Assessment of First-Aid Knowledge Among Medical Students in Syria: A Cross-Sectional Study

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Abstract

Background: Sufficient knowledge required to deal with emergencies at the accident site may not be found in most medical students due to the lack of effective first-aid training in most medical education curricula. This study aims to assess and evaluate the level of knowledge among medical students in providing first-aid care, especially first-year students.

Method: This cross-sectional study was conducted in May 2020 among 1,855 medical students. The data was collected using an electronic questionnaire that was published on social media platforms. Based on the scores obtained for each clinical scenario requiring first aid, general knowledge was classified as good, intermediate, or weak. in order to obtain the best result, a number of measures were taken.

Results: Statistical analysis indicated that Academic year and Academic specialization have a significant effect on the level of knowledge, whereas demographic background (gender, university, marital status, housing status, work status, financial condition), reading, hearing, or receiving training in first-aid have no effect on it.

Conclusion: The level of knowledge among Syrian medical students in providing first-aid care is somewhat limited. Therefore, first-aid courses should be made more accessible to these students, and their effectiveness should be ensured and maintained through frequent updates. Moreover, more attention should be placed on publicizing first-aid knowledge in a way that makes life-saving procedures attainable to anyone, anytime and anywhere.

Background

First aid provides immediate care to people who have been injured or struck by a sudden injury until help from a specialist arrives or until the injured person recovers.

The primary goals of first aid are to preserve life, relieve pain as much as possible, prevent further complications and stabilize the patients [1][2]. Furthermore, anyone can be exposed to injury in various situations, whether at work or at home. It follows that the ability of providing immediate and accurate first-aid care at the accident site is vital [3]. Based on the gathered information, we found that assessments of first-aid knowledge among medical students and those involved in the medical sector have been commonly discussed in the Middle East but similar studies have not been conducted in Syria. Furthermore, a large group of medical students show poor understanding of first-aid principles and practices, especially in their early academic years. Correspondingly, this reveals the lack of sufficient published researches or reports discussing the topic [4]. Therefore, we recommend placing more attention on publicizing first-aid knowledge among all age groups and workers in society, especially those involved in the medical sector, because they are the first line of defense against critical situations.

Methods

Design of the study:

We conducted a descriptive study to assess first-aid knowledge among medical students in Syrian universities and colleges from all academic years. The study was conducted through an electronic evaluation questionnaire due to the current difficulties in reaching all Syrian governorates. It was published among esteemed medical groups and gatherings on social media in order to reach the desired sample and achieve the best possible study.

Questionnaire:

The questionnaire was designed according to the latest British first-aid guidelines. The questions were selected in a way that ensures a comprehensive evaluation of all the essentials of first aid among students concerned with the medical sector, based on similar studies and standard first-aid research.

The questionnaire consists of 29 questions directed to Syrian university and college students concerned with the medical sector. the questions were divided into two groups:

1. The first group contained 15 questions divided into two parts. Part one included personal information such as gender, age, academic year, and marital status. The second part included a question about whether the student had taken any first-aid courses.
2. The second group contained 14 questions aimed at assessing all major aspects of first-aid knowledge.

An initial preliminary study was carried out before the questionnaire was finally published. It was randomly distributed to 25 students from six different medical specialties. The questionnaire was modified by deleting some questions and adding some options to some questions. The questionnaire was then published, and the sample participating in the preliminary study was added to the final sample.

Results

To express the results as numbers and percentage of respondents for each question, the analysis was done by (SPSS Software Version 23.).

Initially, about 2013 questionnaires were collected. Afterwards, the sample was inspected and processed and all questionnaires that did not match the study's criteria were deleted. About 1855 questionnaires were obtained to form the final sample. Students of various medical specialties were classified according to multiple measures including academic specialization, gender, academic year, university, marital status, housing status, work status and financial condition to study their effect on the participants' first-aid knowledge.

Table No. (1) shows the basic demographic information of the sample and whether the student took any previous first-aid courses.

