



St. Paul Hospital Millennium Medical College

Graduate Study Program

**Emergency Medicine as a career: Assessing knowledge and Attitude of
Medical Interns at St. Paul's Hospital Millennium Medical Centre**

By Justin Kawac MD, EMCCR

Addis Ababa, Ethiopia

December, 2023



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St. Paul's Hospital Millennium Medical Centre**

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Also I am grateful to my advisors Dr. Biruktawit and Dr. Hana for their ongoing guidance. Their experience and humble approach to Research and Science provides a strong foundation upon which this proposal is anchored.

Acronyms and Abbreviations

ED-Emergency Department

EM - Emergency Medicine

DR – Doctor

LMIC – Low and Middle Income Countries

ETB - Ethiopian Birr

HMIS - Health management information system

OR - Operation Room

MD - Medical Doctor

MICU - Medical Intensive Care Unit

SPHMMC - St. Paul's Hospital Millennium Medical College

SPSS - Statistical Package for the Social Sciences

S.NO - Serial Number

Abstract

Introduction: Emergency Medicine was formally recognized as a department by the Ethiopian Federal ministry of health in 2008 and the first formal postgraduate training was established at Addis Ababa University College of Medicine in 2010. Ever since the program has had significance growth in Ethiopia with the opening of a second training program at SPHMMC in 2016. Today SPHMMC have graduated 5 batches of Emergency Physicians with an average annual intake of 20 new residents per year. As Emergency Medicine grows as a specialty in Ethiopia it is imperative that its impact and future prospects be evaluated.

Objective: This study seeks to assess the knowledge, and attitude of medical interns at SPHMMC. To identify possible gaps, make recommendations to raise necessary awareness and establish a benchmark upon which future plans and resources can be allocated.

Results: A total of 101 students responded to this study. Of these, majority (59%) scored within the “Good knowledge” range. 29% turned out to have “Excellent Knowledge” while only 13% had “poor knowledge” Likewise, majority of the study cohort (54%) scored within the “Good attitude and perception” range. 21% turned out to have “negative attitude” while only 13% had “Excellent attitude”.

Conclusion: Despite majority of interns at SPHMMC showing good knowledge of Emergency Medicine and subsequently good attitude towards it, a significant number still have not decided whether to pursue EM as a career. This may be due to other confounding factors not identified in this study.

Keywords: Emergency Medicine, Knowledge, Attitude; Awareness; Specialty; Career choice

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1. Introduction

1.1. Background

Emergency Medicine is a fast evolving field of practice in Medicine. It came about as a need to identify, diagnose, stabilize and diagnose urgent and emergent medical and traumatic condition was seen as key to survival in acutely ill/injured patients. Accordingly to World Health Organization (WHO), 90% of deaths and overall global disease burden are due to emergency conditions. Emergency Medicine was set up to promptly address these conditions within hour to days of onset (1).

Ethiopia, like other low and Middle income countries (LMIC) is particularly overly burdened by acute illnesses, trauma and acute decompensation of chronic illnesses. Some studies state that these LMIC carry upwards of 3 times the burden of disease for Emergency conditions compared to high income countries. This was mostly attributed to poor infrastructure and underdeveloped emergency care system (2). Having recognize the gap in the health system and with full appreciation of the burden carried by unmet emergency medical care, the Ethiopian Federal Ministry of Health approved Emergency Medicine as an official medical specialty in 2008 (3). In 2010, Addis Ababa University established its first residency program in 2010.

Emergency Medicine is a new comer to the health system in Ethiopia. St. Paul's Hospital Memorial Medical College (SPHMMC) established the second residency program in Ethiopia in 2016. Medical graduates that passed the residency matching exams were admitted to the 3 years program. Medical School in Ethiopia spans a period of 7 years with the 7th year being for internship. Undergraduate medical education mostly covers specialties such as Medicine, surgery, and Obstetrics and gynecology.

Commented [Birkty1]: There is a 6 weeks Emergency attachment during their last year of clinical year rotation before qualification. and ER attachment during internship so you need to modify that.

1.2 Statement of the Problem

SPHMMC enrolls approximately one hundred 7th year medical students per year into internship at their teaching hospital. Towards the end of 4th year, the students have 6 weeks clinical rotation in Emergency Medicine and subsequently will have the next exposure in their 7th year during their internship. Unlike the other areas of specialty e.g. medicine, surgery, Pediatrics etc The University does not have an independent Department of EM to facilitate academic activities related to the discipline. At their encounter with EM during clinical attachment, most students will start off with limited knowledge and suboptimal attitude that relegates EM as a minor area of Medicine, surgery etc. This would impact their learning and performance. The clinical attachment would present the students with challenges that include a new level of responsibility to patient care, requirement for higher level of efficiency, a different type of learning, and demonstrable professionalism; all that, in a fast working environment that is the ED. A process that should have started with early exposure and more thorough preparation during medical School.

Internship is the phase in a doctor's career between medical school and Residency. It is a critical phase at which medical students establish relationships with different medical specialties. The potential future Emergency Physicians make their first significant encounter during this time with the department. Little studies have been to assess the level of preparations of these students during medical school. A comprehensive research is needed to assess their baseline knowledge and if there is a possible association with their attitude towards the department in the backdrop of poor exposure during medical Studies.

