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### RESEARCH ARTICLE

#### KNOWLEDGE, ATTITUDE AND PRACTICE OF ACLS IN HEALTHCARE PROFESSIONALS AND MEDICAL STUDENTS IN MAJMAAH UNIVERSITY.

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#### Abstract

**Objectives:** Advanced Cardiac Life Support (ACLS) is essential to ensure delivery of optimum medical care in emergency situations. This study is aiming to measure the knowledge, attitudes and experience of ACLS among the students of Majmaah University in Saudi Arabia.

**Methods:** The study prospective is cross-sectional took place between February and August 2019. The study used a questionnaire as a tool to collect opinions of 300 students, the answers were collected and analyzed using SPSS software.

**Results:** Almost half of study sample have poor knowledge of ACLS practice although many have attended BLS (Basic Life Support) courses or workshops.

**Conclusion:** The study revealed that despite having positive attitude training, students fails to answer some of very simple question, which shows their inadequacy in BLS/CPR training. It also indicates that the overall knowledge of BLS/CPR training among Majmah University students is not adequate and need significant improvements in order to save lives.

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#### Introduction:-

In medical emergencies, it is critical for advanced cardiac life support (ACLS) to be administered at the right time as it aids in saving the lives of the patients involved. In the modern times, medical professionals and health care studies should have advanced knowledge regarding ACLS and they should remain up to date with any changes implemented on various protocols as per evidence in medical science. This would ensure that in addition to equipping them with the proper skills to cope with most of the medical emergencies, medical facilities would avoid tragic consequences and legal hazards associated with negligence and improper care<sup>1</sup>.

For the past few decades, research studies carried out on the use of Cardio Pulmonary Resuscitation (CPR) and ACLS have revealed that there is extended lack of knowledge, training and inability to offer these medical emergency operations to patients among medical professionals worldwide. Based on this, it is important to enlighten healthcare professionals on the need to remain well-prepared to tackle emergency cases, to acquire proper skills, and remain confident to provide their patients with advanced care possible<sup>2</sup>. Majmaah University is an institution of higher learning located in Saudi Arabia and medical students from this institution undertake ACLS training programs during their courses. As per the medical council in Saudi Arabia, before medical professionals take part in

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medical internship they also undertake another ALS training course to ensure that they are aware of what to do in times of medical emergencies<sup>3</sup>.

While trainings and knowledge of ACLS is provided worldwide to all those in the medical field, its successful outcome does not solely rely on the provision or the availability of the courses in the medical curriculum or learning institutions. It is highly dependent on the attitude and practice of the medical professionals and students meant to perform these procedures on patients in need of medical emergencies. Attitude and practice complements the good knowledge provided during training to guarantee positive outcome of ACLS. This situation in the end works to lower the mortality rate due to medical emergencies hence causing increased patient satisfaction globally<sup>4</sup>.

In focusing on the healthcare professionals and medical students in Majmaah University in Saudi Arabia, this study proposes the performance of a research study that explores the knowledge, attitude, and practice of ACLS. The study is aiming to confirm the assertions in some of the previous studies performed in the recent past by earlier scholars on the importance of acquiring proper knowledge, having positive attitude towards its application, and practice of ACLS. It will also aim to providing suggestions to the medical industry with regards to improving the ACLS training programs. These objectives will be met while the researcher focuses on emphasizing on the significance of introducing regular programs for the qualified medical professionals to refresh their knowledge on ACLS and update them on any changing protocols of the aforementioned guidelines.

### Literature Review

According to Alsayil et al<sup>2</sup>, CPR and ALS are critical lifesaving operations whose applications is crucial in saving the lives of patients as they wait for further medical care and services to be provided to them. Studies<sup>6</sup> affirm these assertions by stating that in a community where in all regions worldwide, cardiovascular disorders and diseases have become a major health care concern as sudden cardiac deaths (SCD) become one of the most common causes of mortality among patients. In fact, statistics from WHO confirm that survival rate for patients after a heart attack keep decreasing as the survival of these patients highly depends on the quick intervention of the medical attendants within the vicinity, the quality of medical emergencies given, and the duration undertaken before the patient is placed on defibrillation after the attack.

