Original Research Paper

Volume-8 | Issue-5 | May-2018 | PRINT ISSN No 2249-555X

Medical Science

Awareness of Radiology Staff toward Cardiopulmonary Resuscitation at Taif Hospitals , Saudi Arabia

Rania Mohammed Ahmed*	Radiology department ,Faculty of Applied Medical Science, Taif University, Taif, Saudi Arabia. *Corresponding Author
Suheir A. M. Sayed	Faculty of Applied Medical Science, Taif University, Taif, Saudi Arabia. & National Ribat University , Khartoum , Sudan.
Elsiddiq Amal I	Faculty of Medicine, Taif University, Taif, Saudi Arabia.
Nagwan Elhussein	Radiology department ,Faculty of Applied Medical Science, Taif University, Taif, Saudi Arabia.
Afaf Taha	Satam bin Abdul-Aziz University, College of Applied Medical Sciences, Radiology and Medical Imaging Department, Al-Kharj, Saudi Arabia.
Azhar Elqethami	Radiology department ,Faculty of Applied Medical Science, Taif University, Taif, Saudi Arabia.
Haneen Sahara	Radiology department ,Faculty of Applied Medical Science, Taif University, Taif, Saudi Arabia.

ABSTRACT **Objectives:** Knowledge of cardiopulmonary resuscitation (CPR) and practice of simple CPR techniques increase the chances of survival of the patient until experienced medical help arrives. This study **aim to** evaluate the knowledge and attitude of radiology departments staff in Taif hospitals regarding (CPR).

Patients and Methods : After approval a cross sectional study questionnaire was designed. Eighty tow radiology technologists which agreed to participate in the study (male and female) were selected in four referral hospitals in Taif city, Saudi Arabia. Accordingly, the researchers developed a questionnaire; consisted of three parts including demographic data, knowledge questions and attitude questions. Data collection was performed using interview method.

Results : Total of 82 questionnaires were completed. None of the participants had attended a training program since employment. A significant correlations were observed between source of knowledge about CPR , age and gender ($P \leq 0.08$ & 0.01) respectively. Attitude of the study sample and age ($P \leq 0.02$).Significant difference was observed between male and female subjects' technical knowledge ($P \geq 0.05$) and attitude ($P \geq 0.008$ &.007) respectively.

Conclusions : It can be concluded that, although the knowledge of participants towards CPR was positive in general (97.4%) , their attitude was relatively poor (37.8%). This finding should urge decision-makers to consider delivering in-service training courses to radiology technologists considering the increasing number of patients referred to radiology departments.

KEYWORDS : Knowledge, Attitude, Cardiac Arrest, CPR, Radiology.

Introduction :

Cardiopulmonary resuscitation (CPR) is an important medical procedure which is performed in an effort to manually preserved intact brain function until further measures are taken to restore normal spontaneous blood circulation and breathing in a person in cardiac arrest. It is a combination of rescue breathing and chest compression, which is delivered to the victims who are thought to be in cardiac arrest. Being important members of the health care team; medical students are deemed to passes the basic skills and expertise which are needed to perform CPR.[1,2]

According to guidelines, some advanced imaging systems including digital radiography systems, and Computed Tomography (CT) are installed in emergency departments to meet the needs of critically ill patients in this respect.[3] World Health Organization (WHO) reported that 1.2 million people are killed in road accidents each year and as many as 50 million people are injured worldwide. These figures will increase by about 65% over the next 20 years unless there is a new commitment to prevention.[4] , and of the injured individuals, some may have a critical condition due to severe trauma while others may have incurred superficial injuries. In general, almost all road accident injured individuals need to be taken care of in hospitals regardless of the severity of injuries.[5,6]

So this patients need to be transferred to imaging departments, for complementary radiological procedures, located far from the emergency department. These casualties are normally accompanied by a skilled nurse and a general practitioner during transfer to the imaging department to monitor the patient's condition and to deal with potential critical events. This discipline is disregarded when a collective event happens due to a lack of sufficiently trained and competent personnel to manage such circumstances.[7,8]

Early initiation of CPR can improve patient survival and neurologic outcome. Targeted education on cardiopulmonary resuscitation for emergency care providers and the public has increased survival rate of the patients. The ability to respond quickly and effectively to cardiac arrest situation rests on health care team and medical students being competent in emergency lifesaving procedure of cardiopulmonary resuscitation.[1,2] Knowledge and practice of simple CPR techniques increase the chances of survival of the patient until experienced medical help arrives , because most victims of cardiac arrest don't receive adequate resuscitation within the critical time which reduces the chance of survival as reported by one study.[9]

