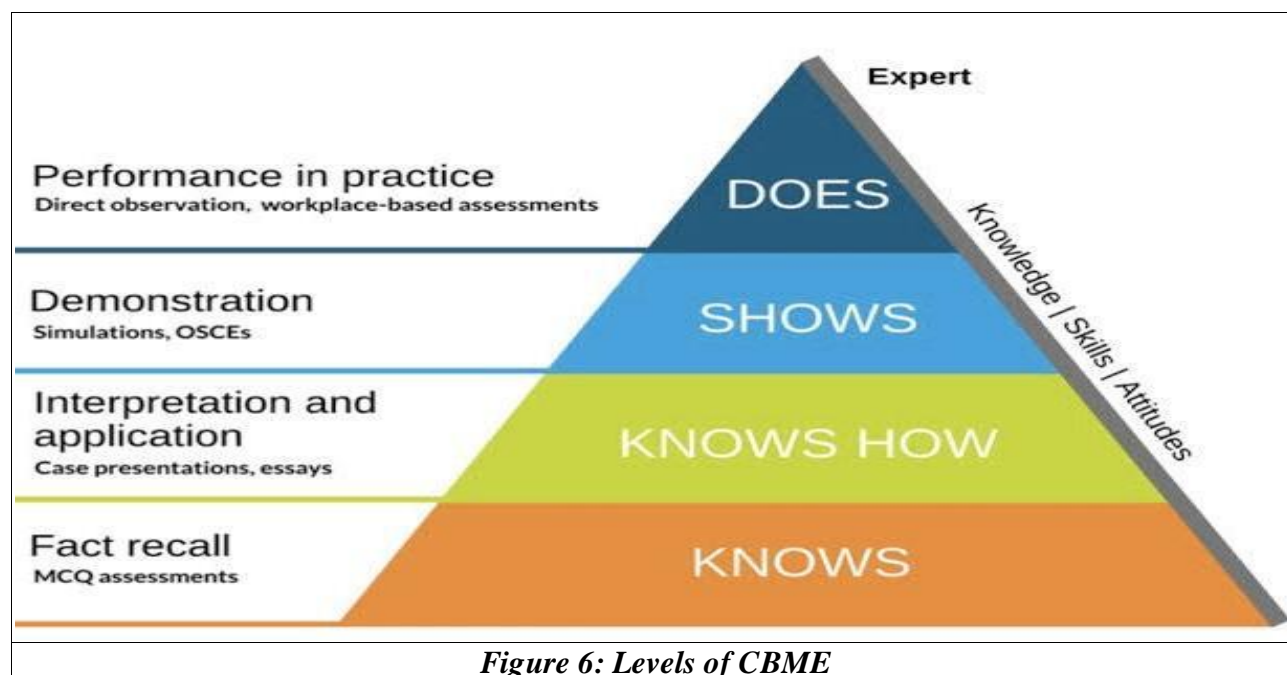
A phase 4 or final year medical unde is allowed to take up electives of their choice. Anaesthesiology evokes new arena as it is not extensively dealt but only a part of surgical subject. The novelty and may be an embracing speciality of surgery, medicine, obstetrics, critical care and so on may interest medical undergraduates to take up this subject as an elective.

As a faculty of anaesthesia, it was decided to guide the student under elect posting to develop an understanding of a fundamental scoring system in anaesthesia namely American Society of Anaesthesiologists physical scoring system so that this knowledge thus acquired would guide the UG towards good clinical practice.

Anaesthesia plays a key role in health science delivery and has a significant impact on population health and burden of disease. The scope of modern anaesthesia practice includes preoperative evaluation and preparation, intraprocedural care and postoperative management.[5] Anaesthesiology was among the first medical specialties to focus on improving safety of patient care. Basic, translational, clinical and implementation research is vital to continuous improvement in outcomes. Anaesthesia patient safety foundation and American Society of Anaesthesiologists have sought to decrease the potential risks of anaesthesia system level improvements and standardisation care processes.[6]

The fundamental purpose of preoperative evaluation is to pertinent information regarding medical and formulate an assessment of patient's perioperative risks. This clinical foundation is for guiding perioperative patient management which serves for enhanced patient outcome.[7] Apart from assessment of physical status functional capacity can be assessed by Duke Activity Status Index and Metabolic Equivalents of Functional Capacity along with several other scoring systems helps to influence perioperative case.

Glance and colleagues from University of Rochester used data from NSQIP (National Surgical Quality Improvement Program) and notified 3 factors that were highly predictive of death at 30 days after surgery namely 1) ASA Physical Status 2) Emergency status 3) Surgery type. Patients with ASA Physical 1, 2, 3, 4, 5 were assigned 0,2,4,5 or 6 points respectively, intermediate or high risk procedures were assigned 1 or 2 points respectively and emergencies were assigned 1 point.

Patients with risk scores less than 5 had a predicted risk of mortality less than 0.5% whereas patients with a score of 5 or 6 had a risk of mortality between 1.5% and 4%, patients with score more than 6 had a risk of mortality greater than 10%.[8]

Class	Definition
1	Normal healthy patient
2	Patient with mild systemic disease (no functional limitations)
3	Patient with severe systemic disease (some functional limitations)
4	Patient with severe systemic disease that is a constant threat to life (functionality incapacitated)
5	Moribund patient who is not expected to survive without the operation
6	Brain-dead patient whose organs are being removed for donor purposes
E	If the procedure is an emergency, the physical status is followed by "E" (for example, "2E")

Table 3: ASA Score Description

History and physical examination most accurately predict the risk of anaesthesia and likely occurrence of changes in monitoring or therapy. Clinical findings often offer direction towards investigation and optimisation of the concurrent disease depending upon the type of surgery.[9]

CONCLUSION

As a phase 4 medical undergraduate American Society of Anaesthesiology physical scoring system provides a valuable tool for screening of systemic disorders, a vivid and authentic account of physical status as a probability to attain a postoperative complications. The cornerstones of an effective preoperative evaluation are history and physical examination.[10] By convention physicians in many countries use ASA classification to identify relative risk prior to anaesthesia. To lift up the student to the top of Miller's prism she was encouraged to perform the scoring in surgical preoperative patients. The scoring system identifies patients whose outcome could be improve by specific medical treatment.

The ASA Physical Status is time tested, simple, and reproducible and is shown to be strongly associated with perioperative risk.

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