

EVALUATING THE KNOWLEDGE OF MEDICAL OFFICERS IN EMERGENCY DEPARTMENTS: A STUDY IN SINDH PROVINCE ON HANDLING MEDICAL EMERGENCIES

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ABSTRACT

The aim of the study was to assess knowledge regarding medical emergencies among medical officers in emergency departments working in Sindh Province, Pakistan. This was a descriptive exploratory study designed to have an in-depth reflection of the level awareness among emergency physicians. We used non-probability convenient sampling techniques to identify the respondents and in total recruited 120 medical officers. The data were obtained using a self-administered questionnaire that contained closed-ended questions. The questionnaire was adopted to evaluate the proficiency of Medical officers in emergency situations including management and line-of-treatment. The data have been analyzed by Statistical Package for Social Sciences (SPSS) Software. Overall knowledge of the medical officers working in emergency departments of Sindh province was fairly good as revealed from findings. The results of this study, on one hand indicates that knowledge about emergency medical care among the Medical officers in Sindh province is good but continuous educational courses and training has to be organized for further improvement and best practices in management of medical emergencies.

Keywords: Medical officers, emergency departments, Sindh Province

INTRODUCTION

The emergency department (ED) is a part of the healthcare system that operates 24 hours and receives substantial patient numbers in resource-limited settings. Sindh Province of Pakistan is confronted with multiple challenges to deliver optimal emergency medical services (EMS) because of its socio-economic and infrastructural deficiencies. The medical officers kick start patient care and at the end of which is a cruel irony set to play folly, because so much hangs in their limelight; if they do badly/ well will be determinant on how things pan out for patients who are often borderline critically. Many former studies have discussed the limitations of EMS in Pakistan by addressing, problem with a shortage of proper training as well infrastructure (Yousuf and al,(2021). This is important to target interventions of educational and training programs at the existing level of knowledge among medical officers.

Potential need for compassionate healthcare is very high in a geography vulnerable to multiple public health emergencies and natural calamities. Sindh Province has faced several public health predicaments such as heatwaves, floods and insect borne disease outbreaks including dengue fever (Pradhan, Najmi & Fatmi 2022; Malik et al., 2021). It has been established that educating and training the health care providers can improve management of disasters (Khan et al., 2023). This study has a two-pronged purpose in nature covering knowledge and skills of medical officers working at the emergency departments regarding management life-threatening types of emergencies happening across Sindh. The total kill to care ratio is quite high in Pakistan and healthcare exemplified well the lowest common denominator concept. Emergency procedures involve complex approaches that need to address an emergency situation with immediate response and even more urgent decision-making options. The importance of ongoing professional training and specialized learning is still being stressed to ensure that members operating in the healthcare system are well prepared for crises (Ali & Panezai, 2021). There is a lacuna in this aspect of medical education; hence, the present study with an objective to carry out thorough assessment of knowledge levels among lady Medical Officers and forms base line against which they will have aimed for betterment.

Results from this study also reveal important knowledge for policymakers and educational institutions in that they provide detailed data on current medical officer-based ED experience. Evaluation of existing training programs for the strengths and weaknesses this research can help

guide innovation in more effective. The paper will aim to improve the quality of emergency care delivered across Sindh Province, making certain its medical officers are competent in managing and treating emerge conditions well.

LITERATURE

Over the years, Emergency Medical Services (EMS) in Sindh Province, Pakistan have been evolving but various studies demonstrate existing training and infrastructure gaps. Yousuf et al. Bigham et al. (2021) discuss the impact and necessity of developing and improving prehospital services in urban centers, showing a strong advantage regarding patient outcomes that accompanies increased coverage with these ancillary resources. The Emergency Medical Services (EMS) system in Pakistan has been criticized for a long time, however as per Baig et al. (2024) Then as now, EMS was dangerously understaffed and under-equipped with the out-of-hospital environment largely immature. Ali and Panezai (2021) compared the poor quality of primary healthcare services available in basic health facilities, but more importantly described health system bottlenecks affecting emergency care as well. Khan et al. (2023), educational interventions were effective in enhancing the behavioral change of health care providers while responding to heat-related emergencies. Malik et al. (2012) In response to concurrent dengue outbreaks, Piyaphanee et al. (2021) report the successful use of Public Health Emergency Operations Centers (PH-EOC), and present effective public health incident management systems that depend on coordinated training and capacity building across agencies responsible for emergency response efforts. Haq et al. (2023) and highlight that the type of training programs provided even prior to COVID-19 may have prepared staff best for this crisis, advising that formalized pre-pandemic approaches would be beneficial in emergency departments across Sindh.