Table No. (1)

		Count	Column N %
University specialization:	other	0	0.0%
	Faculty of Medicine	938	50.6%
	Faculty of Dentistry	220	11.9%
	Faculty of Pharmacy	362	19.5%
	School of Nursing	181	9.8%
	Faculty of Health Sciences	13	0.7%
	Medical Technology Institute	141	7.6%
Gender:	Male	636	34.3%
	Female	1219	65.7%
University year for 2019/2020: *	First-year	278	15.0%
	Second-year	745	40.2%
	Third-year	389	21.0%
	Fourth-year	256	13.8%
	Fifth-year	120	6.5%
	Sixth-year	67	3.6%
Are you still a university student or have you finished your university level (you graduated from university):	Yes (student)	1855	100.0%
	No (graduate)	0	0.0%
The university you are currently studying at:	Damascus University	928	50.0%
	Kalamoon Private University	22	1.2%
	Al-Andalus Private University	12	0.6%
	Al-Hawash Private	15	0.8%
	Ittihad Private University (IPU)	8	0.4%
	Arab International University (AIU)	3	0.2%
	Aleppo University	290	15.6%
	Al-Baath University	173	9.3%

	Tishreen University	200	10.8%
	Tartous University	51	2.7%
	Hama University	99	5.3%
	Al-Sham Private University	21	1.1%
	Syrian Private University (SPU)	25	1.3%
	International University for Science and Technology (IUST)	8	0.4%
Original residence before going to university:	Damascus	561	30.2%
	Al-Hasakah	48	2.6%
	Al-Raqqa	9	0.5%
	Al-Suwayda	74	4.0%
	Quneitra	13	0.7%
	Idlib	30	1.6%
	Damascus Countryside	323	17.4%
	Aleppo	211	11.4%
	Homs	136	7.3%
	Tartous	110	5.9%
	Lattakia	130	7.0%
	Hama	117	6.3%
	Daraa	69	3.7%
	Der Al-Zoor	24	1.3%
Family status:	Single	1815	97.8%
	Married	33	1.8%
	Widower/ widow	3	0.2%
	Divorced	4	0.2%
Housing condition: *	With my friends	139	7.5%
	Alone	55	3.0%
	With my relatives	68	3.7%
	University accommodation	279	15.0%

	With my family	1314	70.8%
Do you work during the study period:	Yes	289	15.6%
	No	1566	84.4%
What is your financial condition in general:	very good	464	25.0%
	good	1286	69.3%
	bad	105	5.7%
Have you ever attended a first aid course?	Yes	646	34.8%
	No	1209	65.2%

Table No. (2) shows the basic medical information that forms the core of the questionnaire and the research carried out.

Table No. (2)

		Count	Column N %
What is the priority of the examination according to the principles of first aid when viewing an injured person in general:	I do not no	166	8.9%
	Breath - Response - Airways - Circulatory System	436	23.5%
	Airways - Breath - Responce - Circulatory System	363	19.6%
	Response - Airways - Breath - Circulatory	597	32.2%
	Circulatory System - Breath - Airways - Response	293	15.8%
When a person suffers from complete obstruction of the airway, the following procedure should be performed:	I do not no	293	15.79%
	stroking between shoulder blades	341	
	Heimlich maneuver	1133	61.07%
	Inciting the patient to vomit	68	
	Give the patient person a glass of water to open the Airways	20	
External bleeding is managed according to the principles of first aid by:	I do not no	72	3.9%
	Wait until the bleeding has stopped and then cover the wound with a specific cloth.	45	2.4%
	Sterilize the wound with the available sterilizers.	196	10.6%
	Apply manual pressure	1542	83.1%
Nosebleeds are managed by:	I do not no	106	5.7%
	Apply pressure to the cartilage section of the nose and head forward.	1108	59.7%
	Never press the nose and tilt the head back.	91	4.9%
	Apply pressure to the cartilaginous section of the nose and head backward.	354	19.1%
	Never press the nose and tilt the head forward.	196	10.6%
How is the shock state treated?	I do not no	360	19.4%

