

## Evaluation of knowledge, attitude, and practice about first aid of spinal injury among medical students in Saudi Arabia, 2018

Eradah Ali AlMarhoon<sup>1</sup>, Renda Ali Alhabib<sup>2</sup>, Abdullah Ali Alshaalan<sup>3</sup>

1-Almaarefa university, 2-Unaizah College of medicine, 3-Prince Sattam Bin Abdulaziz University

### **Abstract**

**Background:** Spinal cord injury (SCI) is always a medical emergency as it could lead to chronic painful conditions, permanent paralysis or even death. **Objectives:** Assessing the knowledge, attitude and practice (KAP) regarding the first aid of spinal injury in Kingdom of Saudi Arabia (KSA). **Methods:** A prospective randomized controlled study based on a questionnaire sheet that was conducted at Saudi Arabia, from March to July 2018. The study included 390 medical students randomly chosen from different faculties of medicine around KSA. **Results:** The level of knowledge was sufficient among 84.9% of medical students. The attitude of the medical students was good among most of the participants regarding calling help and starting CPR immediately, taking care while moving the patients and applying direct pressure on the side of bleeding. The level of practice among most of medical students was good toward patients with spinal injury even conscious or not. **Conclusion:** The KAP level was sufficient among medical students about first aid of spinal injury. The proper knowledge, positive attitude and practice skills towards first aid can make a significant difference in Saudi Arabia.

**Keywords:** Knowledge, Attitude, Practice, medical students, first aid, spinal injury, KSA

### **Background**

First aid is defined as some simple and quick steps that can be performed outside the hospital without or with minimal medical equipment to save someone who in risk or relieve his pain until the arrival of ambulance (1, 2).

Spinal injury is a lethal clinical condition that can occur frequently among adults. The treatment is often difficult and resulted in high incidence of disabilities and death around the world (3). The most effective management of spinal injury begins with adequate first aid and rehabilitation (4, 5).

Also, cervical spinal cord injury is a severe problem that alter the neurological function resulting in compromising the cardiovascular and respiratory systems (6-8) especially during the 3-8 hours. It must be managed properly within the accurate time otherwise; these conditions could result in death. If not managed adequately in a timely manner, these conditions can be life-threatening. The patient must be stable to avoid further damage thus the secure mobilization is an indispensable must for definitive treatment and recovery (9).

Most of Universities teach about handling emergencies in hospital and pre-hospital which could be lifesaving. Although, the adequate knowledge regarding the emergency handling at the site of emergency was found to be insufficient which is supposed to be very life wasting (10, 11). Also, there is a

lack of studies contributing the awareness of medical students regarding first aid thus, the practice of some junior doctors may be non-satisfactorily (12, 13).

### **Methods:**

#### **Study design:**

A prospective randomized controlled study based on a questionnaire sheet that was conducted at Saudi Arabia, from March to July 2018.

#### **Study population and sample size:**

The study included 390 medical students randomly chosen from different faculties of medicine around KSA. As 13 universities were randomly chosen from each district then 30 medical students from the 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> curriculum were randomly chosen from each university.

#### **Study**

#### **tools:**

The study was based on a questionnaire sheet that was designed after conducting a systemic search on all online medical search engines then was tested in a pilot study among 50 medical students to be tested, modified and validated. The questionnaire was reviewed by supervisors and the committee of university.

#### **Ethical approval:**

The study was approved by the ethical committee of Faculty of medicine. All the included interns gave a written informed consent for approval on taking part in the study.

**Statistical analysis :**

The data were processed using the Statistical Package for Social Sciences (SPSS, version 22) for windows.

