



Challenges and Solutions to Improve Prehospital Emergency Services Given for Iranian Pregnant Women: A Qualitative Study

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Abstract

Introduction: Considering the challenging prehospital services given to pregnant women and the high sensitivity of this population, this qualitative study was conducted to find challenges and solutions to improve prehospital emergency services given to Iranian pregnant women in 2021.

Methods: The present qualitative study used content analysis in Fars, Bandar Abbas, and Tehran provinces, Iran during the winter of 2020 and spring of 2021. In this research, emergency physicians, obstetricians, gynecologists, health professionals in disasters, emergency medicine specialists, midwives, and pregnant women were interviewed. The data were collected using in-depth interviews with 18 specialists and policymakers. The interviews were analyzed using thematic analysis.

Results: The findings were divided into two groups of challenges and solutions. The challenges included five categories, namely “structural and systematic problems,” “staff problems,” “equipment problems,” “problems of pregnant women,” and “traffic problems.” These five categories included 19 subcategories. Moreover, the solutions consisted of five categories including “solutions for structure and system,” “solutions for staff,” “improvement of equipment,” “reconstruction of roads,” and “solutions for pregnant women’s issues.” The mentioned five categories consisted of 17 subcategories.

Conclusion: Since many health infrastructures have remained undeveloped in developing and undeveloped countries, policymakers and prehospital emergency professionals must cooperate before the occurrence of emergencies to discover and solve defects, so that there will be fewer health challenges and problems while providing prehospital services for pregnant women. This will also reduce the number of deaths and injuries amongst pregnant women.

Keywords: Pregnant women, Emergency medical services, Health, Infants, Qualitative research

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Introduction

Emergency Medical Service (EMS) is a profession that provides rescue measures for individuals with urgent traumatic and medical needs within the shortest time (1). Regarding the unpredictable nature of EMS, these professionals may experience emotional and moral incidents when carrying out their tasks. These incidents may include the death of a child, abuse of a child or an elderly individual,

suicide, and natural and human-made disasters (2, 3). Patients who die out of hospitals constitute 83% of medical emergency cases whose deaths are seen by EMS professions while transportation or treatment (4). However, these workers (paramedics) have not received sufficient training to encounter such conditions and cases (5, 6).

According to Regehr et al. (2002), paramedics working in a prehospital emergency are exposed to emotionally traumatic incidents including the

death of a patient, line-of-duty death, violence, near-death experience, death of a child, and multiple casualties (7). Nevertheless, EMS workers must stay focused to provide high-quality care services (7, 8). Pregnant women are the most sensitive individuals who need prehospital emergency services.

Pregnancy and childbirth are the specific features of human creation (9). Many considerable somatic, psychological, and social changes occur during pregnancy. It is worth noting that there is a close relationship between mother and fetus in such a way that the infant's health depends on the mother's health. Therefore, improvement of the mother's health status is among the fundamentals of healthcare services (10). Considering the increase in obstetric complications, the vital issue is the staff's readiness and EMS personnel's ability to manage emergency incidents. The prehospital management strategy is based on two principles which deal with obstetric complications. The first principle assumes that there may be a lack of definite care, while the second principle argues that maternal care is the most optimal and appropriate care for a fetus (11). Although most pregnancies are without any problems, EMS workers must expand their knowledge and skills to respond to undesired incidents (12). Trauma is one of the major causes of maternal and fetal death during pregnancy (13).

Anatomic and physiologic changes during pregnancy must be understood in medical management to overcome the relevant challenges. Most medical care should be considered in the prehospital section for pregnant women (12). The most common urgent prehospital problems in pregnant women include preeclampsia, umbilical cord prolapse, gestational diabetes, trauma, breech deliveries, ectopic pregnancy, bleeding, miscarriage, and placental abruption. EMS workers should arrive at the scene as soon as possible to provide medical services such as Cardiopulmonary Resuscitation (CPR) of the mother and her infant, giving medications, giving suitable positions based on the delivery type, and providing other supportive and medical measures or to transfer them to medical centers (14).

