Original Article

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Quick Response Code:

Website:
www.jehp.net

DOI:
10.4103/jehp.jehp_1566_20

Barriers and requirements in the off-line emergency medical protocols implementation in Iranian Pre-hospital system: A qualitative study

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Received: 02-12-2020
Accepted: 04-01-2021
Published: 31-08-2021

Abstract:

BACKGROUND: To avoid making decisions based on the unproven opinions of emergency medical technicians (EMTs), many emergency medical service (EMS) systems rely on emergency medical protocols. As protocol-based on-scene decision-making is influenced by many challenges, identifying these challenges can result in providing appropriate conditions for EMTs' decision-making. Therefore, this study aimed to identify the barriers and requirements in the off-line emergency medical protocols implementation m in the prehospital emergency medical system.

MATERIALS AND METHODS: To conduct this study, qualitative content analysis using 10 field observations, 22 interviews, and 2 rounds of focus group discussions was applied. The duration of interviews lasted from October 2019 to January 2020. The Graneheim and Lundman approach was used to analyze the data.

RESULTS: Seven categories (15 subcategories) including education and awareness (professional training and education and community-based education); attitudes (professional attitude and community attitude); interactions and coordination (interpersonal interactions, organizational interferences, and community's interactions); rules and instructions (instructions and supportive rules); control system (monitoring and evaluation and motivational system); accessibility (recourses and communication); and organization (structure and process) were obtained as the obstacles and challenges in the offline emergency medical protocol implementation in the prehospital system.

CONCLUSIONS: There are many challenges in implementing offline emergency medical protocols in the prehospital emergency system. To achieve the effectiveness and efficiency of offline prehospital emergency protocols, it is necessary to facilitate these challenges and improve the EMTs' knowledge, attitude, and performance through cooperative and skill-based education. The findings of this study can be useful for EMS systems from national to local levels.

Keywords:

Decision-making, emergency medical services, emergency medical technician, offline protocol, prehospital emergency

Introduction

Out of the hospitals, injuries and acute illnesses may be lead to disability and death.[1] To prevent disability and death, staff in emergency medical services (EMS) provide proper and on-time services at the scene and on route transfer to hospital.[2] Sometimes prehospital services must be provided when a patient is in complex and life-threatening conditions.[3] Hence, rapid and accurate emergency medical technicians' (EMTs) decisions are necessary to manage the scene, stabilize the patient (s),

How to cite this article: Safi-Keykaleh M, Khorasani-Zavareh D, Ghomian Z, Nateghinia S, Safarpour H, Mohammadi R. Barriers and requirements in the off-line emergency medical protocols implementation in Iranian Pre-hospital system: A qualitative study. J Edu Health Promot 2021;10:312.

and save lives in such conditions.[4] Proper and on-time decision-making for patients in the prehospital setting has an important effect on lives, patient safety, and related outcomes.[5]

In Iran, the EMS system, no physician did attend the ambulance and they only provide online radio or telephone counseling to EMTs. In the many EMS centers, EMTs make a decision based on their judgments and typically operate independently due to lack of Physician Medical Direction (PMD) and communicating challenges.[6,7] Regarding on-scene decision-making, EMTs are faced many challenges due to a lack of sufficient competencies and legal authority.[8,9]

To avoid making decisions based on the unproven opinions of EMTs, many EMS systems, particularly in high-income countries rely on medical protocols.[10,11] Medical protocols are developed to assist care providers through determining appropriate patient care[12] Furthermore, protocols improve patient outcomes by providing evidence-based care.[13] As protocol-based on-scene decision-making is influenced by many challenges including the bureaucratization of care practices, the vast illusion of the answers, and the user's misinterpretation,[14-17] the EMTs are faced such challenges that lead to their concern and reluctance to use the protocols.[18]

Identifying and understanding the challenges of protocol-based on-scene decision-making can result in providing appropriate condition for EMTs' decision-making and also improving patient outcomes. Furthermore, it can lead to improve practitioner's attitude and eliminate their concerns.[19,20] There is a paucity of studies in the field of prehospital decision-making protocols.[21,22] Therefore, this study was conducted to identify the barriers and requirements in the offline emergency medical protocol implementation in the prehospital system in Iran.