This research hypothesizes that Medical Interns would have poor knowledge of emergency medicine associated with suboptimal attitude towards emergency medicine. This would be largely

due to the known fact that Emergency Medicine is a new field of practice in Ethiopia and with the lack of specific Emergency Medicine as a course during undergraduate medical training.

1.3 Rationale of the study

This study identifies interns as the population pool from which the next generation of Emergency Physicians will come. Future plans, budgeting, growth or restructuring all needs a thorough assessment of the baseline knowledge and attitude of this population. At the time of writing this paper, SPHMMC does not have an operational academic department of Emergency Medicine. Additionally, until now, there is little research on the impact of this Medical interns on their baseline knowledge and subsequent attitude towards EM. This research seeks to mitigate this and pave way for further work to potentially identify the short coming of both our medical education and our approach towards interns rotating through Emergency department.

2. Literature Review

For the purpose of this research, we searched indexed international databases MEDLINE, Excerpta, Medica Database (EMBASE), World Health Organization (WHO) index Medicus, African Journals online and the Cochrane Database of systemic reviews. Additionally, relevant non-indexed literatures were reviewed by searching the World Wide Web using Google and Google Scholar search engines. For both index and non-indexed data bases, this research undertook targeted searches using same keywords that included Emergency Medicine, Emergency Medicine in Ethiopia, medical education in Ethiopia etc. This peer reviewed literature dated back 20 years, from 1999 - 2023. This is the period covering all the way back to the period just before formalization of emergency medicine residency programs in Africa.

Medical Mirror defines Emergency Medicine as an area of medicine concerned with the care of illness and injuries that require immediate medical attention. In this article, emphasizes is put on the impact the practice of emergency medicine has had over in history in terms of reduction of disease and injury burden in the countries that have adopted it and incorporated it into their system. This had led to a current general perception by Emergency medicine specialists today, of the discipline, as glamorous, dynamic and exciting (4); However this attitude has not always been the case as EM has undergone major metamorphoses in the last few decades seeing it grow in acceptance and prestige.

50 years back, Emergency Medicine as an independent medical specialty was first introduced to the world. However the practice of Emergency medicine is as old as medicine itself. Chung's article on the evolution of Emergency Medicine articulates existence of ancient documentation of Emergency Medical care dating back to 700 BC (5).

Commented [Birkty2]: ohh Justin..... you literally mentioned 2 literatures. eventhough your unable to get papers related to your title, you need to add papers done on EM field or practitioners, nurses, attendants or even the society. if you don hv literatures....as a postgraduate study it would be less credible

It's a must for you add literatures Justin.

Commented [H3R2]:

Commented [DJK4]: I have expanded it to include over 20 literatures. Covering definition, scope of practice and evolution of Emergency Medicine through history

Ever since, formal graduate training programs have sprung up in many countries across the globe. Africa's first Emergency Residency program was started in South Africa in 2004 (5) According to African Federation for Emergency Medicine, the training program in Africa has grown drastically ever since and the numbers of African countries with formal residency programs stand at 12 countries as of 2022 (6)

N. Meshket et al. points out Ethiopia followed suit in 2008 by approving Emergency Medicine as a newly recognized medical specialty. This was to address the high burden posed on the county by acute illness and injury (7). This recognition was followed by establishment of residency program at Addis ababa Univerity in 2010 and SPHMMC in 2016. However there has been no establishment of a standalone department of Emergency Medicine at any university in Ethiopia. Studies in Egypt and Nigeria have concluded that formal recognition of Emergency Medicine by their respective health ministries does not guarantee that knowledge of the program is widespread in the University. Awareness among medical Students remains low in these countries and the attitude was found to be negative and perception indifferent at best (8, 9)

Many studies around the world have attempted to quantify the level of awareness, attitude and perceptions of medical students towards EM as a career in their respective Universities and teaching hospitals. The findings have been varied and largely dependent on many local factors such as availability of the disciplines as an independent academic department, resources allocated to EM by their local health authorities, general population concept of the discipline etc (10, 11, 12, 13)

Many findings share a consensus that early exposure to EM in the formative years of Medical school has positive impacts on medical students' choice of EM as a career. Ray et al and Gharabaghian et al are examples of such literatures (13,14)

Additionally studies by Cevik et al found that in those countries where there is mandatory EM clerkship, students tend to have a more positive overall perception towards EM with good knowledge (15). In contrast, countries that have no established Residency programs in EM and consequently no prescribed clinical attachment of Medical Students to the department recorded the poorest level of knowledge and negative attitude towards the specialty. This is evident in a study done by the study done in Nigeria by Adeyeye et al (8)

The crucial role played by Emergency Medicine in saving human lives is well evident. A need to establish and incorporate it into the health system particularly when it comes to trauma was established during WW1 when wartime physicians introduced a “treat them where they lie” policy. This saw mortality rate of injured soldiers dropping from 1 in 40 to as low as 1 in 3 (15). There has always been indisputable general consensus that EM saves lives. However the knowledge of the exact scope of EM as a discipline lagged behind and so did the general attitude towards the practice by Medical Doctors and students. As noted by Arnold, EM in its initial years of formal recognition, almost 5 decades back, was relegated to the most junior physician in the hospitals and doctors working in EM were seen by peers as those who have failed in other specialties or those lacking ambition (16). This misconception, led to inadequate funding and understaffing of Emergency departments and subsequent under performance. However in the later years, Economic, Scientific, technologic and societal changes have been a major catalyst for change in the practice of EM. Rising from a community based rudimentary low skill, first aid-level practice to the current modern high skill practice with advanced procedures and vast knowledgeable and versatile practitioners (17).