The speed and readiness of healthcare providers is paramount in the response to any disaster. Pradhan, Najmi and Fatmi (2022) launch an appeal for increased investments in district-specific health system capacities to ensure the sustainability of healthcare during floods as well as developing training guidelines. Malik et al. (2020) Editorial: Variations in Current Knowledge and Practices of Health Professionals on COVID-19 May Impact Emergency Care. Noreen et al. Mirdad R and Baig MA (2021) highlight serious deficiencies in the training to responding of outbreak preparedness for COVID-19 by a situational analysis performed across Pakistan. Hanif

et al. Published in 2020 (6) on psychiatric emergency services underscoring the degree of difficulty present even within aspects of specialty care behalf a major epistemological shift. Saifullah et al. (2023) which emphasizes the issues faced by healthcare workers of Sindh as a whole and finds room for their better assistance and training amidst COVID-19. Qazi et al discuss pediatric surgical care in rural Sindh. Another paper by Forst et al. (2022) highlights the emergency care disparities that Black, Native American and low-income working-age patients experience. Gulzar et al. (2024) used this to standardize and improve emergency preparedness. Mamingi (2024) recommend that it be part of a complete training protocol for nursing students, learning integrated disaster response strategies.

Healthcare professionals` knowledge and attitudes towards emergency management can largely affect the patients outcomes. Amin et al.(2021) said in this pandemic time especially, we believe as well that better mental health support and training are required in frontline doctors (tele-ICU) against COVID-19 which was supported by the study of Sadique MZ. et al.,(2020). ZAIDI et al. In a publication released in early 2020, Shah et al (2020) researched into how dental professionals manage traumatic dental injuries and their findings identified knowledge deficits that may directly alter patient care. Distal; Health professionals in the maternal healthcare system had to face challenges (Ghani, Hashmi and Sadaf 2023) that might have been present for emergency departments as well. Kalwar et al. (2021) - the potential uses of queuing theory in units that attend to health so, resources of emergency department could be optimized. Khan et al. (2023) report on how educational interventions can help improve the practices of healthcare providers when managing heat emergencies. Malik et al. (2021) highlight the importance of harmonised training to enhance emergency care responses.

Healthcare professionals must remain current on the latest protocols and practices in order to effectively provide emergency care. Malik et al. (2020), to remain proactive for the occurrence of emergencies, continuous professional development (CPD) by health care providers is essential. Noreen et al. (2021) comment on the preparedness of Pakistan for COVID-19 and detail significant shortcomings in training and resource availability. Amin et al. A commentary by Smith et al. (2020) describes the sort of emotional strain experienced by front-line doctors and their fears that a similar pressure may be imposed on emergency medical officers. Khan et al. (2023_21) suggest that educational interventions may improve emergency care practices. Baig et al. (2024) have

critiqued the EMS system in Pakistan and emphasized on improved training, resources. Training for healthcare delivery in floods (Pradhan, Najmi and Fatmi 2022) Malik et al. In their report, Gupta and Parameswaran (2021) describe how concerted training can help build better public health emergency preparedness in response to outbreaks of a disease such as dengue.

