ORIGINAL ARTICLE

PERSPECTIVE OF PRE-CLINICAL MEDICAL STUDENTS ABOUT INTENSIVIST AND INTENSIVE CARE UNIT (ICU) IN A PRIVATE UNIVERSITY IN MALAYSIA.

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Abstract
Objective: This study aims to assess second-year medical students' knowledge about Intensivist and ICU (Intensive Care Unit).
Methods: Cross sectional study, conducted as an internal audit with permission by Deanery. 82 second year medical students were interviewed. Questionnaire was validated using Cronbach's alpha. Prior written informed consent was taken from all participants. Data was analyzed using SPSSV22.0.
Results: Second year medical students lack knowledge about who an intensivist is 58(70.7%). Majority were aware that ICU s are structured differently 69(84.1%), and equipped with special monitoring and management techniques, 74 (90.2%). The study showed that around half 43 (52.4%) thought that any critically ill or collapsed patient should be shifted to ICU. At the same note 33(40.2%) were unaware about the existence of ICU admission criteria. The results of the students' knowledge of outcome and prognosis of ICU patients showed that majority were aware that admission to ICU does not guarantee survival and quality of life 62(75.6%) and prolonged stay in ICU may have negative impact 43(52.4%).
Conclusion: This study shows that second year medical students lack knowledge about the Intensivist. They wrongly assume that all critically ill patients need ICU care. It's high time to increase the awareness of this specialty as career option especially among medical students as the demand of this specialty is on the rise, more so in the COVID-19 pandemic. We suggest further studies to create awareness about Intensivist and ICUs during and post COVID-19 pandemic among general population and medical fraternity.
Keywords: Intensivist, Intensive Care Units, medical students, COVID-19.

Introduction

The first ever ICU was created in 1953 in Denmark by Iben.[1] More than half a century ago ICUs were introduced, since then ICUs have become integral part of the health care system [2] and intensive care has emerged as a distinct medical specialty.[3] In Malaysia, the first ICU was set up in University Hospital, Kuala Lumpur in 1969. [4] Today ICUs are available in all tertiary care hospitals and selected secondary care hospitals in the Health Ministry Malaysia. [5]

Intensive Care Medicine has evolved and come a long way. The task force of the World Federation of Societies of Intensive and Critical Care Medicine defines ICU as "An intensive care unit (ICU) is an organized system for the provision of care to critically ill patients that provides intensive and specialized medical and nursing care, an enhanced capacity for monitoring, and multiple modalities of physiologic organ support to sustain life during a period of acute organ system insufficiency. Although an ICU is based in a defined geographic area of a hospital, its activities often extend beyond the walls of the physical space to include the emergency department, hospital ward, and follow-up clinic." Undergraduate teaching of intensive and critical care does not seem to have kept pace with the evolution of critical care medicine [6] and its development as a super specialty in medicine. Medicine today is heading towards specialization and super specialization. The recognition and the need for doctors specializing in intensive care medicine has lagged. [7]

We ventured out to find the second-year medical students' perspective of Intensivist and Intensive Care Units (ICU).

Methodology

This was a cross-sectional study. Pre-clinical medical students (Batch 20) in their second year from Faculty of Medicine, AIMST University who finished their 2 weeks clinical orientation postings were included. Students present after a random medical lecture were included. This was conducted as an internal audit with permission by Deanery in the pre COVID-19 times. Prior written informed consent was taken from all the participants. Data was analyzed using SPSSV22.0. Questionnaire was self-made and validated. Questionnaire was validated using Cronbach's alpha. The sample size for validation was 20 and the population for validation was also the second-year medical students (Batch 20) who finished their 2 weeks clinical orientation postings and present after a random surgical lecture. These were not included in the actual study. The value of Cronbach's alpha was 0.910.

The sample size was calculated using the formula-

$N=Z^2 p(1-p)/d^2$ where N is the sample size, p=proportion of Year 2 medical students is approximately 15%, Z=1.96 (95% confidence interval), d = error of margin 8% or 0.08

$N=Z^2 p(1-p)/d^2$

$= (1.96)^2 0.15 \times 0.85 / (0.08)^2$

$=76$

The minimal sample size for this study was 76. The participation was totally voluntary so all the students who volunteered were included which was 82.

