

An Overview of the State of Emergency Medicine in Syria

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ABSTRACT

Introduction: Emergency medicine is a developing specialty in low-to-middle income countries. The specialty was in its infancy in Syria when the war started a decade ago. Syria has since experienced civil war, unrest, famine, and financial collapse that has strained its healthcare system. There is limited research and information regarding Emergency Medicine residencies and training in Syria. Therefore, this article describes the growing and current state of Emergency Medicine and its training in Syria.

Methods: A mixed methods approach using a systematic review and semi-structure interviews was utilized. MEDLINE, EMBASE and PsychINFO were searched from inception until March 9, 2022. Eligible studies were specific to emergency medicine and discussed the training of emergency medicine physicians in Syria. Semi-structured key informant interviews and a review of the Ministry of Health website were utilized to supplement information regarding the structure of emergency medicine residency in Syria.

Results: Out of 252 unique citations identified, none described emergency medicine training in Syria. The most common articles identified were case reports (40), studies of mental health (34) and nicotine use (33). Public information from the Ministry of Health website was used to gather further information regarding the current state of healthcare in Syria; however, it provided little data specific to emergency medicine. Semi-structured interviews provided additional information regarding emergency medicine training in Syria. This revealed that prior to the 2011 onset of war, Syrian EM had begun to develop and included residency training, Arab Board certification and the establishment of a national specialist society. However, it also revealed, that in Syria, emergency medicine deteriorated much faster than other sectors of health care.

Conclusion: As of now, Emergency Medicine remains in a very early phase of development as a field and medical specialty. It requires renewed commitment, funding, and development. We recommend expanding virtual emergency medicine education, partnering with established emergency medicine training programs across the region and the world, and increasing collaboration across borders to further develop emergency medicine within Syria.

Key words: Emergency Medicine, development, Syria

INTRODUCTION

Emergency medicine (EM) in many countries across the world is a specialty that is still gaining recognition. It initially developed in the western world as early as in the late 1960's, many countries still do not currently have EM as a recognized specialty, or only have programs in their infancy.

Syria has experienced disproportionate conflict,

unrest and famine that has strained its healthcare system. According to the Ministry of Health, there are an estimated 30,875 physicians in Syria. There are 11 medical schools and 504 public and private hospitals with a total of 30,571 beds and an estimated 3,021,842 Emergency Department (ED) patient visits in 2019¹; however, these estimates do not factor in how recent unrest, civil war and conflict within the region has resulted in decreased medical capacity over the last decade.

The development of EM is important in creating resilient healthcare systems. Injuries commonly seen in the ED, such as road traffic accidents, are leading causes of morbidity and mortality in Low to Middle income countries (LMIC such as Syria¹).

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Inaccessibility of medical care places a higher burden of healthcare needs on EM providers, as the ED remains the ultimate source of care that is open at all times.

We aim to highlight what is known about EM in Syria and the areas of development still needed to improve EM.

MATERIALS & METHODS

MEDLINE, EMBASE and PsychINFO were searched from inception until March 9, 2022. Eligible studies (1) discussed EM training programs in Syria and (2) included information regarding Syria's healthcare system.

The following terms were used for the search process.

"Syria[MeSH] AND "Specialization[MAJR]

("Syria"[MeSH]) AND (medicine OR medical OR "Specialization"[MAJR]) AND (residency OR "residents OR physicians)

(SYRIA OR syrian) AND ("internship and residency"[MeSH Terms] OR "residency" OR "residents" OR "fellowship" OR "specialist" OR "specialists")

Semi-structured key informant interviews were conducted with two Syrian physicians who graduated from a Ministry of Health EM residency program in Damascus in 2007 and 2009. Interviews were conducted in Arabic and spanned three hours. The interviews were translated to English by a bilingual coauthor. A review of the Ministry of Health website was utilized to supplement information regarding the structure of EM residency and its current healthcare system in Syria. Arabic text was translated into English by a bilingual coauthor.

RESULTS & DISCUSSION

Systematic review of relevant EM literature in Syria

Out of 252 unique citations identified, two articles passed initial screening. After full-text review, no articles were included as none described EM training in Syria. Popular topics included case reports (40), mental health (34), nicotine/smoking (33), and refugee

health (30).

Public information from the Ministry of Health (MOH) and information from semi-structured key informant interviews were used to gather information detailed below.

History and structure of Emergency Medicine to the present

Emergency medicine specialist training programs were established in Syria in 1994 by the Ministry of Health.

The first class of EM residents graduated in 1998 from the government hospital, Al Moushtahid, in Damascus. By then, the specialty training had spread out gradually to other regions of the country in other MOH operated hospitals in major cities in Syria, such as Aleppo, Latakia, and Dar'aa. By 2008, the ministry of higher education started a university-based training program in Al Mouwassat University Hospital, also in Damascus.

In 2014, the Syrian Board of Emergency Medicine was established by the Syrian Commission for Medical Specialties (SCMS). All specialists, including emergency medicine are diplomats of their respective specialties after taking the required exams. At this time, the Ministries of Health and Higher Education reorganized medical teaching and training to be included within the Ministry of Health. This was an attempt to centralize and standardize medical education.