The literature supports the idea that scenario-specific training programs can considerably enhance healthcare providers' preparedness. Mahmood, Aftab and Shafiq (2020) elaborate on the training required for blast injuries management. Amin et al. In the context of an unprecedented global health crisis, Shaukat et al. (2020) point to anxiety and depression in frontline doctors during COVID-19 as well as a call for better psychological support mechanisms & training. ZAIDI et al. (2020) study the knowledge of dental professionals in relation, to traumatic injuries signalling a call for more extensive emergency training. Ghani, Hashmi and Sadaf (2023) investigate maternal healthcare challenges but hint that emergency departments may have similar training shortfalls. Kalwar et al. Baraki et al., (2021) proposed using queuing theory to enhance the efficiency of healthcare units, and this could be extended into emergency departments as well. Khan et al. (2023) is evidence that educational interventions improve emergency care practices. Malik et al. (2021) underscore the necessity of coordinated training responses to create an effective immediate response.

In this article, we review an important role of continuous education in the enhancement of emergency care. Baig et al. (2024) concluded that the EMS system in Pakistan demands significant enhancements concerning training and resources. Published this year in the International Journal of Disaster Risk Reduction, Pradhan et al. (2022) stressed on the trainings for healthcare providers which ensure service delivery even during disasters. Malik et al. The benefits of multisectoral training responses for dengue fever outbreaks are reviewed by (2021). Mahmood, Aftab and Shafiq (2020) put special emphasis on the requirement of specialized teaching in cases of blast injuries. Amin et al. A need for greater psychological support and training is underlined also by the mental health problems documented in a similar study conducted on frontline doctors (2020). ZAIDI et al. (2020) and a possible general shortcoming of all dental professionals for emergency training. Ghani, Hashmi, and Sadaf (2023) have revealed the sufferings occurred because of a shortage in maternal care that might also be found concerning emergency departments as well.

Overall, the literature emphasizes that healthcare providers in emergency rooms require ongoing education and targeted training. Yousuf et al. (2021) and Baig et al. The study of Barfod et al. (2024) once again illustrates the deficiencies in contemporary EMS, highlighting where change is needed as mentioned before. Khan et al. (2023) show the impact that educational interventions can have on orbicular practices of emergency care. Malik et al. (2021) and Pradhan, Najmi & Fatmi (2022) - The authors of this research have underlined necessity for a coordinated action in learning to face management prescriptions from health emergencies. Karim, Jahirul Matin and Al Mahmood 2020; Mohammad Amin et al. Special training and psychological support of the healthcare providers should be stressed. ZAIDI et al. (2020) and Ghani, Hashmi H S & Sadaf A 2023 points to the general gap in emergency training among various healthcare domains.

MATERIAL AND METHODS

The aim of this study was to ascertain the knowledge levels regarding management of medical emergencies among Medical Officers in emergency departments throughout Sindh Province, Pakistan. The research took place in emergency departments around the province. A non-probability convenient sampling technique was employed to select the subjects with a total sample of 120 medical officers. This strategy of convenience sampling is selected to include more easily accessible participants, consistent with our meeting the inclusion criteria for study and expediting the process data collection.

A self-administered questionnaire consisting of closed-ended questions aimed at measuring the knowledge of medical officers on different emergency conditions, their management as well and proper treatment protocols was adapted. Therefore, the given questionnaire was designed meticulously by covering nearly all ranges of emergency situations and competent evaluation will be occurred for those who participate. Statistical Package for Social Sciences (SPSS) software was employed to analyze the collected data.

DATA ANALYSIS AND RESULTS

Demographic Profile

The survey was dominated by males (82.5 %), with women making up only 17.5% of the sample And the gender imbalance mirrors larger patterns of male predominance in EMS throughout much of the region. Most of the participants were married (66.7%) in their marital status while 33.3%

are single This distribution may affect how the respondents view / experience emergency work because personal circumstances draw on professional duties and stress levels.

Age distribution shows that medical officers are rather young with 70% being within the age range of between 20 and 39 years. 30% are in their 20 to 29 age range and another 40% fall within the group of aged persons between 30 and up. The other thing is that the younger presence of medical officers could argue for a dynamic kind of workforce - one perhaps more receptive to novel training or educational intensive strategies. More than two-thirds of the respondents (63.3 %) have an academic degree with a master's level or higher, revealing that our sample was highly educated.