EM practice and teaching has developed exponentially in the western world with various universities establishing independent departments to facilitate its academic activities.

Subsequently the discipline has grown in prestige and acceptance by peers and general public as a competitive, intellectually stimulating area of practice. Literature in such countries have shown positive trend in the level of attitude, knowledge and perception of EM as an area of specialty among different health practitioners including nurses, paramedics, community health care officers etc. However there is still paucity of baseline data in regards to the trend of EM acceptance and impact in the Ethiopian health system since its inception about a decade back.

3. Concept Framework

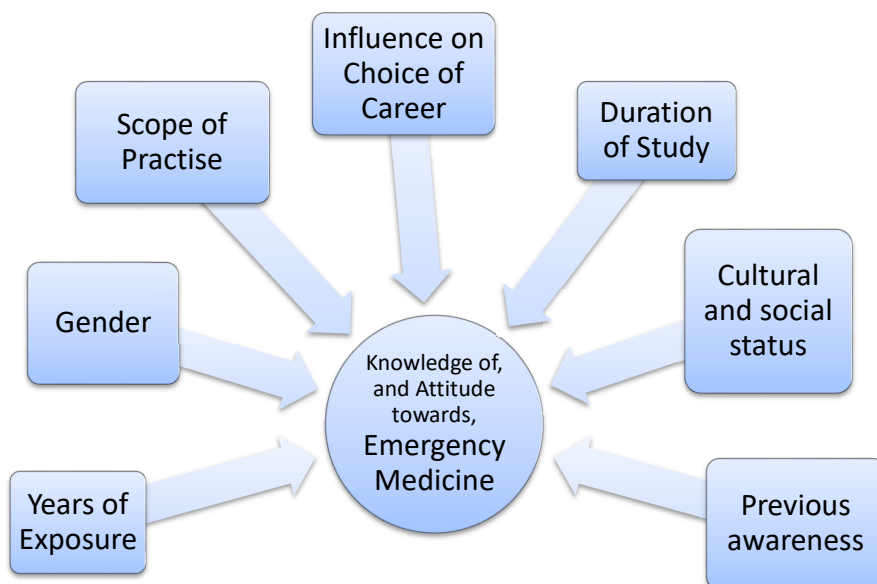


Figure 1: shows relationship of dependent variable with independent variables

Commented [DJK5]: noted

Commented [Birkty6]: here it means that you only have 3 independent variables.....which will significantly impair your discussion in relation to your outcome variables

you may need to go back to your literatures to consider additional Independent variables.

4. Objectives

4.1 General objective

- To assess the knowledge and attitude of medical interns at SPHMMC, class of 2023/2024, towards the practice of emergency Medicine.

4.2 Specific Objectives

- To determine the level of Knowledge of EM among medical interns enrolled at SPHMMC in the period covering October 2023
- To assess the attitude towards EM among medical interns enrolled at SPHMMC in the period covering October 2023

5. Method

5.1 Study setting and Study period

This study was conducted at St Paul's Hospital Millennium Medical College (SPHMMC) in October 2023. SPHMMC is a leading public medical college in Addis Ababa, Ethiopia. The college was opened during the Ethiopian New year in 2007 as a teaching institution affiliated with St. Paul Hospital that has served Ethiopia for more than 60 years. The college recruits Medical Students after a rigorous screening method of high school graduates from all over Ethiopia meeting the standards. However the college is exemplary for making provisions for emerging and underprivileged regional states of Ethiopia. This is line with SPHMMC's principle of upholding equitable representation of all Ethiopians.

The College was the first in Ethiopia to deliver integrated modular curriculum to undergraduate medical students as opposed to the traditional curricula in the other medical schools in Ethiopia.

The college has grown in the last decade to include post graduate and sub specialty programs with more than 2, 800 clinical, academic, administration and support staffs. The College of Medicine is home to more than 250 faculty members and has graduated on average 100 Doctors every year in the last 5 years.

and

5.2 Study design

Cross|Sectional

5.3 Population

5.3.1 Source population

All undergraduate Medical students currently enrolled at SPHMMC

5.3.2 Study population

All Medical Interns from SPHMMC registered for the class of 2023/2024 and currently rotating in the college's teaching hospital.

5.3.3 Exclusion criteria

The following will be excluded from the study

- Final year Medical Student that did not meet the requirement to start internship
- Final year Medical students not registered for the academic year 2023/2024 including those who are on academic leave.

5.3.4 Sample size

The Sample size was determined by using single proportion for finite population with 95% confidence interval, marginal error(d) of 5% and the prevalence (p)of 50%.

Commented [Birkty7]: Better to focus on the academic background as a medical college than focusing on the clinical services like how many undergrad and post graduate graduates so far....n the like

Commented [DJK8]: I couldn't find recent data on the number of students and planning to visit the registrars office tomorrow

Commented [Birkty9]: This needs to be undergraduate medical students currently enrolled at SPHMMC

Commented [DJK10]: Noted and changed

Commented [Birkty11]: ??????????