Materials and Methods

Study design

To conduct this study, qualitative content analysis was used. In this approach, based on the inductive process, collected participants' experiences were derived in the meaning units; condense meaning units, codes, subcategories, and categories.[23]

Participant selection and data collection

To gain a comprehensive understanding of the prehospital protocol-based on-scene decision-making phenomena, data were collected using triangulation methods including interviews, field observations, and focus group discussion (FGD).

At first, four unstructured interviews were performed with general questions [Table 1].

After identifying the main concepts and setting up the interview guideline, 22 semi-structured interviews were done. Purposeful sampling was applied to achieving maximum variation.[24] In this regard, 17 EMTs (11 paramedics and 6 intermediates), 3 dispatchers, 3 PMDs, and 3 EMS managers were participated [Table 2]. Operational and practical experiences, having a direct or indirect impact on protocol-based on-scene decision-making, and the willingness to participate in the interviews were inclusion criteria. The duration of interviews lasted between 40 and 80 min (60 min on average) and was conducted from October 2019 to January 2020. All interviews took place at the workplace of the participants.

Second, after four unstructured interviews, simultaneously with the next interviews (22 interviews),

Table 1: The interviews' general questions of challenges and requirements in offline emergency medical protocol implementation in the prehospital system in Iran

Examples of the general questions
1. What is your experience of on-scene decision-making using offline protocols?
2. What are your challenges at the time of on-scene decision-making?
3. What factors affect your on-scene decisions using protocols?
4. What strategies do you use to deal with on-scene decision-making's challenges?
5. Based on your experiences, does the use of protocols lead to proper and on-time decisions?

Table 2: Demographic characteristics of participants on the obstacles and challenges in offline emergency medical protocol implementation in the prehospital system in Iran

Variables	*n* (%)
Age	
25-35	13 (50)
36-45	10 (38.46)
46-55	3 (11.54)
Work experience (years)	
1-10	7 (26.92)
11-20	15 (57.70)
21-30	4 (15.38)
Gender	
Male	21 (80.77)
Female	5 (19.23)
Occupation	
EMTs	17 (63.38)
PMDs	3 (11.53)
EMS dispatchers	3 (11.53)
EMS' managers	3 (11.53)

EMT=Emergency medical technicians, EMS=Emergency medical services, PMD=Physician of Medical Direction

10 field observations were performed that lasted 15 h by the researcher (MSK), also conducted by the principal investigator (PI) in the EMS missions from November 2019. In this regard, the PI, as a participant and observer, took part in the EMS' missions and wrote all notes in line with the study questions. Gain new concepts, confirm the interviewees' codes, collect data in the real setting as well as saturate the concepts were the aim of filed note observations.

Third, to provide various perspectives, identify participants' interactions, and generate data that they might not have obtained through interviews and field observations, two FGDs, as a supplementary method of data collection were applied. In this regard, 6 male EMTs in the first FGD and 8 in the second FGD participated. One participant was the Ph.D. candidate, one was the master's degree, and the other was the bachelor's degree in the first FGD. All participants were bachelor's degrees in the second one [Table 3]. The duration of the first FGD was 120 min and was conducted in the conference hall of the School of Public Health and Safety, Shahid Beheshti University of Medical Sciences on November 18, 2019. Because of the COVID-19 pandemic, the second FGD was conducted virtually, video FGD, using the Skype application on April 30, 2020 that took 100 min. The first FGD was managed by DKZ (the third author) as a moderator, MSK (the first author) as a notetaker. The second FGD was managed by MSK. Based on the standard of FGD methodology, a focus group moderator guide was performed. Initially, the moderator started by explaining the purpose of the FGD and discussed the importance of confidentiality. After that, participants were asked to introduce only their degree and education, and work experience. Next, the moderator presented the main topic and related questions. During the FGD, participants were allowed to discuss each question. To explore more detail, the moderator asked the follow-up questions such as "could you explain more about this…?", "How….?" The moderator tried to participate all participants. Finally, the moderator summarized and concluded the FGD. The notetaker wrote all notes and participated in the discussion by asking the probing question.