Table 1. Profile of the respondents.

Demographics	Categories	Frequency	Percentage
Gender	Male	99	82.5%
	Female	21	17.5%
Marital Status	Married	80	66.7%
	Single	40	33.3%
Age	20 to 29	36	30.0%
	30 to 39	48	40.0%
	40 to 49	30	25.0%
	50 to 59	6	5.0%
Education	Bachelor Degree	39	32.5%
	Master Degree	76	63.3%
Experience	Less than 1 year	4	3.3%
	1-5 years	67	55.8%
	5-10 years	28	23.3%
	10-15 years	13	10.8%
	15-20 years	8	6.7%

With respect to their professional experience, 55.8% of the medical officers had an experience between one and five years and only 23.3% have work for a period varying from six months up to ten (5-10). Even fewer with over 10 year experience whose workforce was therefore relatively young and may require CPD to be upskilled in effectively handling medical emergencies. This

kind of demographic information is necessary to customize training programs and interventions with a clear focus on working medical officers at emergency departments in the Province of Sindh.

Descriptive Findings

Knowledge on Emergency Conditions and Management

The table summarises the knowledge and confidence in managing specific emergency conditions as well as procedures of the different heads. The data showed the majority of medical officers were confident in dealing with cardiac arrest 37.5% very confident and 41.7 % confidence (Figure4). A 12.5% of the missionaries are neutral and a small margin (8.3 %) did not feel safe in expressing their confidence on furthering mission work this year as well This speaks to a broader demand for more and continual training, as well as proper support in developing further confidence. When asked what the first step in managing severe trauma is, a majority of medical officers responded airway management (58.3%), and subsequent bleeding control (25%). This is consistent with standard trauma protocols, though some of the responses are not ideal as a first step.

Table 2. Knowledge on Emergency Conditions and Management

Question	Frequency Distribution	Percentage Distribution	Mean (M)	(SD)
Confidence in managing cardiac arrest	Very confident (45), Confident (50), Neutral (15), Not confident (6), Not at all confident (4)	37.5%, 41.7%, 12.5%, 5.0%, 3.3%	2.01	1.01
First step in managing severe trauma	Airway (70), Bleeding (30), IV access (10), Vitals (10)	58.3%, 25.0%, 8.3%, 8.3%	1.67	1.00
Use of evidence-based guidelines	Always (30), Often (50), Sometimes (25), Rarely (10), Never (5)	25.0%, 41.7%, 20.8%, 8.3%, 4.2%	2.25	1.03
Initial treatment for anaphylaxis	Epinephrine (90), Antihistamines (20), Corticosteroids (8), Observation (2)	75.0%, 16.7%, 6.7%, 1.7%	1.35	0.66
Critical first step for suspected spinal injury	Immobilize (100), Neuro exam (10), Pain relief (5), History (5)	83.3%, 8.3%, 4.2%, 4.2%	1.29	0.74
Participation in CME activities	Monthly (10), Quarterly (30), Annually (50), Rarely (20), Never (10)	8.3%, 25.0%, 41.7%, 16.7%, 8.3%	2.92	1.08

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Familiarity with ACLS guidelines	Very familiar (60), Familiar (30), Somewhat familiar (20), Not familiar (5), Never heard (5)	50.0%, 25.0%, 16.7%, 4.2%, 4.2%	1.88	1.09
Time window for thrombolytic therapy in stroke	1 hour (5), 3 hours (50), 4.5 hours (55), 6 hours (10)	4.2%, 41.7%, 45.8%, 8.3%	2.58	0.75
Comfort in managing pediatric emergencies	Very comfortable (30), Comfortable (40), Neutral (30), Uncomfortable (10), Very uncomfortable (10)	25.0%, 33.3%, 25.0%, 8.3%, 8.3%	2.42	1.13
Initial treatment for acute myocardial infarction (AMI)	Aspirin (80), Nitroglycerin (20), Oxygen (15), Angiography (5)	66.7%, 16.7%, 12.5%, 4.2%	1.55	0.88