Commented [DJK12]: 4 students did not meet requirement to start internship were excluded

$$n = \frac{z^2 \frac{\alpha^2}{2} p(1 - p)}{d^2}$$

Where;

n = required sample size

$Z_{\alpha/2}$ = critical value for normal distribution at 95% confidence interval= 1.96 ($\alpha = 0.05$).

P = Estimated Proportion of population from similar study in Egypt in 2023 =50%

d = margin of error= 5%

So, $n = \frac{(1.96)^2 \times (0.5) \times (1-0.5)}{0.05^2} = 384$

Therefore, the total required sample size for infinite population is 384.

The Total number of interns enrolled at SPHMMC during the study period is 110 therefore by using correctional formula for finite population since source population is less than 10,000.

$NF = n / (1 + (n/N))$.

Where:

NF = the desired sample size when population is less than 10,000

n= the desired sample size when the population is more than 10,000=384

N = the estimate of the population size = 546

The sample size $n_f = 384 / (1 + (384/110)) = 168$

Then the study added 10% to the calculated sample size, the minimum sample size will be 178

In this study, Total population sampling technique was used because of the small target population

Commented [Birkty13]: still you didn't calculate the sample size and you need to mention the sampling technique

Commented [DJK14]:

Commented [Birkty15]: you need to calculate the estimated sample size with a prevalence formula, take the proportion from previous researches, if not you can take 50% and then you can justify why you included all Interns non response rate need to be calculated too does this mean....all of the medical Interns has responded????

5.4. Study variables

5.4.1.. Dependent variable

- Knowledge
- Attitude

5.4.2 Independent variables

- Years of exposure
- Factors influencing choice of career
- Duration of study
- Previous awareness of Emergency Medicine practice
- Gender
- Cultural and social status
- Scope of Practice

Commented [Birkty16]: Add more variables who have direct or indirect relationship wz your outcome variables you need literatures for that

5.5. Data collection and procedures

Data collection tool was prepared by reviewing different literatures to explore the objectives of the study. A structured and standardized 32 items questionnaire was generated in English language. The data collection instrument was pre-tested for necessary modifications in the questionnaire as following.

Between 1st of October to 14th October an initial piloting exercise was undertaken. During this time, 45 items questionnaires developed to assess knowledge of the scope of the practice of Emergency medicine as well as assessing the general attitude and perception of the target population towards emergency medicine was used. Random interns were surveyed using face to face paper based system. The respondents were interviewed during the above process to to further ascertain their comprehension of the questions and feedback from them noted. 22 simple random responses were obtained and analysed for reliability. A Cronbach's alpha of 0.72 was obtained. The survey questionnaire was then further modified to reflect the feedback, minimize the observed gaps and challenges and extenuate the observed strength during phase one. Finally, a 32 items questionnaire was then generated and further validations was sort from experts including research advisor and with comparison to similar studies done internationally.

In the second phase, during the period November 1st to November 30th, a self-administered online questionnaire containing the 32 structured questions was uploaded on Google Doc. The link inviting the participants in the study population was distributed via messages sent to the student's respective social media group.

5.6. Data analysis plan and procedures

Once data was collected, it was coded and entered to computer by using SPSS version 25.0 for analysis. Descriptive analyses of independent variables were reported as numbers, percentages, and mean and standard deviation. Effect of independent variable on dependent variable was analyzed by using bivariate and multivariable logistic regression. Variables with P-value <0.05 was labeled as statistically significantly associated with the outcome variable

Commented [Birkty17]: no need to include this much detail.....since the questionnaire is attached omit and edit this part

5.7. Operational definitions

Emergency Medicine: An area of medicine concerned with the care of illness and injuries that require immediate medical attention.

Intern: Final year medical Student in his/her clinical rotations

Resident: A medical Doctor in his post graduate training towards specialization in a specific area of medicine

Knowledge: Condition of being aware of something

Attitude: Feelings, emotions, beliefs or values about something

Perception: The way in which something is regarded, understood or interpreted

5.8. Ethical consideration

The study was conducted after obtaining ethical approval from the ethical board review of SPHMMC. To ensure confidentiality name and other personal identities were not used during data collection

Commented [Birkty18]: Emergency Medicine needs to be defined here
Knowledge, Attitude and Perception scale needs to be defined here.
your lickert scale used for analysis

6. Results

6.1. Demographic

A total of 107 students were invited to this study. Of these, 4 did not respond and 2 responses were invalidated. A total of 101 results were uploaded onto SPSS 25 for analysis. Female participants represented 57.4% of the study population. Mean age was 24.53 ranging from 22 to 28 years. We included all interns in their final year of studies at SPHMMC.

Table: 2 Gender Distributions of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	43	42.6	42.6	42.6
	Female	58	57.4	57.4	100.0
	Total	101	100.0	100.0	

6.2 Knowledge of Emergency Medicine

The first 15 questions are designed to reflect knowledge about EM. Each question carried a maximum of 5 for a total score of 75.

Part A (questions 1 to 4) has no true scoring. They are designed to assess the level of the baseline general knowledge of the participants about Emergency Medicine including their awareness, its scope of practice and typical patients treated in the ED. To maintain statistical power correct responses were graded from 5 to 1 for the strongest response to the weakest for a maximum score of 20.

Part B (Questions 4 to Q15) addressed knowledge specific to the clinical practice of EM. They were scored using the likert system and carried a maximum score of 55. Details of the scoring process are provided in Table B.1.