Regarding the challenging prehospital services given to pregnant women and the high sensitivity of this population, this qualitative study aimed to find challenges and solutions to improve prehospital emergency services given to Iranian

pregnant women in 2021.

Methods

This cross-sectional qualitative study was conducted in Fars, Bandar Abbas, and Tehran provinces, Iran, during the winter of 2020 and spring of 2021. The data were collected via observations and in-depth interviews with 18 experts and policymakers.

Participants

Challenges were extracted from the statistical population including medical emergency workers and pregnant women. On the other hand, solutions were extracted from prehospital professionals, managers of the healthcare system, and some specialists including obstetricians, gynecologists, emergency workers, health professionals in disasters, EMS specialists, and midwives.

The inclusion criteria of the study were being willing to cooperate, having experience in urgent pregnancy care, and having a BA degree. The exclusion criteria were unwillingness to participate in the study and lack of moral and mental readiness for taking part in the research. Purposive and snowball sampling methods were employed. Accordingly, each specialist introduced the next one. Finally, 18 specialists were interviewed.

Data Collection

Professionals and experts were required to answer the following deep and semi-structured questions about challenges and solutions: 'What are the challenges in providing services to pregnant women who apply for prehospital emergency services' and 'What are the solutions to improve prehospital emergency services provided for pregnant applicants.' Probing questions were also asked based on the answers given by the respondents. Each interview took about 30-70 minutes. The interviews were done in a quiet place and ended after reaching data saturation.

Data Analysis

After the end of the interviews, the transcripts of the interviews, solutions, and challenges were extracted immediately; then, the data were analyzed manually. The thematic analysis was used to analyze the interviews. It includes six

phases as follows: A. becoming familiar with the data, B. generating initial codes, C. searching for themes and subthemes, D. reviewing categories and subcategories, E. defining and naming the themes and subthemes, and F. producing the report (15). Finally, 179 codes were extracted from the analyzed transcripts. In the next step, challenges and solutions were classified after the repetitive codes were reanalyzed and removed.

Rigor

Guba and Lincoln criteria (16) were used to ensure the accuracy of the qualitative data. Accordingly, trustworthiness, transformability, dependability, and confirmability were approved.

Ethical Considerations

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (code: IR.SUMS.REC.1399.722). Observing confidentiality, provision of information to experts, signing consent forms, acknowledging the participants, and 5. obtaining permission from the Ethics Committee were considered.

Results

The number and demographic features of the interviewed experts are presented in Table 1.

The findings were divided into two groups of challenges and solutions. The challenges included five categories, namely “structural and systematic problems,” “staff problems,” “equipment problems,” “problems of pregnant women,” and “traffic problems.” These five categories included 19 subcategories.

The solutions also consisted of five categories including “solutions for structure and system,” “solutions for the staff,” “improvement of equipment,” “reconstruction of roads,” and

“solutions for pregnant women’s issues.” These five categories included 17 subcategories. The categories and subcategories of challenges and solutions are listed in Table 2.

Herein, some explanations by the experts and professionals are mentioned.

A 42-year-old obstetrician stated, “If pregnant women have high knowledge and awareness, they will demand prehospital emergency services on time to maintain their and their infants’ health, and there will be lower death rates. Moreover, such pregnant women trust the prehospital emergency system and can benefit from these services.”

A 38-year-old pregnant woman explained, “I do not feel fine because emergency workers are men and I cannot tell them my problem.”

A 41-year-old prehospital emergency professional said, “If EMS workers are not experienced and skilled, they will have low self-confidence. Therefore, services cannot be delivered perfectly or there will be problematic prescriptions. Practical teachings and workshops can improve the personnel’s knowledge and skills by preventing errors and faults.”

A 30-year-old health professional in disasters and emergencies maintained, “I suggest a solution for ESM workers to achieve higher capability and eligibility. Different measures should be taken to make the staff familiar with different circumstances.”