To Tsegaye et al<sup>13</sup>, more than 70% of the heart attacks that take place outside of medical facilities occur at the residences of the victims and more than half of these are unwitnessed. The statistics are further depressing as only about 11% of the adult patients who suffer from non-fatal heart attacks and have an increased chance to survive and receive emergency medical care from qualified personnel survive to be discharged from the hospitals. ACLS creates the foundation that saves the lives of patients after they suffer cardiac arrests. As a result, this is why it is critical for all health care professionals to understand and have knowledge of ACLS since they are likely to encounter such situations often than not.

In a busy hospital setting, such medical emergencies and cardiac arrest conditions could occur every day and just as Ghauri et al.<sup>8</sup>, assert in their article on the impact of BLS training on the knowledge of BLS support in undergraduate medical students, it is very important that medical professionals, students, and any other practitioner within a hospital setting, have knowledge of ACLS. The application of this process is a crucial determinant towards the success of initial medical emergency operations such as CPR and BLS. Further, effective performance of ACLS supports the possibility of a positive outcome especially after an acute emergency situation.

Most of the studies that have been carried out in the past, confirm that there is a lack of proper knowledge among health care professionals on the application of ACLS, BLS, and CPR. The situation is serious as the list includes all groups of medical professionals from nursing staff, medical students, nursing students, the medical doctors practicing, medical interns, and pharmacists. In another related study, Tsegaye<sup>8</sup> concluded that many medical professionals and students do not take BLS, CPR and ACLS with the seriousness it deserves. While the programs are provided for in the courses undertaken by these students, the medical and nursing students ignore the need to acquire this knowledge. Consequently, this leads to a good percentage of them skipping the lessons making it hard for them to graduate fully skilled as required. Sharma and Attar (2012) observe that the assumptions most professionals and students in the medical field make is that CPR, BLS and ACLS are too simple and every one of them is always confident that they are well equipped to perform it. However, does this translate to positive results and outcome? Mansour et al.<sup>9</sup>, in a study that explored the knowledge of medical students in relation to BLS confirmed that students who took part in ACLS, BLS, and CPR programs were more knowledgeable than those who did not. Most research studies presented in the recent times have confirmed that poor awareness of ACLS in medical

students and healthcare professionals is worldwide. In developed and developing countries alike, awareness of poor and for the medical industry to be more effective in meeting its mandates towards saving the lives of children, change has to be implemented in the present community with regards to the knowledge, attitude, and practice of ACLS<sup>4</sup>.

Further, in order to create proper awareness and ensure that medical students and professionals understand the importance of acquiring proper ACLS knowledge, improve their attitude towards the practice and skill acquisition process, as well as focus on proper implementation or practice of the same in the real world scenarios, more studies need to be performed in the future. The assumptions by most of these students and professionals that make them assume ACLS programs and the 'self-confidence' should be challenged with facts and motivate these individuals to participate more in the knowledge acquisition process.

### Research Methodology:-

In performing this research study, the researcher will employ the cross-section observational research study design and construct questionnaires that will assist with data collection process. Since the study is meant to be performed in Majmaah University, the participants will include medical students in undergraduate, post-graduate, and graduate levels. A number of medical professionals working in the nearby hospital facility will also be contacted. The participants will be selected randomly with the researcher targeting at least 500 respondents. Once the respondents are identified, the researcher will approach them to consent participation in the study and then administer the questionnaires which will be required to be returned in two-five days.

The self-administered questionnaire used in this study will be prepared based on the recent ACLS guidelines in Saudi Arabia and it will be composed of 15-30 questions. The distribution of the questions will be in a way that some address knowledge, others attitudes, and practice. The collected data that is correctly filled will be saved in a Microsoft excel sheet and later analyzed using SPSS. The results will be presented in charts, tables, and figures for simplification purposes.