Out of the total score of 75 in the knowledge segment, all the 101 respondents had a mean score of 58.75 with Males and females having comparable mean scores at 59.00 and 58.19 respectively. For description purpose the scores were distributed to classify the respondents as having “Excellent knowledge” for those scoring more than 60, whilst those who scored between 55 and 60 were classified as having “Good knowledge” and finally those who scored less then 55 were considered to have “poor knowledge”. This was based on cut-offs established in previous studies in Egypt and Nigeria.

For the total study cohort majority (59%) scored within the “Good knowledge” range. 29% turned out to have “Excellent Knowledge” while only 13% had “poor knowledge” (fig 2)

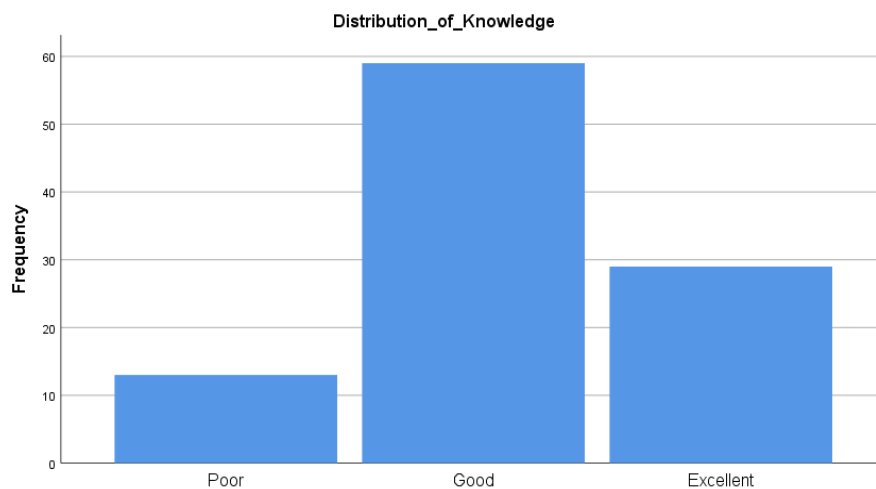


Figure 2: shows distribution of level of attitude

Commented [Birkty19]: you need to calculate the percentile from your data, you can get it on SPSS. it depends on your sample size... and level of response. you can't use this from a previous study.

Further investigations of specific questions in this category did not show any statistically significant difference between female and male respondents. Despite more female (10) than males (3) recording poor level of knowledge, this was offset by female domination in the other extreme end with 17 of them scoring excellent compared to 12 male responders (Table 3).

Table 3. Comparing Distribution of knowledge between the two genders

		Distribution_of_Knowledge			Total
		Poor	Good	Excellent	
D1.Gender	Male	3	28	12	43
	Female	10	31	17	58
Total		13	59	29	101

6.3 Attitude towards EM as a career

In this segment, 15 likert type questions were used carrying a maximum score of 75 as described above. The mean score was 58.02 with Males outscoring females at means of 58.02 and 57.28 respectively.

Again, these scores were distributed to classify the respondents as having “Bad attitude” for those scoring more than 60, whilst those who scored between 55 and 60 were classified as having “Good attitude” and finally those who scored less than 55 were considered to have “bad attitude”.

For the total study cohort majority (54%) scored within the “Good attitude and perception” range. 21% turned out to have “negative attitude” while only 13% had “Excellent attitude” (Fig 3).

Commented [Birkty20]: Where is the result on perception & the third objective of your study
you didn't include any result concerning relation bn knowledge, Attitude n perception
I didn't see any independent variables mentioned on your result section

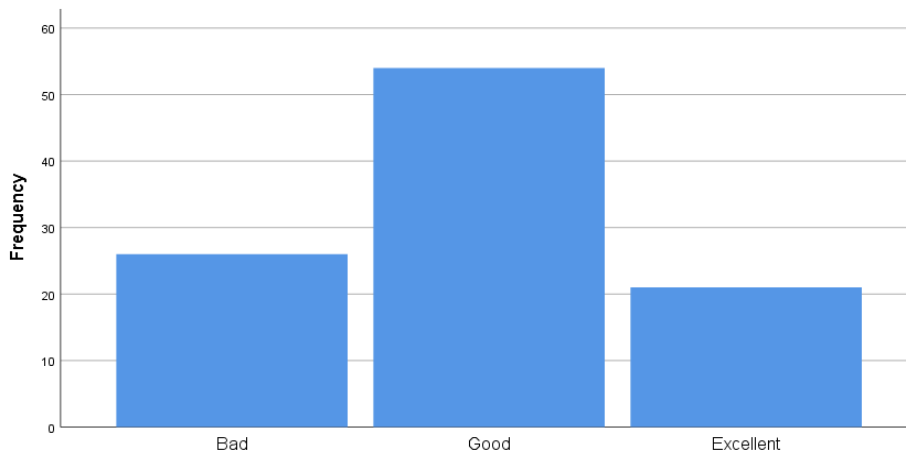


Figure 3: shows level of attitude

6.4 Correlation analyses

Correlation studies showed that there was moderate relationship between knowledge and attitude at Pearson score of 0.60 and a poor relationship between level of knowledge of EM and the respondents' willingness to pursue it as a career at Pearson score 0.09 (Table 3).