The questionnaire was divided into two parts. Part A was about knowledge about the Intensivist and Part B was about the knowledge regarding the ICU. Questions on knowledge about the intensivist included, who is intensivist and their role. Questions on ICU included knowledge about the structure of ICU, patient management and outcome and prognosis of ICU patients.

Results

The results showed that merely 24 (29.3%) knew who an intensivist is and only 21 (25.6%) were aware that basic medical degree is required to become an intensivist. The results of the students' knowledge on the role of Intensivist pointed out that 43 (52.4%) were aware that Intensivist are involved in complete care of the patient. However,

42(51.2%) were unaware that family counselling is part of the role of intensivist.

Majority were aware that ICUs are structured differently 69(84.1%), and equipped with special monitoring and management techniques, 74 (90.2%).

The study showed that around half 43 (52.4%) thought that any critically ill or collapsed patient should be shifted to ICU. Though one participant did not answer this question. At the same note, 33(40.2%) were unaware about the existence of ICU admission criteria.

The results of the students' knowledge of outcome and prognosis of ICU patients showed that majority were aware that admission to ICU does not guarantee survival and quality of life 62(75.6%) and prolonged stay in ICU may have negative impact 43(52.4%).

Discussion

The MedTerms Dictionary defines "Intensivist" as a physician who specializes in the care of critically ill patients, usually in an intensive care unit (ICU). An intensivist also known as critical care physician is a board-certified physician with advanced training and experience in treating critically ill patients. Whereas "Anaesthesiologist" is defined as a graduate of medical school who has completed a nationally recognized specialist anaesthesia training program. [8]

A medical school graduate after completing a residency and board certification in a specialty such as anaesthesiology, surgery, internal medicine, pulmonary medicine, or paediatrics, must obtain an additional two- to three-year fellowship and certification in critical care medicine to become an "Intensivist" or "Critical Care Physician".

Intensive Care Medicine has evolved and come a long way. Its awareness among the general population including medical students in preclinical years is lacking. Though there is not much evidence to support this. It is now included in the later years of medical curriculum. [7] The knowledge and skills the critical care physicians/ Anesthesiologists have to offer to the medical students is vital for producing meaningful, efficient house officers- the front liners of health care profession. [7,9]

There is high demand of this speciality and growing need of specialists trained in this speciality. [10] This demand has increased, especially during COVID-19 crises.

The medical students start their clinical exposure from the second year and get to know various specialties of medical profession. It is essential to expose them to this very important specialty from the very beginning of their curriculum.

Our study showed the knowledge of the second-year medical students about intensivist is limited (as majority were unaware of who an intensivist is and career pathway to become Intensivist). We are of the opinion that if they are not aware of the pathway to become intensivist, they are less likely to keep it as a career option.

Their knowledge about the structure of ICU is quite good which can be attributed to their visit to ICU or some information from social media platforms. (majority were aware that ICUs are structured differently and equipped with special monitoring and management techniques)

Although they were aware that admission to ICU does not guarantee survival and quality of life. They were of the view that any patient that is critically ill or collapses should be shifted to the ICU for further management. This discrepancy can be due to the lack of awareness about the limited availability and high demand of the resources. The limited resources and high demand of ICU services makes it critical for the selection of patients which can be benefitted from it. This is an important aspect of ICU that is vital to be understood. The task force of World Federation of Societies of Intensive and Critical Care Medicine even recommended Intensivists led triage decisions for ICU admissions. [11]

There is lack of evidence to either support our findings or contradict them. There are not many studies to show the awareness about intensivist and ICU in general population.

The Society of Critical Care Medicine (SCCM), partners with the American Association of Critical-Care Nurses (AACN), American College of Chest Physicians (CHEST), American Thoracic Society (ATS), and the American Association for Respiratory Care (AARC) in celebration of National Critical Care Awareness and Recognition Month (NCCARM) to create awareness about Critical Care. [12]

During this COVID-19 Crises ICUs and Intensivists have gained a lot of recognition. They are in the limelight as "heroes". This study was conducted before COVID-19 crises hit the world. Maybe a repeat study involving wider study group can reveal the impact of COVID-19 crises on the awareness about intensivist and ICUs.

Conclusion

This study concludes that second year medical students lack knowledge about the intensivist as a medical specialty and the pathway to adapt it as career option in the pre COVID-19 times. With the increase in the demand of the intensivist especially in the COVID-19 pandemic its high time to increase the awareness of this specialty as career option especially among medical students. We suggest further studies about the awareness of Intensivist and ICUs and willingness to adapt it as career option during and post COVID-19 pandemic among general population and medical fraternity.