	Reassure, then cover, then extend the patient, then lift the legs.	167	9.0%
	Reassure, then extend the patient, then lift the legs, then cover.	608	32.7%
	Extend the patient, then lift the legs, then reassure, then cover.	218	11.8%
	Extend the patient, then lift the legs, then cover then reassure.	502	27.1%
We do not give the shock patient any food or drink even when requested.	I do not no	609	32.8%
	True	905	48.8%
	False	341	18.4%
The main symptoms of a fracture:	I do not no	150	8.1%
	absence of pain - functional disability - absence of deformation of the broken organ- swelling	74	4.1%
	Severe pain - functional disability - deformation of the broken organ - swelling	1457	78.5%
	Severe pain - functional disability- absence of deformation of the broken organ - absence of swelling	114	6.1%
	Moderate pain - functional disability - deformation of the broken organ - absence of swelling	60	3.2%
An ankle sprain is treated by:	I do not no	512	27.6%
	RICE procedure R:Rest I:Ice C:Comfortable E:Elevate	468	25.2%
	Massage the area with ointments	57	3.1%
	Fixing the area with a compressive strap	767	41.3%
	Wash the area with warm water	51	2.7%
First and superficial burns are managed according to the principles of first aid through:	I do not no	115	6.2%
	Wash the burning place with cold or running water - cover the burn after it has cooled	1343	72.4%

	Put toothpaste on the burn site to cool it down	77	4.2%
	Cover the burn site only	18	1.0%
	Apply ointment to the burn and cover the place of the burn	302	16.2%
All material stuck to the place of burning in third-degree burns is removed according to the principles of first aid:	I do not no	529	28.5%
	True	557	30.0%
	False	769	41.5%
When the patient is poisoned with the drug as a result of an overdose, the patient is induced to vomit according to the principles of first aid:	I do not no	258	13.9%
	True	1191	64.2%
	False	406	21.9%
The patient is given nitroglycerin four times every five minutes:	I do not no	1105	59.6%
	True	88	4.7%
	False	662	35.7%
The CPR cycle is:	I do not no	764	41.2%
	30 pressures /2 breaths per minute	666	35.9%
	15 pressures / 2 breaths per minute	226	12.2%
	30 pressures / 4 breaths per minute	95	5.1%
	15 pressures / 4 breaths per minute	104	5.6%
A patient with hypoglycemia is treated with:	I do not no	224	12.1%
	Calling an ambulance and monitoring vital signs.	232	12.5%
	Give him a small amount of sugar	1245	67.1%
	Lift the patient feet and calm down the patient	75	4.0%
	Give the patient an aspirin	79	4.3%

As for Table (2), we will display the count and percentage of each choice for each question in the second group of the questionnaire.

We have allocated one point (1) to each question from the second group of the questionnaire for each true answer and zero points (0) to the wrong answers. The questions are an integrated unit so that the existence of a gap within one answer eliminates part of the participant's final knowledge score, thus the total score is anywhere from 0 if all answers were wrong to 14 if all answers were correct. To facilitate the comparison, three levels of knowledge were adopted, namely:

Weak level: from (0) to (4).

Intermediate level: from (5) to (9)

Good level: from (10) to (14)

The results were:

- Weak level: 454 (24.4%).
- Intermediate level: 1205 (65%).
- Good level: 196 (10.6%).

Total scores are shown in *Table (3).*

Level of Knowledge				
	Frequency	Percent	Valid Percent	Cumulative Percent
Weak	454	24.4	24.4	24.5
Intermediate	1205	65.0	65.0	89.4
Good	196	10.6	10.6	100.0
Total	1855	100.0	100.0	

The following is the relationship of each factor in the first group of the questionnaire with the students' level of knowledge:

Statistical analysis showed that the **Academic Specialization** and **Academic Year** had an apparent effect on the research sample's knowledge level. We conducted the "Chi-Square Test" where both the P-value for the **Academic Specialization** (0.023) and for the **Academic Year** (0.000) were less than 0.05 as shown in **Table (4)**. The demographic background (gender, university, marital status, housing status, work status and financial condition) did not significantly affect first-aid knowledge. Also, receiving first-aid training, reading or hearing about first-aid information did not significantly affect the total score. **Table (4)** shows the p-value for those independent variables and the test used:

Table No. (4)

The Factor	Test's type	P - value
1.Gender	Chi-Square	P = 0.306
2.University	Chi-Square	P = 0.917
3. Marital status	Chi-Square	P = 0.995
4. Housing status	Chi-Square	P = 0.330
5. Received Medical first-aid training	Chi-Square	P = 0.073
6. Work status	Chi-Square	P = 0.799
7. Financial condition	Chi-Square	P = 0.884
8. Academic Specialization	**Chi-Square**	**P = 0.023**
9. Academic Year	**Chi-Square**	**P = 0.000**