Commented [Birkty21]: You can measure for the presence of any association between the variables under Knowledge.... analyse the influence of Knowledge on Attitude in a different qn. here you can analyse the results like, how many of the Interns know patients need to be seen in ED, Procedures done and the scope, you can compare this among Male and female interns

Table 3 Correlations between knowledge of Respondents and their attitude towards, EM and Willingness to practice EM

		Knowledge	Attitude	Willingness to Practice EM
Knowledge	Pearson Correlation	1	.600	.090
	Sig. (2-tailed)		.000	.000
	N	101	101	101
Attitude	Pearson Correlation	.600	1	.230
	Sig. (2-tailed)	.000		.057
	N	101	101	101
Willingness to Practise EM	Pearson Correlation	.090	.230	1

Comparing Female and male responders, it is worth noting that Females had significantly worse attitude towards EM when compared to males. With 17 Females scoring in the bad category compared to 9 males meanwhile, only 7 females scored in the excellent category compared to 14 males (Table 5).

Table 1. Comparing level of attitude between males and females

		Level_of_attitude			Total
		Bad	Good	Excellent	
D1.Gender	Male	9	20	14	43
	Female	17	34	7	58
Total		26	54	21	101

Despite poor correlation between level of knowledge and attitude and willingness to pursue EM as a career, more females than males scored maybe or no when asked the question. This could be due to the above distribution.

Additionally when asked about factors influencing their choice of residency an overwhelming majority picked “high income potential” with influence from family/mentors and work-life balance in second and third place respectively.

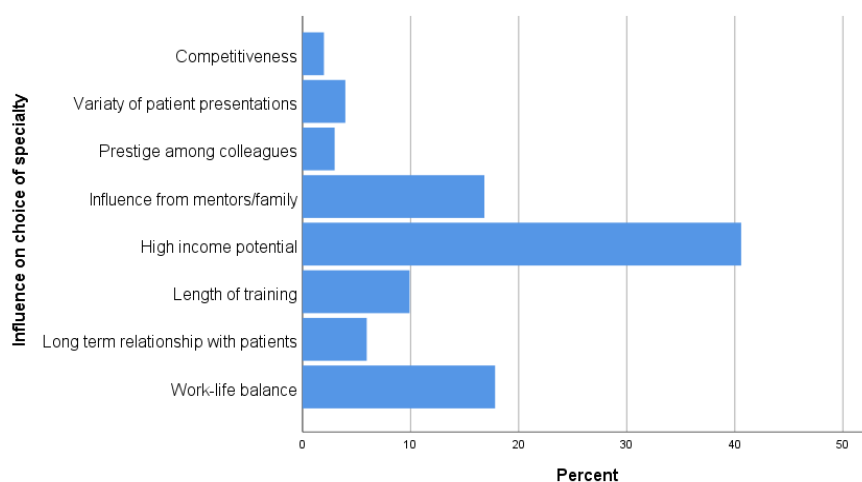


Figure 4: Influence on Choice of Specialty

A closer look into the above results would reveal that there is some gender discrepancy. While both agree that high income potential was the number one influencing factor, the second most important factor for females was work life balance while males responses emphasized on influence from family in the second place (Table 6)

Table 2 Comparison of Influence on choice of specialty between Genders

	D1.Gender		Total
	Male	Female	
Work-life balance	4	14	18
Long term relationship with patients	3	3	6
Length of training	3	7	10
High income potential	21	20	41
Influence from mentors/family	7	10	17
Prestige among colleagues	2	1	3
Variety of patient presentations	2	2	4
Competitiveness	1	1	2
Total	43	58	101

7. Discussion

This study follows similar studies done in Egypt and Nigeria and is the first of its kind in Ethiopia to the best of my knowledge.

Emergency Medicine is past its nascency stage in Ethiopia as an area of specialization. Establishment of the formal residency program in the country just over a decade ago was not followed by installation of EM as an independent department in our universities. Students at SPHMMC have their first exposure to EM towards the end of 4th year of Medical School when they do 6 weeks of clinical attachment to the department in their teaching hospital. This is followed by another 4 weeks attachment during their internship year. Other than that, there are no formal activities during medical school pertaining EM.

Table: 3 Milestones of Development in Emergency Medicine in Different countries

Country	Specialty recognition	Residency Training	National Organization	Board Examination
Ethiopia	2008	2010	2012	-
Kenya	2017	2017	2015	-
USA	1979	1970	1968	1980
Australia	1993	1984	1986	1993

It is in the light of the above that this study hypothesized that Medical interns, have poor knowledge of EM and consequently have negative attitude and bad perception of the discipline. However our findings rejected this hypothesis with findings that majority of our interns had good knowledge of Emergency Medicine and good attitude and Perception.

Compared to similar studies in Nigeria where EM is still to be recognized as a formal area of specialization, our students had better scores in all the variables. However the Egyptian Medical Students had better knowledge of Emergency Medicine and most of their students had excellent

Commented [Birkty22]: You get short on your discussion bcz you didn't analyse your results well. you need to analyse your results again and revise the discussion part. it ll be worrisome if this is gonna be your final thesis

attitude and perception. This could be attributed to the fact that the students in the Egyptian considered EM as a high paying specialization plus earlier exposure to EM in 2nd year of Medical School.