Acknowledgement

We acknowledge the deanery for granting the permission to conduct this study.

Table 1. Second Year medical student's knowledge of Intensivist

Knowledge of Intensivist	**yes**	**no**	**do not know**	**total**
Do you know who an intensivist is?	24 (29.3)	23 (28.0)	35 (42.7)	82 (100)
Is basic medical degree required to become intensivist?	21 (25.6)	14 (17.1)	47 (57.3)	82 (100.0)
Is intensivist a board-certified specialist physician who provides special care for critically ill patients?	38 (46.3)	2 (2.4)	42 (51.2)	82 (100.0)
Can any physician who is taking care of patients in the hospital be designated as intensivist?	18 (22.0)	22 (26.8)	42 (51.2)	82 (100.0)

Table 2. Second Year medical student's knowledge of role of Intensivist in patient management.

Knowledge of role of Intensivist in patient management	**yes**	**no**	**do not know**	**total**
Are intensivists involved in complete care of the patient?	43 (52.4)	16 (19.5)	23 (28.0)	82 (100.0)
Does the intensivist manage the primary problem only?	16 (19.5)	43 (52.4)	23 (28.0)	82 (100.0)
Does the intensivist provide multiple organ support?	42 (51.2)	17 (20.7)	23 (28.0)	82 (100.0)
Is the intensivist involved in prevention of further complications	50 (61.0)	9 (11.0)	23 (28.0)	82 (100.0)
Does the intensivist manage ventilatory support?	52 (63.4)	5 (6.1)	25 (30.5)	82 (100.0)
Does the intensivist manage renal support?	30 (36.6)	27 (32.9)	25 (30.5)	82 (100.0)
Do the intensivist provide family counselling?	15 (18.3)	42 (51.2)	25 (30.5)	82 (100.0)

Table 3. Second Year medical student's knowledge of ICU structure.

Knowledge of ICU structure	**yes**	**no**	**do not know**	**total**
Do all hospitals provide ICU services?	43 (52.4)	27 (32.9)	12 (14.6)	82 (100.0)
Are ICUs structured in the same way as general wards?	6 (7.3)	69 (84.1)	7 (8.5)	82 (100.0)
Is the preferred design of ICU one patient per cubicle to prevent transmission of infection?	67 (81.7)	0.0	15 (18.3)	82 (100.0)
Are ICUs more equipped with more special monitoring and management techniques than the normal wards?	74 (90.2)	0.0	8 (9.8)	82 (100.0)

Table 4. Second Year medical student's knowledge of management of ICU patients

Knowledge of management of ICU patients	**yes**	**no**	**do not know**	**total**
Are all critically ill /collapsed patients shifted to ICU?	43 (52.4)	25 (30.5)	13 (15.9)	81 (98.8)
Is the nurse to patient ratio in ICU, 1:1?	23 (28.0)	18 (22.0)	21 (50.0)	82 (100.0)
Do the specialists monitor ICU patients round the clock?	47 (57.3)	6 (7.3)	26 (31.7)	79 (96.3)
Are all ICU patients given antibiotics?	12 (14.6)	19 (23.2)	50 (61.0)	81 (98.8)
Do the ICUs manage only critically ill patients belonging to medical speciality?	40 (48.8)	17 (20.7)	25 (30.5)	82 (100.0)
Are there any admission criteria for ICU patients?	44 (53.7)	5 (6.1)	33 (40.2)	82 (100.0)

Table 5. Second Year medical student's knowledge of outcome and prognosis of ICU patients

Knowledge of outcome and prognosis of ICU patients	**yes**	**no**	**do not know**	**total**
Is survival and quality of life guaranteed?	9 (11.0)	62 (75.6)	11 (13.4)	82 (100.0)
Does prolonged stay in ICU have negative impact?	43 (52.4)	20 (24.4)	19 (23.2)	82 (100.0)
Can patients in ICU directly be discharged?	8 (9.8)	50 (61.0)	23 (28.0)	81 (98.8)
Do ICU patients need long term follow up?	49 (59.8)	5 (6.1)	28 (34.1)	82 (100.0)
Is ICU care more expensive than care in general wards?	63 (76.8)	5 (6.1)	14 (17.1)	82 (100.0)

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