A 38-year-old medical emergency specialist explained, “Some medications such as magnesium sulfate and methylethylergonovine do not exist in many ambulances. Therefore, the lives of pregnant women may be at risk of preeclampsia. Hence, ambulances must have medications for pregnant women and infants.”

Discussion

Regarding the challenging prehospital services

Table 1: The experts participating in the study

N.	Expert	Number	Mean age	Gender		Education level				
				Male	Female	BA	MSc	Ph.D.	General practitioner	Medical Expert
1	Obstetricians and gynecologists	4	42	0	4	0	0	0	0	4
2	EMS specialists	2	39	2	0	0	0	0	0	2
3	Health professionals in disasters and emergencies	2	38	2	0	0	0	2	0	0
4	Emergency medicine workers	4	35	4	0	4	0	0	0	0
5	Midwives	2	32	0	2	0	2	0	0	0
6	Pregnant women	4	41	0	4	2	1	0	1	0
7	Total	18	37.83	8	10	6	3	2	1	6

Table 2: The categories and subcategories of challenges and solutions for prehospital services provided to pregnant women

Main theme	Category	Subcategory
Challenges in prehospital services given to pregnant women	Structural and systematic problems	Lack of sufficient knowledge about pregnancy emergencies
		Lack of continuous training and teaching for practitioners
		Male gender of technicians
		Mismatched teachings
		Lack of consistency between internal and external organizational levels
		Low cooperation between prehospital emergency and the hospital
		Lack of an appropriate medical protocol
	Staff's problems	Religious issues and considerations
		Low knowledge and awareness of personnel
		Staff's low skills
		Low experience
		Stress and concerns among staff
	Equipment's problems	Lack of required medications in the ambulance
		Lack of required equipment for pregnant women
Problems of pregnant women	Low knowledge and awareness of pregnant women	
	Women's instructions in services	
Traffic problems	Impassable roads	
	Traffic jam	
Solutions to improve prehospital services given to pregnant women	Solutions for structure and system	Employing female technicians
		Designing practical teachings in the curriculum for students
		Designing continuous teachings for staff
		Developing cooperation between internal and external organizational levels
		Improving collaboration between prehospital emergency and hospital
		Designing specific medical treatment protocols
		Designing educational programs to make practitioners aware of ethical issues
	Solutions for the staff	Increasing the staff's knowledge and awareness
		Expanding the staff's skills
		Improving the experience of non-experienced staff by sending them on pregnancy emergency missions
		Designing some programs for psychological debriefing, mindfulness, and mental relaxation
	Improvement of equipment	Preparing emergency obstetric drugs for ambulances
		Using air ambulance and motorlance
		Equipping ambulances
	Reconstruction of roads	Making roads safe and accessible
	Solutions for pregnant women's issues	Expanding pregnant women's knowledge and awareness
		Making pregnant women and families trust in prehospital emergency services

given to pregnant women and the high sensitivity of this population, this qualitative study was conducted to find challenges and solutions to improve prehospital emergency services given to Iranian pregnant women in 2021.

Generally, a higher level of knowledge, awareness, and skills among EMS workers helps them perform efficiently in missions and commit fewer faults. In this context, continuous workshops can be designed to improve these workers' knowledge and skills. Moreover, they can take part in tabletop and operational exercises to achieve more experience and skills.

Many urban and suburban roads are unsafe and

congested in Iran. Hence, ambulances may arrive late at the scene, resulting in many complications or causalities. Therefore, urban management and municipalities should cooperate with the prehospital emergency organization to improve the commuting status and roads to facilitate emergency missions. In addition, motorlance and air ambulances must be used to overcome traffic jams and impassable roads. Moreover, many problems can be solved by focusing on various aspects including personnel, equipment, structure, and system.

Pregnant women constitute a major part of missions. Thus, if they are familiar with their

physiologic status, they can call the EMS timely. In this case, death rates will be reduced. Hence, the improvement of pregnant women's knowledge and awareness is a key factor.