**Results:**

**Assessment of knowledge among medical students concerning first aid during spinal injury:**

The study included 390 medical students from both genders. As for the first aid awareness among the participants, all of them knew when to suspect spinal injury wither by head injury evidence, neck or back pain and complains, inability to move neck and neck or back twisting. Also, more than half of them (78.7%) knew that weakness, numbness or paralysis or lack of control of limbs; bladder or

bowels are significant signs of spinal injury. As for the first aid, all of the participants had sufficient knowledge about the importance of immobilizing the patient with spinal injury. Also, 90.8% knew about the damage and complications of mobilizing the spinal injury patient in improper way. However, only 35.6% of them had proper knowledge about the importance of reduction within the first few hours and its effect on neurological outcomes. About 91.9% of subjects knew properly the exact timing for complete management of injury that could be lifesaving. Also, 78.5% knew the proper way for moving the patient with spinal injury and all of them knew about the importance of CPR among spinal injury patients

**Table (1): Awareness level among participants (390):**

	Correct
1- When would you suspect having a spinal injury:	
- There's evidence of a head injury with an ongoing change in the person's level of consciousness	390 (%100)
- The person complains of severe pain in his or her neck or back	390 (100%)
-The person won't move his or her neck	390 (100%)
-An injury has exerted substantial force on the back or head	206 (52.8%)
-The person complains of weakness, numbness or paralysis or lacks control of his or her limbs, bladder or bowels	311 (78.7%)
- The neck or back is twisted or positioned oddly	390 (100%)
2- Immobilization of the injured cervical spine is of vital importance	390 (100%)
3- unstable injured spine can not only cause further damage to the spinal cord, but can also affect the respiratory function	354 (90.8%)
4- Reduction or realignment of the cervical spine within the first few hours of injury may lead to dramatic improvement in the neurologic status	139 (35.6%)
5- Reduction within two hours of injury may reverse tetraplegia	239 (91.9%)
6- For mobilizing the patients use <b>the hand flip method "log rolling," and a neck supporter</b>	306 (78.5%)
7- Air way maintenance and CPR must be done if the patient shows no signs of circulation	390 (100%)

**Level of knowledge:**

The level of knowledge was sufficient among 84.9% of medical students and was insufficient among 15.2% of them (Table. 2).

**Table (2): first aid level of knowledge**

Knowledge level	Frequency	Percent (%)
Good	331	84.9
Poor	59	15.2
Total	390	100.0

**- Evaluating the attitude towards first aid:**

The attitude of the medical students was good among most of the participants regarding calling help and starting CRP immediately, taking care while moving the patients and applying direct pressure on the side of bleeding as presented in Table. 3.

**Table (3): Attitude of medical students toward first aid during spinal injury**

	No.	Percentage (%)
<b>What will be the next step if you find a patient who is unresponsive?</b>		
Check for no breathing and no pulse, call for help then start cardio pulmonary resuscitation (CPR)	278	71.3
Call for help directly.	12	3.1
Start cardio pulmonary resuscitation (CPR).	100	25.6
<b>I would take spinal movement precautions in unconscious trauma patients</b>		
Yes	390	100
No	0	0
<b>In case of bleeding due to injury I apply direct pressure and the injured limb is raised above the level of the heart</b>		
Yes	390	100
No	0	0

**Practice pattern of included subjects:**

The level of practice among most of medical students was good toward patients with spinal injury even conscious or not.

**Table (4): practicepattern among medical students:**

	Yes	No
1. I call ambulance and ask for help then begin first aid intervention	347 (89%)	43 (11%)
2. I have practiced CPR before	299 (76.7%)	91 (23.3%)
3. I take extreme care at all times to maintain alignment of the head, neck and spine.	365 (93.6%)	25 (6.4%)
4. Among unconscious patient/s, I place the unconscious patient in recovery position supporting neck and spine in a neutral position at all times to prevent twisting or bending movements with maintain a clear and open airway and a cervical collar	286 (73.3%)	104 (26.5%)
5. If they're responsive: Reassure them and tell them not to move	390 (100%)	0 (0%)

**Discussion**

Restriction of the injured spine movement is significantly vital and could be lifesaving<sup>(9)</sup>. If it is ignored it could result in unstable damage to spinal cord, decline in respiratory and cardiac function. Thus, it is considered the first step of first aid to support the back and neck while moving the patient with spinal cord injury. Thus, study showed high level of KAP toward keeping the patient still, supporting him and decreasing the level of pain using special movement manner<sup>(14-16)</sup>.

This study aimed at establishing good knowledge about first aid of spinal cord injury among medical students to enhance the pre-hospital training and enabling the students to formulate first aid specifications which can save lives and decrease disabilities.

The positive attitude and the level of practice were adequate among most of the medical students which was associated with their high knowledge. The awareness and practice of CPR technique was high among the participants which could enhance the survival rate among

patients till medical help arrives among most of the cases.