According to researchers knowledge there are no previous studies done on assessments of knowledge, attitude and practice toward CPR among radiology staff in Taif city hospitals. Only a few reports from developing countries have addressed the level of awareness, knowledge and practice of health care professionals in the performance of CPR.[10] So this study will provide baseline information for other researchers and health professional who are interested on CPR and encouraging habit of CPR training and education. Basic Life Support (BLS) includes both prompt recognition and immediate support of ventilation and circulation in case of respiratory or cardiac arrest.[11] It has a combination of skills including mouth-to-mouth

breathing to support ventilation and chest compression to normalize blood circulation to the brain and vital organs. Knowledge of BLS and practice of simple CPR techniques ensures the survival of the patient long. Furthermore the awareness should not only be limited to the medical personnel but also to the general population enough till experienced medical help arrives and in most cases is itself sufficient for survival.[12]

BLS is referred to as maintenance of airway, breathing and circulation without the use of any equipment. Emergencies can occur anywhere, anytime and in any individual. Such life threatening emergencies can also occur at the dental office due to higher levels of stress that is generally encountered. Management of an emergency must be the foremost goal and utmost responsibility for a dentist.[13,14] The majority of patients who experience an out-of-hospital cardiac arrest do not receive adequate resuscitation by health care professionals within the critical time, 3–5 min after onset, thus reducing the chance of survival.[15] Knowledge of BLS and practice of simple CPR techniques increase the chances of survival of the patient until experienced medical help arrives and, in most cases, is sufficient for survival in itself.[16] Past studies of BLS training have mostly compared test results before and after a course .[17,18], So this study aim to determine the level of awareness regarding CPR and BLS and knowledge of involved skills and its practical implementation attitude among radiology staff at Taif referral hospitals.

Material and Methods :

A cross sectional study designed by the researchers to assess knowledge , attitude and practice toward CPR among radiology departments staff in Taif hospitals through a well designed questionnaire. The questionnaire consisted of three parts :

First part : Demographic data: consisted of four questions (age, gender, nationality and work experience).

Second part : Knowledge Questions consisted from 2 questions toward Cardiopulmonary Resuscitation (CPR) ; Do you know the meaning of CPR , If yes , I know the meaning of CPR from where ?(University , friends , internet or movies and other source).

Third part : Attitude towards CPR which consisted from 6 questions , which were general attitude toward CPR ; Are you willing to perform CPR to any victim ? Yes or No question , and (if yes …how ? ; through chest compression , mouth to mouth or both). If no , their justification was (I am not ready , I fear injuring the patient , To avoid any responsibility and My occupational competence). Victim not breathing. What next ? and the choices were (Open airway , start chest compression and look for safety).

Methods of data collection : A verbal permission to carry out the study was obtained from the directors of each hospital to collect the necessary data after explanation the aim of present study to all participants. Interview by the prepared sheet to assess knowledge , practice and attitude toward CPR among radiology staff in Taif hospitals, each member was interviewed individually and the questionnaires were filled by one of the researcher. The sheet was filled and completed in 20 minutes.

Statical analysis : The obtained data were transferred to SPSS version 20. The t-test (independent samples) was used to test differences between groups (male and female subjects). Pearson correlation test was used to test association between the variables such as technical knowledge and score attitude score. A P value < 0.05 was used as cut-off point for significance. Age groups & gender distribution as in **table (1)** , nationality as in **fig (1)** and work place represented in **fig (2)**.

Table (1): Demonstrate age groups vs. gender distribution among study sample. **(n=82)**

Age * Gender Cross tab			
Age	Gender		Total
	Male	Female	
18-25	8	15	23
26-35	22	18	40
36 And Above	11	8	19
Total	41	41	82

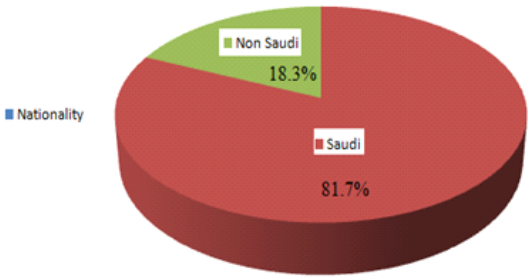

Fig (1): Demonstrate nationality of the study sample. (n=82)

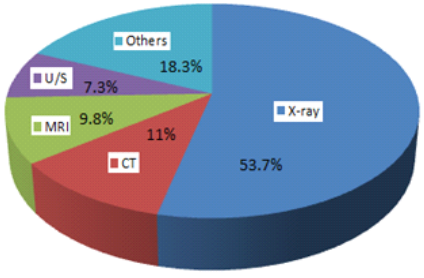

Fig (2): Demonstrate work place of the study sample. (n=82)