Up to now, no qualitative study has been performed on the considered topic in this research. Hence, the existing studies were reviewed. Strauss and Gräsner (2018) carried out a study entitled "prehospital emergency management of pregnant women" to indicate the importance of prehospital emergency services during pregnancy. Accordingly, these services were provided for pregnant mothers during or even before a hospital stay. The results of that study indicated that knowledge transfer methods had to be implemented so that emergency teams would have sufficient obstetrical information to provide emergency care during pregnancy. The authors also described the prehospital emergency management of pregnant women and explained about the prehospital emergency care for pregnant women, their emergency transport, handover management on hospital admission, and a team approach to perinatal emergency care (17).

Cairo et al. (2018) conducted a study entitled "prehospital education in triage for pediatric and pregnant patients in a regional trauma system without collocated pediatric and adult trauma centers" to provide appropriate services for patients and improve their access to prehospital trauma care centers. This regional survey was administered at emergency medical response units to identify the factors influencing patient disposition. A course was also developed to guide the triage of pediatric and pregnant trauma patients. According to the results, 445 participants completed the course at 22 sites, representing 88 different prehospital provider agencies. Improvements were detected in all categories including trauma in pregnancy, trauma in adults, and age limits and triage protocols (18).

Battaloglu and Porter (2017) carried out a study entitled "management of pregnancy and obstetric complications in prehospital trauma care: Faculty of prehospital care consensus guidelines" to provide a clear guidance for the management of pregnant trauma patients in prehospital settings. They believed that pregnant patients sustaining trauma injuries had certain clinical management priorities beyond those of the non-pregnant trauma patients that, if overlooked, might be detrimental to maternal and fetal outcomes (12).

Battaloglu and Porter (2017) conducted another study entitled "management of pregnancy and obstetric complications in prehospital trauma care: Prehospital resuscitative hysterotomy/perimortem cesarean section" and explained about the rare need for prehospital resuscitative hysterotomy/perimortem cesarean section. Thus, the procedures could be daunting and clinically challenging for practitioners. Yet, maternal death could be averted by swift and decisive actions. They presented a guideline to inform prehospital practitioners about conducting maternal resuscitation following cardiac arrest. This guideline provided a framework to improve the prehospital care (19).

Navarro (2009) in a study entitled "prehospital management of pregnancy and obstetric" investigated the anatomic and physiologic structure of the female reproductive system to evaluate emergency cares provided for pregnant women and diagnose obstetric complications during pregnancy. The findings demonstrated an increasing rate of obstetric complications. Hence, EMS staff's preparedness for the management of emergencies was considered critical. It was also found that the prehospital management strategy was based on two principles to deal with obstetric complications. The first principle assumed that there might be a lack of definite care, while the second principle argued that maternal care was the most optimal and appropriate care for a fetus (11).

In the present research, it was not possible to interview all experts and professionals. Thus, a perfect interaction was created during the interviews.

Some recommendations are presented below to provide more appropriate prehospital emergency services for pregnant women:

1. designing specialized teachings to make EMS staff eligible
2. providing healthcare equipment and facilities for EMS workers,
3. Training people, especially women, and teaching warning signs to pregnant women to minimize casualties and injuries, and
4. holding regular tabletop, computerized, and operational exercises to promote EMS workers.

Conclusion

Since many health infrastructures have remained undeveloped in developing and undeveloped countries, policymakers and prehospital

emergency professionals must cooperate before the occurrence of emergencies to discover and solve the defects. In this way, there will be fewer health challenges and problems while providing prehospital services for pregnant women. This will also decrease the number of deaths and injuries among pregnant women.

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Authors' Contribution

All authors were responsible for the study conception and design. Jalaladdin Keshavarz collected the data and prepared the first draft of the manuscript. All authors did the data analysis, made critical revisions to the paper for important intellectual content, and supervised the study.

Ethical Approval

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (code: IR.SUMS.REC.1399.722).

Informed Consent

Informed consent was obtained from all individual participants included in the study.

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Conflict of Interest

There are no conflicts of interest.

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