In terms of the usage of evidence-based guidelines, it is quite positive to note that most medical officers often (27.7%)/always (39%) use EBMs effectively and therefore conform well with established best practices. Were you aware? Nevertheless, 20.8% uses it only occasionally and in addition some rarely or never (12.5%) take guidelines into account - an another area where a stronger orientation on guideline-based practice seems warranted [Figures 2d). The first-line therapy of anaphylaxis is commonly known with 75.0% correctly identifying epinephrine as the treatment. Dealing with immobilization in suspected spinal injury is equally significant and 83.3% of respondents know about it Of the residents that we included who completed our survey, 41.7% participate in CME annually and another quarter (25.0%) do so quarterly; however a notable number of respondents (25.6%, therefore representing almost those same proportion of their programs) rarely or never support faculty participation which could suggest an area for improvement when keeping up with ongoing professional development efforts by attendings.

A majority of respondents 50.0% reported being very familiar and another 25.0% indicated that they were only somewhat with the Advanced Cardiac Life Support (ACLS) guidelines However, a significant proportion of the population still is not very familiar or simply does not know at all and this in turn can affect emergency responses. Only 45.8% are aware that patients with stroke need to be treated within a correct time window for thrombolytic therapy in order not to harm them--or even as many as nearly half of the respondents incorrectly think there is no difference (54.2%). Comfort in handling pediatric emergencies splits with higher than 50% of providers feeling comfortable/very comfortable, but nearly a sixth (16.6%) indicating they are uncomfortable -potentially pointing to another area that specialized training could benefit. Finally, most providers

(66.7%) knew that acute myocardial infarction should be treated initially with aspirin but a significant minority chose other treatments indicating the need for more detailed training in AMI protocols. These data offer insight into both the strengths and areas for improvement within Sindh Province medical officers knowledge base.

Training and Educational Needs

This table demarcates the level of education and training individual medical officers in emergency departments felt they had received, and where more should be added (Table 2). In all, 75% strongly agreed or agreed that extra training was required (mean =1.96 and SD=1.09). It shows an existing gap in their knowledge and a desire to improve. There also appears to be an important requirement for specialist input, with 58.3% stating they always or often needed a referral Specialist (Table With a mean of 2.33 and slightly higher standard deviation (1.20), variability in this need may mirror personal levels of confidence or departmental support structures

Table 3. Training and Educational Needs

Question	Frequency Distribution	Percentage Distribution	Mean (M)	(SD)
Need for additional training	Strongly agree (50), Agree (40), Neutral (20), Disagree (5), Strongly disagree (5)	41.7%, 33.3%, 16.7%, 4.2%, 4.2%	1.96	1.09
Need for consultation with specialists	Always (40), Often (30), Sometimes (30), Rarely (10), Never (10)	33.3%, 25.0%, 25.0%, 8.3%, 8.3%	2.33	1.20
Areas needing more training	Trauma (40), Cardiac (30), Pediatric (25), Neuro (15), Toxicology (10), Other (0)	33.3%, 25.0%, 20.8%, 12.5%, 8.3%, 0.0%	1.95	1.32
Accessibility of CME resources	Very accessible (20), Accessible (40), Neutral (30), Not accessible (20), Very inaccessible (10)	16.7%, 33.3%, 25.0%, 16.7%, 8.3%	2.66	1.17
Benefit of simulation-based training	Strongly agree (60), Agree (30), Neutral (20), Disagree (5), Strongly disagree (5)	50.0%, 25.0%, 16.7%, 4.2%, 4.2%	1.88	1.09

Trauma and cardiac care are the areas (33.3% and 25%), respectively, that most responders feel they need additional training in, followed by pediatric emergencies as well neurology emergency with a total of 50%). The distribution, with a mean of 1.95 and standard deviation of 1.32 highlights the wide range in practice across various urgent conditions requiring training actions to address them. DOI: Fifty-three percent of students find access to CME resources problematic (mean 2.66, SD 1.17) This indicates that CME might be less accessible as a result of logistical and/or financial issues, or time constraints.