Table (3): Knowledge of the study sample according to their gender and age groups. (n=82)

Gender/Age groups	Do you know the meaning of CPR ?		
	Yes	No	Total
Male	(48.7%)40	1 (1.3%)	41 (50%)
Female	40 (48.7%)	1(1.3%)	41(50%)
Total	80 (97.4%)	2 (2.6%)	82(100%)
18-25 y	22(26.8%)	1(1.3%)	23(28.1%)
26-35 y	39(47.6%)	1(1.3%)	40(48.8%)
36 y And Above	19(23.1%)	0	19(23.1%)
Total	80(97.5%)	2(2.6%)	82(100%)

Table (4): Demonstrate sources of knowledge about CPR of the study sample according to gender distribution. (n=80)

Gender	If yes , I know the meaning of CPR from where ?				Total	Asymp . Sig. (2-sided)
	University	Friends	Internet or Movies	Others		
Male	27(33.8%)	3(3.8%)	0	10(12.5%)	40 (50%)	.080
Female	22(27.5%)	2(2.5%)	6 (7.5%)	10(12.5%)	40(50%)	
Total	49(61.3%)	5(6.3%)	6 (7.5%)	20 (25%)	80(100%)	

*There was significant correlation represented as (p= 0.08).

Table (5) : Demonstrate sources of knowledge about CPR of the study sample according to their age groups. (n=80)

Age	If yes , I know the meaning of CPR from …					Asymp. Sig. (2-Sided)
	University	Friends	Internet Or Movies	Others	Total	
18-25 y	18 (22.5%)	1(1.2%)	0	3(3.8%)	22(27.5%)	.018
26-35 y	24(30%)	1(1.2%)	5(6.3%)	9(11.3%)	39(48.8%)	
36 y And Above	7 (8.8%)	3(3.8%)	0	9(11.3%)	19(23.7%)	
Total	49 (61.3%)	5(6.2%)	5(6.3%)	21 (26.3%)	80 (100%)	

*There was significant correlations between the variables represented as (p= 0.01).

Table (6): Demonstrate attitude of the study sample according to the gender. (n=82)

Gender	Are you willing to perform CPR to any victim ?		Total	Exact Sig. (1-sided)
	Yes	No		
Male	12(14.6%)	29(35.4%)	41(50%)	.021
Female	22(26.8%)	19(23.1%)	41(50%)	.043
Total	34(41.4%)	48(58.5%)	82(100%)	

There was significant correlation between the variables represented as (p= 0.02 & 0.04) , respectively.

Table (7): Demonstrate attitude of the study sample according to their age groups. (n=82)

Age	Are you willing to perform CPR to any victim ?		Total	Asymp. Sig. (2-sided)
	Yes	No		
18-25 y	4(4.9%)	19(35.4%)	23	.008
26-35 y	15(18.3%)	25(30.5%)	40	
36 y And Above	12(14.6%)	7(8.5%)	19	
Total	31(37.8%)	51(62.2%)	82 (100)	

*There was significant correlations between the variables represented as (p= 0.007)

Table (8) : Demonstrate correlation between positive attitude of CPR according to age distribution. (n=31)

If yes…	How…?			Total	Asymp. Sig. (2-sided)
	Chest compression only	Mouth to mouth ventilation	Both		
Yes	7(22.6%)	2(6.5%)	22(70.9%)	31(100%)	.007
Total	7	2	2	31	

*There was significant correlations between the variables represented as (p= 0.007)

Table (9): Demonstrate justification of the study sample towards negative attitude towards CPR. (n=51)

Gender	If No , their justification was…				Total	Asymp. Sig. (2-sided)
	I am not ready	I fear injuring the patient	To avoid any responsibility	My occupational competence		
Male	11(21.6%)	1(1.9%)	10(19.5%)	0	22	0.08
Female	9(17.6%)	6 (11.7%)	8(15.7%)	6(11.8%)	29	
Total	20(39.4%)	7(13.6%)	18 (35.2%)	6(11.8%)	51(100)	

*There was significant correlations between the variables represented as (p= 0.08).

Table (10): Shows attitude towards CPR of the study sample. (n=70)

Age	Victim not breathing. What next ?			Total	Asymp. Sig. (2-sided)
	Open Airway	Start Chest Compression	Look For Safety		
18-25 y	11	0	8	19	.008
26-35 y	28	5	1	34	
36 y And Above	9	2	6	17	
Total	48	7	15	70	
Gender	**Victim not breathing. What next ?**			**Total**	**Asymp. Sig. (2-sided)**
	Open Airway	Start Chest Compression	Look For Safety		
Male	16	5	11	32	.009
Female	32	2	4	38	
Total	48	7	15	70	

* There are strong relation between variables represented as (p=0.008 and 0.009) respectively.