Data analysis

The content analysis method using Graneheim and Lundman method[23] was carried out to analyze the data collected from the interviews, field observations, and FGDs. In regard to interviews, after each interview, the PI listened the audio-recorded several times and transcribed them. All transcribed files were compared by recorded files. In the case of field observations, the PI took all his observations as filed notes. Finally, FGDs audio-recorded were read and re-read by the PI and transcribed.

Initially, to get the sense of the whole, each text was read several times. Next, all sentences were extracted and wrote on the margin by means of meaning units. After that, the meaning units were summarized as condense meaning units and then labeled as codes by ZGH and MSK. The codes were checked by DKZ to ensure its accuracy. After reaching a consensus, the researchers categorized the obtained codes as subcategories and integrated them as categories according to similarities and differences. All steps were used for FGD's text and field notes observations.

Trustworthiness

Trustworthiness was achieved by means of four strategies including credibility, confirmability, dependability, and transferability.[21] Researchers' field experience and their engagement with data and participants, data collection triangulation including interviews, direct field observations, and FGDs as well as member and peer checking were resulted in achieving credibility. Prolonged engagement and refectory commentary during data collection and data analysis were also two additional methods for credibility. To achieve confirmability, the first Author as PI tried to prevent possible biases by means of triangulation, bracketing, and peer-evaluation. In regard to transferability, all processes of the study including data collection, data analysis, and interpretation of the results were explained. Finally, to ensure dependability, the strategies including audit trail, code-recode strategy, triangulation, and peer examination were adopted.

Ethical considerations

This study was approved as a part of research in the Workplace Health Promotion Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran. The ethics committee (IR.SBMU.PHNS.REC.1399.036) approved this study. In addition, verbal and written informed consent was obtained from all participants.

Table 3: Demographic characteristics of the participants in the focus group discussions to get barriers and challenges in offline emergency medical protocol implementation in the prehospital system in Iran

Variables	First round			Second round		
	Age	Education	Work experience	Age	Education	Work experience
Moderator	55	Post doc	15	34	Ph.D. candidate	10
Notetaker	34	Ph.D. candidate	10			
Participants	38.5 (mean)	Bachelor's degree	13 (mean)	35 (mean)	Bachelor's degree	16 (mean)

Accordingly, the participants were informed about the confidentiality of all private information. Furthermore, the participants were provided the possibility of leaving or declining their participation.

Results

In this study, 1160 initial codes were obtained. Based on similarities and differences, 400 final codes were placed in seven categories (15 subcategories) including education and awareness (professional training and education and community-based education), attitudes (professional attitude and community attitude), interactions and coordination (interpersonal interactions, organizational interferences, and community's interactions), rules and instructions (instructions and supportive rules) control system (monitoring and evaluation and motivational system), accessibility (recourses and communication), and organization (structure and process) [Table 4].

Education and training

Professional education and training and public or community-based training and education were two subcategories that were emerged as the major challenges in the implementation of offline emergency medical protocols.

Professional training and education

Based on the experiences of the participants, the weakness of training systems is the major challenge in the implementation of offline emergency medical protocols in the prehospital system in Iran. Most of the current approaches of training systems are theoretical and since they are not based on EMT needs, they are not influential. Despite the necessity of physical examination skills and providing emergency medical care, since the training is not skill based, EMTs face serious problems in their duties. Lack of modern training approaches has turned into a serious barrier in the implementation of the offline emergency medical protocols. In this respect, the establishment of simulated and virtual training, international training cooperation, financial resources, and motivational incentives are major barriers.

"We need practical training for rapid patient assessment and provide emergency care. Since most of our training comprises theories, most of the technicians don't have skills like physical examination and emergency care."(P5)

"Our training approaches are traditional. We don't receive enough budget and credit to provide effective training." (FGD)

Community-based training and education

One of the major concerns for the EMTs and major obstacles for protocol implementation was shortcomings in public education. People are unaware of the prehospital emergency services and the importance of prehospital emergency care. Most of the people do not have information concerning the abilities of the EMTs. Unawareness of some people leads to irrational interference and makes it difficult for the EMTs to act based on the protocols.