Despite the above results, the respondents were hesitant regarding willingness to take on EM as a career.

Table: 4. Willingness to Practice Emergency Medicine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	27	26.7	26.7	26.7
	Maybe	39	38.6	38.6	65.3
	Yes	35	34.7	34.7	100.0
	Total	101	100.0	100.0	

It is worth noting that despite the overall good attitude and perception of SPHMMC interns towards Emergency Medicine, majority of them consider it as a low paying career as denoted by their hesitancy to take on the career considering an overwhelming majority of the interns consider potential for good financial rewards as the main reason for choosing a specialty.

A positive moderate level relation was found between knowledge and attitude as those found to have good knowledge were more likely to have good attitude. However this didn't seem to have any relationship with the respondents' willingness to take on EM as a career.

In **conclusion**, despite majority of interns at SPHMMC showing good knowledge of Emergency Medicine and subsequently good attitude towards it, a significant number still have not decided

whether to pursue EM as a career. This maybe due to other confounding factors not identified in this study.

7.1. Strength and Limitations

The strength in this study is the response rate with majority of the study cohort responding to the invitation with good level of understanding. Additionally the questionnaire was clear and understandable.

However there were several limitations in this study, first Limitation is the sample size. Although this study uses the total sampling technique, it targeted just the medical interns in a single institution; it leaves room for further studies to see if the findings are representative of other medical students in the country. Additionally this study is cross sectional with no prospective data on the eventual career choice of these interns. Finally another limitation is the cutoff values set for “poor”, “bad” etc. Though these values are based on similer studies in other countries, the subjective nature of these values carries major limitations and requires further statistical testings in the local Ethiopian context.

7.3. Recommendation

Early exposure to EM in the formative years of Medical school delivered by a functioning EM department at their respective university can see this gap mitigated. This study recommends further studies to see to identify any missed confounding factors and to investigate if these findings are reproducible nationwide .

Commented [Birkty23]: recommend to do another qualitative study to explore the reason in depth.

Commented [Birkty24]: Conclusion and recommendations follow after discussion it should be strength and limitation

Commented [DJK25]: Noted

Commented [Birkty26]: Add conclusions before strength and limitation

Commented [DJK27]: Noted.

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9. Assurance of the principal investigator

I understand that as Principal Investigator, I have responsibility for the conduct of the study, the ethical clearance of the project and the protection of the rights and welfare of study participants.

Name of investigator: Justin Kawac, MD

Signature: _____

Date: _____

Approval of Clinical Advisor

Clinical Advisor - One: Birutawit Zemedet, MD

Signature: _____

Date: _____

Clinical Advisor – two: Hana Ketema, MD

Signature: _____

Date: _____

10. Annex

10.1 Questions available on Google Doc

Section 1 of 5: **INTRODUCTION**

Dear Dr,

My name is **Justin Kawac**, a final year Emergency and Critical Care resident at SPHMMC. I am inviting you to take part in this study as a member of the population upon which the future of medical profession in Ethiopia depends.

Purpose of the Study: Emergency Medicine is a fairly new area of specialization in Ethiopia. This research seeks to assess the impact this new area of practice has had among our final year medical students since its establishment in Ethiopia. We seek to assess how vast our intents are in Emergency Medicine, their interest in the field and how they value Emergency medicine as part of the health system. This will provide a benchmark upon we can make recommendations towards managing any identified gaps and plan for future prospects.

Confidentiality: This study will not collect any private information and your participation will remain confidential.

Thank you for taking 10 minutes of your time to participate.

Section 2 of 5: **ELECTRONIC CONSENT**

I have read the purpose of this study above. I understand that all information regarding me and all answers given by me are secret and confidential. I also understand that participation in this study is voluntary and my acceptance or refusal to participate will have no effect on me.

Section 3 of 5: **DEMOGRAPHIC INFORMATION**

1. Indicate your gender
2. Indicate your age

Section 4 of 5: **KNOWLEDGE OF EMERGENCY MEDICINE**

1. For how many years have you known that your teaching hospital offers Emergency Medicine as an area of specialization
2. Which of the following are subspecialties of Emergency Medicine
3. Which of the following is a patient unlikely to be seen in the ED?
 - a. 3/M presented with multiple injuries after RTA of 2 hours duration
 - b. 28/F Gravida 1 Para 0 in her 3rd trimester presented with sudden loss of Consciousness 30 minutes back
 - c. 47/M known oncologic malignancy patient scheduled for chemo therapy
 - d. 12/M presented with sudden onset Abnormal Body Movement
4. Select all procedures likely to be done in the ED
 - a. Perimortal Cesarean Section
 - b. Appendectomy

- c. Rapid sequence intubation
 - d. Canthectomy
 - e. Damage control laparotomy
 - f. Cholecystectomy
 - g. Gastrostomy
 - h. Chest thoracostomy
 - i. Percutaneous pacemaker placement
 - j. Intravenous pacemaker placement
5. Emergency physicians can discharge patients and provide them with follow up plans.
 6. Emergency physicians are non-specialized general practitioners.
 7. The emergency department is supervised by other specialties.
 8. Emergency physicians should refer all fractures to the orthopedics department.
 9. Emergency physicians should directly refer all cases of bleeding in pregnant women to the obstetrics and gynecology department.
 10. Emergency physicians should know how to manage common toxicological syndromes.
 11. Emergency physicians should know how to manage electrolyte disturbances.
 12. Emergency physicians can expertly manage a patient's airway.
 13. Emergency physicians can perform advanced interventional procedures (e.g., ultrasound guided temporary transvenous cardiac pacing).
 14. Emergency physicians should be able to use ultrasound in the workup of patients.
 15. Emergency physicians can perform cesarean sections in pregnant patients suffering from cardiac arrest (i.e., perimortem cesarean section)