### Expected Findings Results

Of the 500 participants that will be contacted to take part in this research study, the researcher expects that at least 300 will fulfil all requirements, provide consent, and fill out the questionnaires correctly. This will ensure that the response rate is about 60% and the forms filled to be over 300 for all involved. In order to make sure that all the groups mentioned in the research topic are fully represented, deliberate attempts will be made to ensure that the percentage of the medical professionals to that of students is not too low to make their contribution insignificant. This means that the researcher will need at least 30 of the 300 participants to be qualified medical professionals in any position (i.e. nurses, pharmacists, or doctors).

The researcher also expects that a good number of the respondents will be experienced enough to have at least faced a cardiac arrest emergency situation or had to take care of a medical emergency at one point in their life. The researcher will also expect that most of the respondents indicate a higher confidence level with regards to handling medical emergency cases, saving the lives of patients with CPR, BLS, and ACLS, and using their knowledge to direct proper medical care post cardiac arrest. The results should further reveal that most medical students and nursing students have an improved attitude towards undertaking courses or programs on ACLS, BLS, and CPR in the modern times. This is because in the past, a number of studies have been performed to reveal the need for medical students to take these courses seriously and keep up to date with ever changing protocols in the ACLS guidelines. The same should also be witnessed with the findings from the health care professionals. This is in the sense that the study should show that most medical practitioners take ACLS programs seriously and they take the time needed to undertake refresher courses to enlighten them on new developments in the guidelines based on evidence.

### Study Results

To determine the level of Knowledge, Attitude and Practice the third Likert Scale has been used to indicate the weights and it was indicated as follows:

**Table 1:-**The weights of third Likert Scale

Mean	Level
1-1.66	No

1.67-2.33	I don't know
2.34-3.0	Yes

### Results Related to Answering the First Question Which Were:

What is the level of Knowledge and practice of ACLS in healthcare professionals and medical students in Majmaah University?

To determine this answer, we use the mean of response and compare it with the weights of third Likert Scale as the following table:

**Table 2:-**The mean and the standard deviation for questions in field of knowledge and practice.

N	Question	Mean of Knowledge and practice	Std. Deviation	Coefficient of variation	Degree of knowledge and practice
1	EMS stands for emergency medical services.	2.7355	0.51063	19%	Yes
2	CPR stands for cardiopulmonary resuscitation.	2.7871	0.54638	20%	Yes
3	If a 50-year-old man complains of retrosternal chest pain and nausea, you should contact EMS, administer aspirin and allow him to rest.	2.4323	0.75610	31%	Yes
4	If a colleague displays slurring of speech and right upper limb weakness, it could be a stroke which would require thrombolysis, so you should contact EMS.	2.6323	0.60323	23%	Yes
5	If you see a person collapse on the road, check if he is conscious, breathing and has a pulse.	2.7161	0.58946	22%	Yes
6	To find out if a person is unconscious, shake him and shout at him.	2.4129	0.80411	33%	Yes
7	To find a person's carotid pulse, feel their neck.	2.6581	0.61832	23%	Yes
8	After confirming that a person is unconscious, not breathing and has no pulse, you should contact EMS and start CPR.	2.7419	0.50759	19%	Yes
9	The phone number for EMS is 997.	2.6129	0.55112	21%	Yes
10	The location of chest compressions in CPR is the mid-chest.	2.5871	0.69120	27%	Yes
11	The correct rate of chest compressions for adults and children is 100–120 times/minute	2.3806	0.78352	33%	Yes
12	The correct depth of chest compressions for adults is 5–6 cm.	2.5871	0.61144	24%	Yes
13	The correct ratio of chest compressions to rescue breaths is 30:2	2.6581	0.56337	21%	Yes