Another entity, named the Syrian Board of Medical Specialties (SBMS) claims to operate in the opposition held areas of Northern Syria after the recent civil war started. The information was obtained solely from their website and editorial inquiry efforts to contact the organization were not replied to. However, their website (<https://sboms.org/en/homepage/>) clearly makes no mention of EM as a recognized specialty.

The Arab Council for Health Specializations (ACHS) was established in 1978 by the Council of Arab Health Ministers under the umbrella of the League of Arab States. It created the Arab Board and its goal was to offer high quality board certification to medical graduates from Arab countries and prevent migration of physicians outside the Arab World.¹¹ Emergency

Medicine delivery in Syria accordingly followed the Anglo-American model in that patients are brought to the hospital-based emergency department for higher level of care. The prehospital care, although basic or rudimentary, is administered by non-physician providers.⁹

According to the key informants interviewed, these providers are in ambulances and are typically nurses who are trained in trauma life support or ICU care. In every directorship in the country the MOH has established “emergency and ambulance center”. They are reached by a “110” phone call. Depending on availability, the ambulances dispatched are staffed with nurses. These call centers are staffed with physicians on-call who are mostly EM physicians. They assist by directing the ambulance over the phone or in some instances they dispatch physicians with the ambulances. According to interviewee, this is at the discretion of the physician.

In addition to the “110” call center set up by the MOH, there are separate red crescent call centers reached by calling “133”. Those are staffed by medical and non-medical volunteers who have taken resuscitation courses.

The responses between the MOH 110 call center and the 133 red crescent center is coordinated by the call center themselves. There is currently a protocol being written and finalized between the MOH and Syrian Red Crescent.

The EM specialty training in Syrian is a four-year residency consisting of rotations lasting 2 to 6 months including emergency services, surgical training, anesthesia, intensive care unit, cardiology, toxicology, and orthopedics.

Since 1994 when it was first recognized, EM has remained in the developing stages. Its academic structure, quality assurance and peer review and other elements of development are non-existent. These shortcomings **compromise the quality and support needed for proper training and the development of the field and specialty.**

According to the interviewees, the EM curriculum is not standardized across the country and there is poor access to adequate and scheduled teaching. Every department is responsible for teaching and

training EM residents in their respective specialty (in the ED). Residents training in EM is inconsistent and compromised. EM residents usually do not have EM-boarded, EM-trained, or EM-experienced faculty supervising them, or any attending as a matter of fact, on-site or even remotely. EM residents need to rely on the general surgery or orthopedic surgery attending or trainees when on-call and available for phone consultation when needed. An internal medicine attending is available for phone consultation but not usually present in the ED.

The textbook used most is a translated out-of-date older version of Tintinalli’s Emergency Medicine that was translated from English to Arabic by local EM residents and then printed and distributed; and until now, that old edition is the main source.

Calls for EM subspecialty training appeared in 2021 in publications of the Syrian Commission for Medical Specialties (SCMS). Their rationale for doing so remains unclear and is somewhat perplexing, at such a difficult time for the primary specialty in Syria, with a severe shortage for emergency physicians. The commission advertised for 3-year positions in intensive care training, orthopedic surgery, general surgery, and burn and reconstructive surgery. Key specialty leaders and contacts in Syria were unable to secure a clarification for this matter or to verify if any emergency physicians were accepted into these positions.

Unfortunately, the relationship of EM with other specialties is poor and there is little acceptance of the specialty in Syria overall. A survey done among medical students at Aleppo University in 2019 showed that male students are more likely to select surgical or internal medicine specialties over other specialties including emergency medicine. It was found that influencing factors included specialty interest and anticipated income.² It is unclear if medical students rotate through ED or have exposure to it prior to applying for residency. The lack of interest in EM is mostly economical. The private hospitals do not staff their ED’s with EM-trained physicians. They prefer to choose less costly recent medical school graduates with no post graduate training. The public sector salaries are very low, especially considering the triple-digit inflation rampaging the country.

The result is that most EM graduates choose to travel abroad, mostly to the Gulf countries where they are well received with good salaries and better recognition. A recent survey showed that there are 40 EM graduates practicing in the Gulf. Most of them are in Qatar.

In regard to anticipated income, there is competition with other specialties for reimbursement. According to the interviews of key contacts in the field of EM in Syria, the monthly income from EM providers was around \$100/ month until 2012. After the onset of war and due to devaluation of the currency, the monthly salary dropped to levels below \$50 despite additional incentives given to EM specialists. This US dollars value continued to decline due to the ongoing devaluation of the Syrian national currency. Cost of living was also largely and rapidly on the rise. There were extremely limited opportunities to work in private hospitals. Many specialists travel and move to the Arab Gulf countries where they can be paid significantly higher salaries. According to the interviews, the monthly salaries range from \$4,000 to \$14,000.

Professional organizations and activity

The Syrian Emergency Medicine Association was established in 2004 by a residency graduate trained in the United States. He translated the ATLS book to Arabic, started organizing trauma courses that resembled ATLS with a makeshift animal lab. The association held annual conferences until the civil war erupted.