Discussion

In this study, very few students demonstrated good knowledge of first-aid principles, whether they had received prior training in first-aid procedures or not. Likewise, a Peruvian study among medical students reported that 60.4% of the participants showed poor first-aid knowledge although 52.5% of them had received prior training on how to act in an emergency. Further, a Dutch study reported that 81% of junior doctors had poor knowledge of first-aid principles [5]. Thus, we conclude that taking courses alone is not sufficient to apply the knowledge in real-life situations. Therefore, it is advisable to perform frequent knowledge assessments through out the courses to obtain the best possible result. It is also encouraged to undergo follow-up sessions every 6–12 months to ensure that the population in general, and medical students in particular, remain well-informed and updated about the latest standards of practice followed in first-aid procedures [6].

We also note that most medical students obtained average scores on their first-aid knowledge assessment and that only a tiny group managed to score above average. Furthermore, the largest proportion of clinical-year (senior) students were able to score well on first-aid knowledge assessment. This indicates the urgent need to devote greater focus to the topic of first aid among pre-clinical students [5].

In this study, 35.9% of students were correctly aware of the steps of cardiopulmonary resuscitation (CPR) as part of their overall first-aid administration, which was a very high percentage compared to the results of a study conducted in Salem, Tamil Nadu, where it was reported to be 17.1. %. Also, in the Dutch study, only 6% of students knew and performed CPR correctly [7]. Nevertheless, except that similarly to our own, two Karachi-based studies reported that 32.2% and 38.8% of participants knew how to perform CPR correctly [4]. Moreover, the test results were similar to some studies and different from others, as we have

shown previously, depending on the different causes leading to this result and the different living conditions in the countries.

Properly administering first aid for burns was recognized by 57% of students compared to 23.2% in an Irish study, showing that our students are thoroughly informed about the concept of burns. On the other hand, the latter study reported that 30.4% of medical students had good knowledge of first-aid management in cases of accidental ingestion of toxins compared to 21.9% in our study [3].

As for applying ambulance-aid principles to fractures, external bleeding, and cases of trauma in general, many students demonstrated good knowledge, indicating that our curricula focus relatively more on these topics. In contrast, regarding the priority of examination when viewing Injured, a low percentage of students answered correctly, comprising about 32.2% (Table 2). Moreover, based on the results obtained (Table 2), we find that most of the students did not provide correct answers on several topics such as ankle sprain and trauma, which comprised 26% of the lack of knowledge of trauma management compared to fractures, whose rate was only about 8.1%.

Meanwhile, television advertisements can have an impact on viewers' perceptions of first-aid procedures, especially medical students, and can be used as a means of raising awareness and disseminating knowledge. Needless to say, an increase in knowledge among medical students would result in individuals who are knowledgeable and confident enough to handle any critical situation they might encounter. This may be especially vital for a country in the face of any natural disasters because medical students will be the future cornerstone of facing any health risk that society may be exposed to. Another benefit from training students in first aid is that they can successfully provide first-aid training to their peers or other beneficiaries as stated by 97.7% of medical students at Altintaş et al. [8] [9] [10].

Strengths

Similar studies regarding awareness of first aid measures among medical students in Syria have not been done before. Our study revealed that first-aid knowledge among students needs improvement in certain subjects, whereas in other subjects, students managed to show sufficient experience to properly deal with the corresponding situation. The study was also conducted at a national level and included all public and private universities in all Syrian governorates.

Conclusion

In general, students in clinical years performed better than students in earlier years. On the whole, this study emphasizes the need to provide formal training courses for medical students, specifically first-aid courses, so that trained students become able to perform effective first-aid procedures independently and spontaneously in real-life situations. We also note that there is currently no formal first-aid training in medical curricula for students in their early years. Therefore, there is an urgent need for first-aid training among medical students as a whole and pre-clinical students in particular. The study also identified areas

where a lack of knowledge among students was more prevalent and therefore these areas must be the main focus of future curriculum revisions. Finally, we note that more studies should be conducted to assess first-aid knowledge and other healthcare-related skills among medical students in Syria.

Declarations

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