1 4	The correct depth of chest compressions for children and infants is at least two-thirds of the depth of the chest.	2.3871	0.6 779 2	28%	Yes
1 5	The correct location for chest compressions for infants is one finger breadth below the nipple line.	2.4323	0.7 209 2	30%	Yes
1 6	Rescue breathing in infants is given mouth-to-mouth and mouth-to-nose.	2.1677	0.7 369 6	34%	I don't know
1 7	If you do not want to give mouth-to-mouth CPR, you can give hands only CPR.	1.9871	0.8 137 4	41%	I don't know
1 8	The chance of survival for individuals experiencing an out-of-hospital cardiac arrest increases two-fold if the patient receives sufficient BLS before the arrival of EMS personnel.	2.5097	0.6 382 6	25%	Yes
1 9	If you come across an unresponsive adult who has been removed from fresh water and is breathing spontaneously, keep him in the recovery position.	2.4710	0.6 675 2	27%	Yes
2 0	If someone appears to be choking, confirm foreign body aspiration by talking to them.	2.2452	0.7 923 5	35%	I don't know
2 1	If an infant shows symptoms of foreign body aspiration and you have confirmed that they are unable to cry/cough, perform back blows and chest compressions of five cycles each, then open the mouth and remove the foreign body only if it can be seen.	2.4774	0.6 579 7	27%	Yes
T o t a l  d e g r e e	<b>Knowledge and practice</b>	<b>2.5057</b>	<b>0.3 295 7</b>	<b>13%</b>	<b>Yes</b>

Maximum grade for Knowledge and practice is (3).

The previous table shows that the Mean of Knowledge and practice greater than 2 which means that all questions was important, the standard deviation of the responses was small for all questions, the coefficient of variation less than 50% for all questions which means that we can depend on it in taking decision, and there was found Knowledge and practice for Healthcare Professionals and Medical Students in Majmaah University in most of questions. There were found only three questions that the Healthcare Professionals and Medical Students in Majmaah University don't know it.

The three questions were:

1. Rescue breathing in infants is given mouth-to-mouth and mouth-to-nose.
2. If you do not want to give mouth-to-mouth CPR, you can give hands only CPR.
3. If someone appears to be choking, confirm foreign body aspiration by talking to them.

#### Results Related to Answering the Second Question Which Were:

What is the degree of attitude of ACLS in healthcare professionals and medical students in Majmaah University?

To determine this answer, we use the mean of response and compare it with the weights of third Likert Scale as the following table (3):

n	Question	Mean of	Std.	Coefficient	Degree
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		attitude	Deviation	of variation	Mean of attitude
1	You have attended BLS course before?	1.8774	0.95574	51%	I don't know
2	Should this course be offered to all students, for its importance?	2.7806	0.52559	19%	Yes
3	Will you be interested in ACLS refresher course every 4-5 years?	2.5871	0.70974	27%	Yes
4	Will you use your ACLS skills if a person suddenly goes into cardiopulmonary arrest or if he is choking from a foreign object?	2.4323	0.79788	33%	Yes
Total degree	<b>Attitudes</b>	<b>2.4194</b>	<b>0.53675</b>	<b>22%</b>	<b>Yes</b>

Maximum grade for Attitudes is (3).

The previous table shows that; The Mean of Attitudes greater than 2 which means that all questions was important except the first one, the standard deviation of the responses was small for all questions except the first one, the coefficient of variation less than 50% for all questions which means that we can depend on it in taking decision except the first one, there was found Attitudes for Healthcare Professionals and Medical Students in Majmaah University in most of questions.

But, there was found only one question that the Healthcare Professionals and Medical Students in Majmaah University don't know it. it was: You have attended BLS course before?