"Public education is really flawed. People don't know about the capabilities of EMTs and their duties and rights. I think people's interferences could be minimized by education… in some missions, people literally don't let us do anything for the patient." (P11)

Attitudes

Based on our data, some organizational attitudes including the attitude of the technician oppressed, lack of belief in organizational support and attitude of nonapplicability of protocols, and some public attitude including EMT as a transporter and attitude of immediate transfer were main examples of challenges that were categorized as professional attitude and community attitude.

Professional attitude

Most of the EMTs claimed that the main barrier of protocol implementation was their uncertainty regarding institutional support in the case of any complication for patients. The common attitude among the technicians was that they will be the ones who face blame and failure every time. Besides, public attitudes toward the excessive use of free EMS services, expecting out of scope service from the EMTs, and transferring to private hospitals are among the factors that prevent protocol-based prehospital services.

"The technicians believe that acting based on the protocols is not supported by the authorities and managers… people want home care services like serum-therapy." (P4).

Based on the experiences of the technicians, the impracticality of the protocols is another challenge. Excessive simplicity or complexity of some protocols, lack of enough information in the offline protocols, lack of a link to complementary protocols, and termination of all protocols in imperative transfer to the hospital are the major flaws in protocols. The participants referred to the complicated protocols as having "a Spaghetti nature" "a tunnel vision and dead-end view" because of ignoring the changing status of the patient and the necessity of flexible cares and interventions in the protocols' process.

"The current pre-hospital emergency medical protocols have a lot of problems. Some of them have a complicated process which makes them difficult to remember and implement. Some are so simple that they are not useful. Protocols should take into account Past Medical History, drug dose, and change in patient status" (FGD).

Table 4: The codes, subcategories, and categories of barriers and requirements in offline emergency medical protocol implementation in the prehospital system in Iran

Category	Subcategory	Example of code
Education and awareness	Professional training and education	Lack of standard training packages
		Lack of simulated training
		Weakness of skill-based training
		Lack of motivational education system
		Lack of awareness among physicians of protocols
	Community-based education	Insufficient public awareness of the scope of EMS services
		Lack of public awareness of the importance of prehospital emergency cares
		Insufficient public awareness of the EMTs' capabilities
Attitudes	Professional attitude	Attitude of the technician oppressed
		Lack of belief in organizational support
		Attitudes of caregivers as customers
		"Spaghetti nature" or "tunnel vision" of the protocols
		Attitude of nonapplicability of protocols
	Community attitude	EMT as a transporter
		Low value of free services
		Attitude of immediate transfer
Interactions and coordination	Interpersonal interactions	Insufficient interaction between EMTs
		Self-protection decision-making
		Insufficient interaction among EMTs, dispatcher, and physician
	Organizational interferences	Insufficient interaction between prehospital and hospital
		Hospital intervention in EMTs' services
		Insufficient interaction between EMS and emergency agencies
	Community's interactions	Violence
		Lack of sufficient trust
		Hasty behavior of people
Rules and instructions	Instructions and executive regulations	Lack of executive guarantee for protocols
		Authorities' unawareness of the protocols
		Lack of legal authorization to prescribe drugs by EMTs
		Mismatch of EMTs' responsibility and authority
	Supportive rules	Lack of sufficient supportive rules
		Ambiguity in the legal validity of the protocols
Control system	Monitoring and evaluation	Lack of good evaluation system
		Lack of self-evaluation system
		Lack of motivation-based evaluation systems
	Motivational system	Lack of impact of certification on personnel promotion
		Lack of continuous reward system
		Discrimination in rewards
Accessibility	Recourses	Lack of need-based distribution
		Inequality in the distribution of resources
		Lack of enough EMTs and physicians
		Shortage of the diagnostic medical equipment
	Communication	Weak accessibility to dispatch center
		Low technology and poor communication tools
		Miscommunication in receiving medical direction
Organization	Structure	Cultural context
		EMT-based structures
		Unrelated EMTs' academic degrees
	Process	Dispatching with every call
		Transfer all the cases
		Protocol avoidance approach in medical counseling
		Lack of link between prehospital and hospital protocols

EMT=Emergency medical technicians, EMS=Emergency medical services

Community attitude

The participants approved that people are believed that prehospital nurses are less competent compared to hospital nurses. Besides, expecting immediate transfer because of hasty behavior disturbs protocol implementation on the scene. Based on the experiences of the participants, free services are not valuable for people and this negative attitude leads to irrational behavior and unrealistic expectations.