In 2007, the European Cardiopulmonary resuscitation training was established. A large number of physicians participated in the training and trained others who received various certificates including Advanced Life Support (ALS), Major Incident Medical Management and Support (MIMMS). In Hama city, an international Advanced Trauma Life Support (ATLS) training center was established in 2009 which allowed healthcare professionals to become ATLS-certified. This was interrupted by the war before full-scale development.

In 2009, another Syrian ABEM-certified attending physician, also trained in the USA, helped organize the annual Syrian EM conference.

Additionally, through the efforts of Syrian American-boarded EM physician specialists, an executive directive was written to define and identify the scope of practice of EM in Syria, which greatly helped in protecting EM specialists from lawsuits.

Challenges to the development of Emergency Medicine in Syria

There is a myriad of challenges that exist in the development of EM as a respected specialty in Syria. The lack of recognition by other specialties poses challenges for patient care, collegiality, and teamwork. The competition amongst physicians for reimbursement also impeded higher reimbursement.

Low insurance reimbursement or governmental funding have led EM graduates and other physicians to migrate for markedly more competitive salaries abroad.

Most importantly, there is no fundamental structure of the specialty. There is little knowledge of the subject, no structured academic training, and no real continuing medical education of EM in Syria.

Devastation and challenges brought in by the war

The ongoing war and armed conflicts forced the current specialists out of Syria and diverted providers from pursuing EM, despite an increased demand for EM and trauma services. There have been few to no resident applicants to EM in the last several years. All assemblies and conferences have ceased during the war and international scientific and education cooperation have not been organized since 2010.

During the war-torn years, only 5 EM specialists worked in the single-government hospital in Aleppo. They had no EM or off-service residents assisting them. During mass-casualty incidents, those specialists performed mainly triage & focused on ED decompression.

According to one interviewee, multiple mass casualty events would occur daily with at least 30 cases of trauma and 100 minor injuries per disaster. This exhausted the attending emergency physicians since they were severely understaffed and overworked.

Also, there were attacks on hospitals and clinics

leading to destruction of these facilities as well as multiple provider casualties. It is reported that between 2011 and 2018, 611 attacks were made on healthcare facilities resulting in the deaths of 847 medical professionals^[E]. This decrease in healthcare personnel caused strain on the system as well as the remaining medical professionals who were attempting to make-up for the gap in manpower. One in 10 of healthcare workers also reported getting personal threats because of their occupation and feared going to work due to targeted attacks, forcing some providers to quit.⁶ Two thirds of Syria's medically trained staff have fled Syria since the crisis began in 2011.⁵

A study done in 2018 showed significant burnout amongst residents affiliated with three residency programs in Syria: Ministry of Higher Education, Ministry of Health, and Ministry of Defense as well as private hospitals. Approximately 4.4% of 3,350 residents surveyed were in the field of EM and amongst them 89% were experiencing emotional exhaustion, 34% depersonalization, and only 12.3% felt a sense of personal accomplishment.³

The war also caused a shortage of drugs and medical supplies due to the tremendous deterioration in the Syrian economy and to the rampant poverty, which both were worsened by the international sanctions that were put in place. These shortages were further exacerbated by the destruction of healthcare facilities and of the Syrian pharmaceutical industry manufacturing plants, leaving less than 64% of hospitals and 52% of primary healthcare facilities in Syria operational.⁸ By 2013, 78% of Syria's ambulances had been seriously damaged or destroyed, further limiting access to healthcare.⁷

Hope & Priorities for the future

EM in Syria has persisted despite obstacles limiting its development secondary to civil war, international conflict interventions, and the displacement of refugees. Over more than a decade, the training of EM residents has been stalled or limited and the retainment of existing EM attendings has proven difficult. The need for improvement of education and up-to-date knowledge in EM is necessary to continue the practice of the specialty in Syria. We also recommend attention to improving prehospital services, especially since EMS, as most of the healthcare system, were destroyed

by the war:

It is increasingly difficult to support EM in Syria in the current crisis. We recommend expanding continuing education, its activities, and its certificates to online formats. The availability of virtual teaching and online remote work has greatly expanded capacity to reach more austere environments, including providers in Syria. Such platforms can support providers who have been restricted by grave constraints such as security, travel time or costs. We recommend participation in research and educational materials be routinely updated through online access to current scientific literature. This may be best accomplished by partnering with established international EM research group or university which may benefit both parties.

This is however no less than heavily constrained due to international sanctions against Syria including travel and visitor visa restrictions for exchange and prospective participation in training and education outside Syria.

CONCLUSION

In summary, EM in Syria remains early within the "Developing Emergency Care System Phase" in the classification published by Dr Jeff Arnold nearly 3 decades ago.⁹ Syria recognizes the specialty and has a specialist society and has board certification in the specialty. It has no journal and no ongoing conferences although the annual conference has just resumed in 2022. EM continues to face major challenges sustaining proper quality and development in specialist training and education as well as in professional and clinical service. The specialty has also suffered tremendous setbacks during the last decade of civil war due to migration of specialists abroad and the lack of new graduates.

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