### Discussion:-

This study focused on the assessment of medical students of Majmaah University, one of the medical faculties in the Kingdom of Saudi Arabia. Out of 300 medical students who participated in this study, 51% do not know the ACLS, most of the students were average in the ACLS training. These findings are in agreement with those of previous research from Saudi Arabia, which have consistently shown poor BLS awareness but favorable attitudes towards BLS training according to Al-Mohaissen<sup>15</sup>, Al-Turki et al.<sup>4</sup>, Alanazi<sup>1</sup>. The knowledge score observed in the present study is based on the critical question which can be verified by the previous research Al-Mohaissen et al. Also, the knowledge scores observed in the current study were similar to those reported among medical students in Princess Nourah bint Abdulrahman University, Riyadh, Saudi Arabia in Al-Mohaissen study<sup>15</sup>; the question students were unable to answer shows that the students lack understanding of some basic concepts regarding the practice. Although the ACLS training is strongly recommended but still there are deficient in the medical education system in ACLS awareness in Saudi Arabia.

Poor ACLS knowledge has been observed in many countries, including India, Pakistan Chandrasekaran et al<sup>7</sup>, and Zaheer et al<sup>14</sup>. In Saudi Arabia, the major mean of transportation is the motor vehicle. Road traffic accidents are common in Saudi Arabia, and is among the major health hazard specially during Ramadan<sup>12</sup>. The strategic prevention plans can be implemented by the healthcare policies, transportation and Education authorities at this level. In case of trauma, ACLS and CPR support can save the life of a patient. Keeping this fact in the eye, the present study proves that students are incapable or not have sufficient training in CPR. The results indicates that the students were unable to answer, **If you do not want to give mouth-to-mouth CPR, you can give hands only CPR.** The present study access that there is a need of improvement in the ACLS awareness and training among the students of the Majmaah University. The awareness of ACLS and practice of CPR technique ensures the survival of the patient long enough till experienced medical help arrives and in most of the cases is itself sufficient for the patient survival. Cardiac arrests and accidents leave the victims with severe fatal morbidities if not treated promptly. Almesnad et al<sup>5</sup>. In this regard the proper training of the ACLS and CPR is required. The survival chances decrease by 7% to 10%, for every minute of delay in CPR. If the medical worker, would unable to think about CPR, it may lead to the death of the patient. A great number of the victims do not receive proper and adequate Resuscitation

within the critical time that reduces the chance of survival. So, it is very important that every healthcare Professional in the hospital must know about ACLS and CPR to save lives.( Chandarsekaran et al<sup>7</sup>., Out of 300 students, 41% say that they do not about the use of hands in CPR. This shows that the overall knowledge of ACLS/CPR training among Majmah University students is not sufficiently enough and need major improvements in order to save lives in the near future.

The limitations of this study are that this is a survey-based study, which does not test the psychomotor skills of students related to CPR/ACLS, which can influence the current result. The results can be affected by the gender biasness, as the sample recruitment was not comparative. Third it a small sample study related to the students of Majmah University only.

Although a number of cross-sectional studies have been performed on this topic, but this study is important as it suggests the designing future plans and educational strategies to improve ACLS/CPR training among the students. It also addresses the road accidents in Saudi Arabia, which calls for attention towards the better training programs for ACLS and CPR.

#### **Study conclusion and recommendations:**

In conclusion, the prognosis of cardiac arrest, infant breathing issues and deaths due to choking can be significantly improved by the timely administration of BLS/ CPR. BLS/CPR is an important part of first-aid training. The present study revealed the understanding and familiarity of BLS/CPR and attitude towards BLS awareness and training of the students of Majmah University, Saudi Arabia. Despite having positive attitude training, students fails to answer some of very simple question, which shows their inadequacy in BLS/CPR training. The results indicate that the overall knowledge of BLS/CPR training among Majmah University students is not adequate and need significant improvements in order to save lives.

Based upon the results of this study, a major introductory course and short courses should be introduced to the study material, about the use of the hands in CPR, recue breathing in infants. Derived from the result I would recommend the video tutorial for the students and simulation-based models demonstrating, how to help an infant in rescue breathing and proper procedure of the CPR. Future studies can involve distribution of questionnaire by the email.

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