"Unfortunately, most people assume we are only to transfer the patient… they don't know that we are mostly experts and master nurses… I think it's because of the flaws in public education and the unworthiness of free services in our country." (P7)

Interaction and coordination

Some barriers including insufficient interaction among EMTs and dispatcher and physician and generally between prehospital and hospital centers were obtained. Furthermore, we obtained violence against EMTs, insufficient trust, and some negative behaviors of people that we categorized them in interactions and coordination barriers.

Interpersonal interactions

One of the main obstacles to the implementation of prehospital protocols extracted from the focus groups was flaws in interpersonal interactions. Given the current condition of the prehospital system of Iran, decision-making at the scene requires EMT's teamwork, interaction, and agreement. The insufficient interaction among the EMTs, dispatch operators, and physicians' medical direction was identified as obstacles to quality care. All participants believed that honesty and trust are two of the main elements of teamwork among emergency medical care providers.

"To make the best decision for a patient the technicians need to have interaction and agreement because our technicians are not ranked. Interaction of the medical team is important but this interaction is weak." (P16)

Organizational interferences

Many cases of weak inter/intraorganizational interaction were extracted as challenges in the implementation of the on-scene medical protocols. Insufficient interaction between hospital and prehospital personnel and dismissal of the EMTs' services by hospital emergency unit staff are among the major challenges. Furthermore, in some missions, the presence of police is necessary to control and ensure security at the scene, and weak interaction in this respect has also been experienced by the technicians.

"When we act based on our protocols and we are questioned at the hospital about why we did this or that, we are not willing to follow the protocols anymore. Interaction between our organization and other organizations like hospitals, police, and firefighters is important".(P8)

Community's interactions

To protocol implementation, besides the interaction between organizations, there is a need for mutual interaction between the providers and the receivers of prehospital services. However, factors such as violence and lack of patients or their relatives' participation and cooperation disturb the interactions. In other words, violent behavior against EMTs, dishonesty in expressing a chief complaint, and malingering distract the technicians and lead to a decrease in the on-scene time.

"I think one of our main problems is disrespectful and hasty behavior of some people. Sometimes they don't cooperate with us, don't give us honest answers, though the cooperation of the patient and relatives is a principle." (P11)

Rules and instructions

Challenges related to laws and instructions were categorized into two groups, namely the executive regulations and supportive laws. The participants introduced the authorities' unawareness of the prehospital protocols, uncertainty in the legal validity, and lack of executive guarantee for protocols as the main challenges of applying them. The EMTs believed that the managers of EMS centers do not support providing service and care only based on protocols and without receiving medical advice. Despite EMS being technician-based, excessive duties, and responsibility of EMTs, they did not have enough authority. Based on the law, EMTs are not allowed to prescribe emergency medicine or decide on transfer without medical advice.

"I really don't know how much the authorities support the protocols. We have a lot of duties but very little authority. The technician is not even allowed to prescribe emergency medicine based on the protocol unless the physicians approve…" (P13)

Control process

Challenges related to the control process were categorized into two groups, namely the monitoring and evaluation and motivational system.

Monitoring and evaluation

Weak monitoring and evaluation processes were identified as obstacles to protocol implementation. EMTs discussed that the competencies and qualifications of most of the evaluators are actually less than the EMTs. Furthermore, the weakness of the control and evaluation process has led to the incompetence of the self-evaluation and feedback systems, flaws in the criticism system, and lack of motivation. The technicians believed that to be implied, any guideline and protocol require acceptance

of the users. Therefore, the organization's disregard of the experiences and suggestions of the technicians in improving the protocols has decreased the motivation to use them.

