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RESEARCH ARTICLE

ANALYSIS OF TRAINING NEEDS FOR ANESTHESIA AND INTENSIVE CARE RESIDENTS

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Abstract

Despiteadvancements in anesthesiasafety, perioperativemorbidityremains a frequentconcern, and no practitioneris immune to potential accidents. This studyaims to assess the training needs of anesthesia and intensive care residentsconcerning the management of perioperative incidents. A surveywasconductedat the Mohammed V MilitaryTeachingHospital in Rabat, usingindividual interviews and an open-ended questionnaire. The resultsrevealedsignificant training needs in knowledge, skills, and relationalabilities, particularly in managingperioperativehypoxemia, bronchospasm, cardiacrhythmdisturbances, and hemodynamicinstability. Junior residentsexpressedgreater training needscompared to senior residents. Thesefindingshighlight the necessity of targetededucation to improveperioperative care and safety in the operating room.

Introduction:-

Despitesignificantprogress made in anesthesiasafety, morbidity (whetherserious or not, fully or partiallyrelated to anesthesia) remainsfrequent, and no practitioneriscurrently immune to an accident. In an effort to improve care provided in the operating room, weconducted an analysis of the training needs of anesthesia and intensive care residents in terms of managingperioperative incidents.

Objective:-

The aim of ourstudyis to assess the training needsregardingperioperative incident management for anesthesia and intensive care residents.

Materials And Methods:-

Weconductedoursurveywithin the anesthesia and intensive care departments of the Mohammed V MilitaryTeachingHospital in Rabat. Duringthissurvey, residentswereinterviewed. Our approach to gathering training needsrelied on twotools: individual interviews and an open-ended questionnaire, the responses of whichwererankedusing a validatedgrid (Grid FG: frequency, severity, problems). The individual interviews highlighted the training needsperceived by the interviewedphysicians. At the end of these interviews, four main topicswereidentified. The FG grid (Frequency, Severity, Problems) is an analyticaltoolthathelpsassess training needs by focusing on identifying "real problems." It isamethodthat has the advantage of being simple, easy to use, and

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anonymous. It allows the development of a method for quantifying and qualitativelyanalyzing the training needs of a group, considering the needs of eachindividualwithinthat group. This methodwillbeimplemented in all cases [1].

It ispracticedattwolevels:

- **First level:**general collection of themes.
- **Second level:**detailing the needs for a chosentheme. The variation is to use apresentgridwith 6 columnsdetailing the 3 types of problemsmentionedabove: knowledgeproblems (Know-how); skillproblems (Know-how); relationalproblems (Know-being). This is the case with the gridpresented in Table 1.
- **Frequency (F)**israted 0, 1, or 2 based on the participant'sprofessionalexperience:
  - 0: rare
  - 1: moderatelyfrequent
  - 2: veryfrequent
- **Severity (G)**israted 0, 1, or 2 based on the participant'sprofessionalexperience:
  - 0: benign
  - 1: moderatelysevere
  - 2: verysevere
- **Problems (P)** are rated 0, 2, or 4, whichhighlights the problems and hence the need for continued training in relation to frequency and severity. Thesemaybeknowledgeproblems (know), skillproblems (know-how), or relationalproblems (know-being).
  - 0: no problems
  - 2: moderateproblems
  - 4: manyproblems

Total (T): Each participant adds up the numbersfrom the 3 FGP columns for eachsubject. Simultaneously, the facilitatorperforms the sameoperation for all participants (group total) [1].
Statisticalanalysiswasperformedusing SPSS 25, and the significancelevelwas set at $p < 0.05$.

Wecollected the opinions of 20 physicians, 9 junior residents (1st and 2nd year), and 11 senior residents (3rd and 4th year). The individual interviews highlighted the training needsperceived by the residentsinterviewed. The averageage of the participants was 30.8 ± 0.51 years (Table 1). At the end of the interviews, four main topicswereidentified: perioperativebronchospasm, perioperativehypoxemia, cardiacrhythmdisturbances, and perioperativehemodynamicinstability. This studysuggests a clearneed for training in perioperative incident management in ourdepartment. The needsconcernbothknowledge, skill, and relationalabilities for all four items. Participants clearlyindicatedthatperioperativehypoxemia and hemodynamicinstabilitywere the mostfrequent and severe pathologies. Concerningperioperativebronchospasm, itwas the least common issue seen by the physicians. Junior residentsexpressedsignificantlygreater training needsthan senior residents in terms of knowledge and skills for perioperativehypoxemia, bronchospasm, and cardiacrhythmdisturbances, as well as relationalskillsregardinghemodynamicinstability and cardiacrhythmdisturbances.