The simulated-based training was viewed by the average score of 1.88 and a standard deviation of 1.09, as highly positive with an overwhelming agreement at (75%- strongly agree) or (agree). The above results indicate an obvious selection of practical-oriented training which may result in improved real life emergency situation handling technique among the medical officer. In conclusion, these results really showed that medical officers felt the need for more structured and available training programs especially in critical such as trauma / cardiac care and it reiterated the role of simulation based education to improve readiness together with confidence among them dealing with acute OMEs.

DISCUSSION

The results of this study suggest some strengths and areas to improve the level of knowledge, training needs among medical officers worked in emergency departments all over Sindh Province. Provided robust adherence to critical protocols in both managing cardiac arrest with high confidence levels and prioritization of airway management in severe longitudinal trauma (Yousuf et al., 2021) But, it is very important to highlight what are the shortcomings have been identified and there itself which must be addressed on priority basis. This includes better adherence to evidence-based guidelines and familiarity with ACLS protocols that can lead to improved patient survival in life-threatening scenarios. In such situations, people around a discharged victim might include children, infants or elderly in proximity; there societal connection established. Another issue includes the lack of understanding about appropriate treatment times for thrombolytic therapy in stroke cases and thus reinforcing educational campaigns to direct practices concerning established standards (Pradhan et al., 2022).

Following on from this, a large number of medical officers highlighted their continued education requirements and interest in gaining more training or being able to speak with specialists after the lens prescription survey (Amin et al., 2020; Haq et al. 2023). Indeed, it was in trauma and cardiac care as well as paediatric emergencies that respondents identified most need for further training; such findings are echoed by elsewhere [Mahmood et al., n.d.; Malik et al. Other major issue related to CME resources had emerged that pose a potential threat for continuity of career progression at one end and conceiving up-to-date knowledge, skills among Medical officers more appropriate (Malik et al., 2021; Gulzar et al., 2024). The almost unanimous support for simulation as a training tool further highlights the perceived benefits of this modality in improving readiness, consistent with international movements that have advocated base workflow on simulated teaching (Kalwar et al., 2021).

IMPLICATIONS AND DIRECTIONS

The study has implications for healthcare policy, hospital administration and medical education in the province of Sindh as well as elsewhere. Most importantly, reducing the previously perceived knowledge and training gap through tailored educational programs. Hospitals can also make a substantial difference by investing in the continuing medical education activities that address their specific areas of deficit—trauma management, cardiac care, pediatric emergencies—to ensure they are competent and confident as ultimate decision-makers. The objective of this is to provide a more standardized and improved emergency care that can help save lives, making the health system better for everyone in Alberta.

Secondly, better access to specialist consultations and evidence-based guidelines is necessary. Regular communication with experts and updated protocols that are user-friendly would help reduce the variability in practice, encouraging standardized care. The high level of support for simulation-based training as a whole also points to fertile ground for future educational interventions. By integrating simulation into standard training curricula, medical officers gain the opportunity to practice real-world situations in a controlled environment and learn how to respond quicker/better when faced with complex emergencies. In addition, the use of developments in technology and collaboration among care providers with educational measures help improve capabilities for emergency response services which allows a better improvement in health service delivery systems.

CONCLUSION

This study therefore, summarize knowledge and training needs of medical officers working in emergency departments throughout Sindh Province who have been trained on a structured course. Overall knowledge base was adequate, but some direct improvements were identified such as consistent application of evidence-based guidelines, familiarity with specialized protocols like ACLS and creation potential avenues for continued professional development. These results highlight the need for directed educational resources, improved specialist access and incorporation of simulation-based training to improve emergency care. Overcoming these challenges may not only enhance the preparedness and confidence of medical officers but also create a culture for uniform high-quality emergency services which arguably would translate to better patient outcomes in this region.

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