Section 5 of 5 **ATTITUDE TOWARDS AND PERCEPTION OF EMERGENCY MEDICINE**

1. The presence of a Department of Emergency Medicine and trained emergency physicians is necessary for optimal patient outcome.
2. Having an emergency medicine rotation is valuable to future physicians regardless of their eventual specialty choice.
3. Emergency medicine doctors are particularly capable of providing comprehensive care.
4. The work of other hospital specializations is intellectually more stimulating than that of an emergency physician.
5. Other specialists (e.g., Cardiologists) should earn more money than emergency physicians.
6. I would feel frustrated if I could not practice in a field other than emergency medicine
7. Treating acute diseases is more interesting than counseling/caring for chronically ill patients.
8. If I were asked to include the three most fascinating medical specialties, I would include emergency medicine
9. Working in other specializations is more attractive than being an emergency physician.
10. A wide variety of problems encompassing all age groups is interesting
11. Emergency medicine physicians are not as competent as internists
12. Emergency medicine physicians should always consult a specialist for managing acutely ill patients.
13. The Ethiopian health system works better when emergency medicine physicians are an integral part of the system.

14. An emergency medicine physician should enjoy as much prestige as other specialists, e.g. Neurosurgeons
15. Emergency medicine is a valid discipline like internal medicine or surgery
16. What would influence your choice of specialty
17. Will you be willing to practice Emergency Medicine? (YES/MAYBE/NO)

Table 1: Scoring of the questions testing knowledge

No.	Question	SA	A	N	DA	SD
Kf05	Emergency physicians can discharge patients and provide them with follow up plans.	5	4	3	2	1
Kf06	Emergency physicians are non-specialized general practitioners.	1	2	3	4	5
Kf07	The emergency department should be supervised by other specialties.	1	2	3	4	5
Kf08	Emergency physicians should refer all fractures to the orthopedics department.	1	2	3	4	5
Kf09	Emergency physicians should directly refer all cases of bleeding in pregnant women to the obstetrics and gynecology department.	1	2	3	4	5
Kf10	Emergency physicians should know how to manage common toxicological syndromes.	5	4	3	2	1
Kf11	Emergency physicians should know how to manage electrolyte disturbances.	5	4	3	2	1
Kf12	Emergency physicians can expertly manage a patient's airway.	5	4	3	2	1
Kf13	Emergency physicians can perform advanced interventional procedures (e.g., ultrasound guided temporary transvenous cardiac pacing).	5	4	3	2	1

Commented [Birkty28]: where is the perception assessment part on the Questionnaire?
You need to omit it from your title if you didn't assess it.
And make sure your able to defend and justify your Questionnaire that it's standardised enough to assess knowledge, attitude and perception.

Commented [DJK29]: Noted and done

Kf14	Emergency physicians should be able to use ultrasound in the workup of patients.	5	4	3	2	1
kF15	Emergency physicians can perform cesarean sections in pregnant patients suffering from cardiac arrest (i.e., perimortem cesarean section)	5	4	3	2	1

Table 2: Scoring of the questions to test the Attitude towards and Perception of Emergency medicine

No.	Question	SA	A	N	D	SD
1	The presence of a Department of Emergency Medicine and trained emergency physicians is necessary for optimal patient outcome.	5	4	3	2	1
2.	Having an emergency medicine rotation is valuable to future physicians regardless of their eventual specialty choice.	5	4	3	2	1
3.	Emergency medicine doctors are particularly capable of providing comprehensive care.	5	4	3	2	1
4. (r)	The works of other hospital specialists are intellectually more stimulating than that of an emergency physician.	1	2	3	4	5
5. (r)	Other specialists (e.g., a Cardiologists) should earn more money than emergency physicians.	1	2	3	4	5
6. (r)	I would feel frustrated if I could not practice in a field other than emergency medicine	1	2	3	4	5
7.	Treating acute diseases is more interesting than counseling/caring for chronically ill patients.	5	4	3	2	1

8.	If I were asked to include the three most fascinating medical specialties, I would include emergency medicine	5	4	3	2	1
9. (r)	Working in other specialists is more attractive than being an emergency physician.	1	2	3	4	5
10.	A wide variety of problems encompassing all age groups is interesting	5	4	3	2	1
11. (r)	Emergency medicine physicians are not as competent as internists	1	2	3	4	5
12. (r)	An emergency medicine physician should always consult a specialist for managing acutely ill patients.	1	2	3	4	5
13.	The Ethiopian health system works better when emergency medicine physicians are an integral part of the system.	5	4	3	2	1
14.	An emergency medicine physician should enjoy as much prestige as other specialists, e.g. Neurosurgeons	5	4	3	2	1
15.	Emergency medicine is a valid discipline like internal medicine or surgery	5	4	3	2	1
16.	Will you be willing to practise Emergency Medicine?	5	4	3	2	1