Table 1:- Mean Scores by Items for Anesthesia and Intensive Care Residents.

Items	**Total**	**Junior Residents**	**Senior Residents**	**p**
Age (years)	30.80	30	31.5	
Perioperativebronchospasm				
Frequency	0.9	0.55	1.18	NS
Severity	1.45	1.66	1.27	NS
KnowledgeProblems	1.9	2.66	1.27	<0.05
SkillProblems	2.3	3.33	1.45	<0.05
RelationalProblems	2.7	3.25	2.18	NS
PerioperativeHypoxemia				
Frequency	1.75	1.77	1.72	NS
Severity	1.8	2	1.63	NS

Items	Total	Junior Residents	Senior Residents	p
KnowledgeProblems	2.4	3.11	1.18	<0.05
SkillProblems	2.8	3.33	2.2	0.02
RelationalProblems	2.6	3.11	2.2	NS
CardiacRhythmDisturbances				
Frequency	1.4	1.55	1.3	NS
Severity	1.8	1.89	1.7	NS
KnowledgeProblems	2.2	3.33	1.02	<0.05
SkillProblems	2.4	3.33	1.4	<0.05
RelationalProblems	2.2	3.55	1.09	<0.05
PerioperativeHemodynamicInstability				
Frequency	1.7	1.66	1.72	NS
Severity	1.75	1.66	1.81	NS
KnowledgeProblems	2.6	2.89	2.36	NS
SkillProblems	2.9	3.33	2.54	NS
RelationalProblems	2.2	3.33	1.27	<0.05

Discussion:-

Anesthesiaisdefined by the American Society of Anesthesiologists (ASA) as the practice of medicinededicated to the relief of pain and perioperative care of surgical patients. Anesthesia and intensive care physicians (AICs) thereforeparticipate in patient safety and care duringthisperiod [2]. Improving patient management throughteamworkis a coreconcern in medicine, especially in anesthesia and intensive care. The occurrence of a critical situation in the operating room is central to the work of anesthesia teams: anesthesiologists and anesthesia nurses. Despite constant progress in anesthesiasafety [3], serious adverse eventsstill have ahigh incidence during the perioperativeperiod [4-5]. The signing of the Helsinki Declaration on AnesthesiaSafety by the Moroccan Society of Anesthesia and Intensive Care (SMAR) in 2015 requiresmembers to adopt a culture of quality and a risk management policy to standardize practices and improvesafety [6].

In Morocco, the initial training of AICs for obtaining a national specialtydiplomatakes 4 years, coveringanesthesia, intensive care, emergency medicine, and pain management. The program includestheoreticallessons in modules and practical training over 8 semesters in accrediteddepartments. Anesthesiamedicalcompetence must thereforeadapt to awider range of pathologies, conditions, and patients of all ages. Our surveyidentified training needsrelated to the management of perioperative incidents for anesthesia and intensive care residents. Severaltools are available to assess training needs: questionnaires, knowledge tests, individual interviews, evaluation of professional practices, simulations, and group discussions. We chose to use twoassessmenttools in thispreliminarywork: individual interviews and the FG questionnaire.

Conclusion:-

Our studyhighlighted the perceived and expressed training needs of anesthesia and intensive care residents. The subsequent use of complementarytools for needsanalysisshouldallow us to furtherrefinetheseneeds and develop a relevant training program.

Consent

As per international standard or university standard, patient's consent has been collected and preserved by the authors.

Ethical Approval

As per international standards or university standards writtenethicalapproval has been collected and preserved by the author(s).

Competing Interests
Authors have declared that no competing interests exist.

Methods:-

Use of Large Language Models (LLMs):
In conducting this review, we employed Large Language Models (LLMs), specifically ChatGPT, developed by OpenAI. LLMs were utilized to generate text in sections where comprehensive analysis or discussion was required, such as the introduction, discussion, and conclusion. It's important to note that LLMs function as AI-driven text generation tools and do not constitute traditional authorship. Consequently, the text generated by LLMs was reviewed and edited by the authors to ensure accuracy, coherence, and alignment with the objectives and scope of this review.

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