This study has some strength points as it is the first study to evaluate the KAP of medical students toward first aid of spinal injury which is a significant issue altering many lives with its high prevalence in KSA. This study has also some limitations including the included students were only from higher grades and there was a scanty of available online database considering the first aid during spinal injury.

#### **Conclusion:**

The KAP level was sufficient among medical students about first aid of spinal injury. The proper knowledge, positive attitude and practice skills towards first aid can make a significant difference in Saudi Arabia.

#### **References:**

- 1.Swetha C, Suchitra M and Sahana B (2015):** A study on assessment of knowledge attitude and practices regarding first aid among nursing students. *International Journal of Current Research*, 7:1673-1675.
- 2.Joseph N, Kumar G, Babu Y et al. (2014):** Knowledge of first aid skills among students of a medical college in mangalore city of South India. *Ann Med Health Sci Res.*, 4:162-166.
- 3.Jazayeri SB, Beygi S, Shokraneh F et al. (2015):** Incidence of traumatic spinal cord injury worldwide: a systematic review. *European spine journal : official publication of the European Spine Society, the European Spinal Deformity Society, and the European Section of the Cervical Spine Research Society*, 24:905-918.
- 4.Xue F, Xiong J, Zhang P et al. (2017):** Pre-hospital and in-hospital first aid programs and specifications for spine and spinal cord injury in Beijing, China: study protocol for a prospective, multicenter, nonrandomized controlled trial. *Asia Pacific Journal of Clinical Trials: Nervous System Diseases*, 2:58.
- 5.Lee BB, Cripps RA, Fitzharris M et al. (2014):** The global map for traumatic spinal cord injury epidemiology: update 2011, global incidence rate. *Spinal cord*, 52:110-116.
- 6.Grabowski G, Cornett CA and Kang JD (2012):** Esophageal and vertebral artery injuries during complex cervical spine surgery--avoidance and management. *The Orthopedic clinics of North America*, 43:63-74.
- 7.Helgeson MD, Gendelberg D, Sidhu GS et al. (2012):** Management of cervical spine trauma: can a prognostic classification of injury determine clinical outcomes? *The Orthopedic clinics of North America*, 43:89-96.
- 8.Jubert P, Lonjon G and Garreau de Loubresse C (2013):** Complications of upper cervical spine trauma in elderly subjects. A systematic review of the literature. *Orthopaedics & traumatology, surgery & research*, 99:S301-312.
- 9.Kwon BK, Vaccaro AR, Grauer JN et al. (2006):** Subaxial cervical spine trauma. *The Journal of the American Academy of Orthopaedic Surgeons*, 14:78-89.
- 10.Khan A, Shaikh S, Shuaib F et al. (2010):** Knowledge attitude and practices of undergraduate students regarding first aid measures. *JPMMA The Journal of the Pakistan Medical Association*, 60:68-72.
- 11.Tekian A (2002):** Have newly graduated physicians mastered essential clinical skills? *Medical education*, 36:406-407.
- 12.Joseph N, Kumar GS, Babu YPR et al. (2014):** Knowledge of First Aid Skills Among Students of a Medical College in Mangalore City of South India. *Annals of Medical and Health Sciences Research*, 4:162-166.
- 13.Tan EC, Severien I, Metz JC et al. (2006):** First aid and basic life support of junior doctors: A prospective study in Nijmegen, the Netherlands. *Medical teacher*, 28:189-192.
- 14.Fransen BL, Hosman AJ, van Middendorp JJ et al. (2016):** Pre-hospital and acute management of traumatic spinal cord injury in the Netherlands: survey results urge the need for standardisation. *Spinal cord*, 54:34-38.
- 15.Oteir AO, Smith K, Stoelwinder J et al. (2017):** Prehospital Predictors of Traumatic Spinal Cord Injury in Victoria, Australia. *Prehospital emergency care : official journal of the National Association of EMS Physicians and the National Association of State EMS Directors*, 21:583-590.
- 16.Robert AA and Zamzami MM (2013):** Traumatic spinal cord injury in Saudi Arabia: a review of the literature. *The Pan African medical journal*, 16:104.