"The evaluators don't have enough competency and tools. No feedback is given after the evaluation. The evaluations are based on personal judgment. The assessments and evaluation are hasty… we don't know where to offer our suggestions." *(P10)*

Motivational system

Some of the participants expressed that the current incentive systems have no effectiveness and efficiency. Based on their point of view, discrimination in rewards is the major cause of demotivation among the staff. The technicians claimed that there was no difference between the ones who had acted based on the guidelines and protocols and their colleagues who had not. Discontinuity of the rewards, lack of public appreciation, and the certificate ineffectiveness in the promotion of the technicians were also among the challenges of the incentive system.

"The incentive in our organization is low. When the rewards are secretive and only reserved for certain staff, it is irrational to expect high performance and cooperation from the others." (P15)

Accessibility

Our data indicated that EMS systems need to enough human resources and medical equipment to act based on medical protocols. In this regard, accessibility to dispatch centers and communication tools are important. After analyzing the data, we sorted these limitations in accessibility challenges with two main subcategories including recourses and communication.

Recourses

The participants believed that resources play a vital role in the implementation of medical protocols. In other words, resource distribution based on needs, enough EMS staff, and medicine and diagnosis instruments are necessary to protocol implementation. In the FGDs, the participants discussed examples of resource challenges. They believed that sometimes it is difficult to diagnose based on symptoms and signs, so portable equipment in ambulances, such as electrocardiographs, glucometer, and defibrillator, are remarkably helpful. However, these instruments have not been distributed evenly.

The resource distribution is not based on needs. Protocol implementation requires medical equipment. For example, diagnosing heart emergencies is much easier with cardiogram, or internal hemorrhage is diagnosed faster and more accurate with Sonographer and Hypoglycemia with a glucometer, rather than diagnosing only based on the symptoms… (FGD)

Communication

The participants emphasized that sometimes taking action based on some offline medical protocols does not meet the emergency needs of the patients. In these situations, the medical direction of a physician is required, but because of reasons including weak accessibility to technology and connection tools and connection interruption and parasite, making a connection with the dispatch center is not possible. Such barriers delay giving medical emergency care. Missions in faraway locations where radio connection encounters interruption and the chaotic and crowded situation of the scene are also introduced as other communication challenges.

"It is sometimes necessary for us to make a connection with the dispatch center's consultant physician, but our communication infrastructures are weak. sometimes people's intervention prevents connection to the center." (P5)

Organization

The participants of this study declared that all EMS systems need to improve their structures. Some challenged including dispatching with every call, transfer all the cases, EMT-based structures, and unrelated EMTs' academic degrees were obtained and categorize as organizational challenges.

Structure

The extracted data showed that the public and organizational culture is necessary for being protocol based. Although there has been a great emphasis on the offline medical protocols at the national and local levels, there is not enough motivation and appropriate conditions for using the protocols at the province and local levels. Based on the participants' experiences, although the EMS centers have EMT-based structures, variation in employment status and variation in the educational level of the EMTs and technicians with unrelated degrees are serious obstacles in this area.

"In my opinion, our institutional structures and the society's culture are not yet ready for protocol-based Pre-hospital services... agreement of two EMTs on one emergency medical protocol is almost impossible due to dispersion of employment status and variation in academic degrees." (P21)

Process

Based on the experiences extracted from interviews and FGDs, some of the prehospital emergency processes are not designed and performed correctly. Some of the policymakers' and managers' approaches have resulted in challenging processes. For example, the technicians were intensely unsatisfied with the dispatch with every call and blamed it on the deficiency of dispatch protocols. On the other hand, they have to transfer all

the cases to the hospital because they would harshly get reprimanded in case of any problem or dissatisfaction of the patients. The technicians pointed out that some of the dispatch center's consultant physicians do not believe in protocols and guide them based on personal judgment.

"Our managers have told us several times that when anybody calls the ambulance should be sent out and the technician is not qualified to decide not to transfer the patient to the hospital. We have to ask the consultant physician what to do and they usually advise not based on the protocol but on the personal judgment." (P2)

Discussion

Training issues, attitude, interaction and coordination, rules and instructions, accessibility, and organization were obtained as the most important challenges in implementing offline emergency medical protocols in the prehospital emergency system.

The findings of the study indicated that the current training system has not been able to make links between knowledge, attitude, and EMTs' performance very well. Similar to this finding, another study conducted to examine the obstacles related to nurses' knowledge, attitude, and practices gave support to the existence of educational and managerial barriers in the way of upgrading and improving nurses' attitudes and knowledge.[25] Improving training by establishing a skill-based educational system, stimulated training, practice, and maneuver, and training participation with other countries' EMS are suggested.

According to this study, weak perception and awareness of laypersons and bystanders because of inadequate public education results in intervening in the EMTs' actions. Other studies in the field of road traffic injuries in Iran have referred to the negative role of laypersons' and bystanders' intervention.[26,27] Improving public knowledge and awareness can lead to a reduction of intervention and an increase in people's cooperation.[28]

The current study showed that the EMTs believe in weak institutional support for medical care and action based on protocols. This is while institutional support like decision-making support systems has an important role in making the right decision.[29] The extracted data indicated that simplicity or too much complexity of protocols, incomplete processes, and lack of enough information in the protocol guideline result in their inefficiency and ineffectiveness. The conducted studies asserted that the protocols' validity is in clarity, being easy to follow, relevance to the prehospital environment, logical orders, and practicality.[13,30]

Based on the extracted data, lack of intrapersonal interaction including insufficient trust and self-protection and lack of coordination with other organizations are serious obstacles against protocol-based services. To have correct patient management and agreement on a right and timely decision, especially in critical situations, EMTs' teamwork must be done based on mutual trust and interaction.[31,32]

This study addressed that the courts and forensic medicine were not sufficiently aware of the offline prehospital emergency medical protocols, so the users would not be legally supported. According to a study, adherence to the protocol to laws and regulation and also supporting users are the basic conditions for accepting the protocol by its users.[33]

Based on this study, the shortage of some equipment because of incorrect distribution management and shortage of resources are significant barriers to implementing the protocols. This is while the quality and even the weight of equipment such as medicine bags, oxygen capsule, suction, and defibrillator are effective on the quality of EMT care.[34] Studies considered the medical emergency's advanced care in need of medicine and enough equipment.[35,36]

A number of approaches including dispatch with any call, transfer of all the cases to the hospital, and deficiency in the processes of delivery of the patient to the hospital, have decreased the motivation of EMTs in using the protocols. This is while based on the delivery principles of prehospital emergency services and triage protocols, the ambulance should be dispatched for patients with urgent service needs.[19] Excessive request for prehospital services is effective on the type and quality of the decisions made by technicians.[37]

Study strengthens and limitations

The qualitative approach was used to explore the barriers and challenges in offline emergency medical protocol implementation in the Iranian prehospital system. To our best knowledge, this study is the first study on this topic in Iran that was employed interview and observation and FGD. To have maximum variation, the participants were selected among EMTs, dispatchers, managers, MDPs, and policymakers. To achieve consistency and the credibility of the data, different methods including constant comparative analysis, member check, and peer review were used. One potential limitation of the current study is that this study was conducted in the Iranian context that can be limited in generalizability to another countries. In the qualitative study, the scope is not generalization; however, it seems that given the shared problems, the results can be applicable in low- and middle-income countries.

Conclusions

To achieve the effectiveness and efficiency of offline prehospital emergency protocols, it is necessary to facilitate the barriers and challenges. Concentrating on creating the protocols with scientific methods and using experts' and users' opinions is the first step for compatibility of the protocols with the best procedures and practices and user's acceptance.

Educating all the stakeholders including managers, physicians of medical direction, and nurses in the hospitals' emergency units, EMTs, and also creating supporting rules can significantly facilitate the use of protocols. Since the attitude and approach of technicians as the main users of protocols have a major role in decision-making and protocol-based actions, it is necessary to improve the EMTs' knowledge and thus, attitude and performance by cooperative and skill-based education so that their willingness to use the protocols would increase. It is suggested that policymakers and managers make an effort to increase the coordination between prehospital and hospital emergency and other involved organizations.

Acknowledgments

This study is part of the Ph.D. thesis in the School of Public Health and Safety. The authors would like to thank Shahid Beheshti University of Medical Sciences as well as all the participants in this study, especially the EMTs.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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