Discussion :

In hospital cardiac arrest is an emergency situation that requires teamwork and the appropriate sequential actions to rescue the patients.[19] The outcome of cardiac arrest and CPR is dependent on critical interventions, particularly early defibrillation, effective chest compressions and assisted ventilation.[20] Health professionals should have sound CPR/ BLS knowledge and skills, but there is a major problem with retention of skills and outdated information. [21,22] The technical knowledge and attitude of radiology staff regarding CPR in radiology departments of Taif referral hospitals were evaluated. Due to the lack of similar studies in western region of Saudi Arabia , general comparisons were performed. In this study male and female participants have had the same percentage (50%) for each, their age groups ranged from (18-25 y ,26-35 y and 36 y and above) , age group (26-35) y represented the majority of participants with (48.8%) , as in table (1).(81.7%) were Saudi , as in fig (1), they work at (X-ray ,CT , MRI , U/S units and other) , as in fig (2). 27(33.8%) of male and 22(27.5%) of the female participants they heard about CPR and BLS in the university , as in table (3).

Knowledge of (97.4%) of the participants in this study regarding CPR were considered adequate , age group 26-35 years old have had the best knowledge with (47.6%) , regarding their sources of knowledge about CPR and BLS (61.3%) they knew from university , while (25%) from other sources such as books , as in **tables (4&5)**. Study by National Academy of Sciences [23] demonstrated inadequate knowledge in CPR among health care professionals. Another study results [24] showed that although clinical practitioners had better BLS knowledge than students, their knowledge was not complete. (xvi) This result supports a similar study conducted in 2010 in India. Awareness of CPR and BLS was present in (66.6%) students, but skills were found in 18% only. Our study emphasized on the cognitive approach to general perception and skills of BLS. Practical application is difficult to assess through a questionnaire as cognitive abilities are superior to technical skills.[25] While one study [26] revealed that ; the participants had inadequate knowledge on BLS. Although 52% of the participants answered "7 of the 15 questions, only 7.4% (n=9) of them could answer (75%) of the questions correctly. Other studies also demonstrated inadequate CPR knowledge in health care professionals.[27,28]

(41.5%) of radiology technologists participating in this study had a positive attitude towards CPR (34 ± out of 82), and a correlation was also observed between attitude towards CPR and technical knowledge , the technical knowledge of participants was good (p=0.02 ,0.008) respectively. (37.8%) were welling to perform all types of CPR , while the rest of participants were refuses and their justification was am not ready , I fear injuring the patients , to avoid any responsibility and my occupational competence with (39.4% , 13.6% , 35.2% , &11.8%) respectively with sig correlation between the attitude and gender of the participants (p=0.08) , as in **tables (6,7,8 &9)**. (70 out of 82) of the study sample showed positive Attitude towards CPR , as in **table (10)**. One study[29] , showed that radiology technologists participating in the study generally had a positive attitude towards CPR (80 ± out of 115), and a correlation was also observed between attitude towards CPR and technical knowledge. On the contrary, the technical knowledge of participants was poor (average 8.8 ± 2.3 of 17).

While other study [30],showed that students with a positive attitude toward CPR and first aid acquired a higher technical knowledge score than those with a negative attitude. In terms of work experience, Another study [29] , reported a significant correlation between the years of work experience and technical knowledge (r = 0.317), which was in agreement also with the findings of Boddu et al.[31] Only (40%)of the respondents have attended workshops on CPR, this result reported in other study [32] , that (93.87%) were willing to perform CPR if the need arose while 4(6.13%) were not willing to perform CPR. The main reason for not willing to perform CPR by the few respondents is the fear of it not been effective from their experience in the past. All of the respondents were in support of the need to include training in CPR in the curriculum of the medical school.

In an effort to improve cardiac arrest outcomes, recent investigations have focused on the timing and quality of CPR. Several guidelines on performing CPR have been published and certified training courses based on these guidelines have become a standard in medical professionals' training in many parts of the world.[33]

Conclusion :

Since none of the participants had attended in-service training since employment according to their notice , it is assumed that educational programs of public media such as television and radio are beneficial as a reminder in this regard. Although the subjects had adequate

knowledge their attitude towards CPR was insufficient. All the participants in this study agree the need for CPR training for all health care providers. The students should completed CPR courses on continuous basis to keep them well informed of basic and new information in CPR training. Knowledge and awareness needs to be improved in order to prevent the life threatening emergencies.

Recommendation :

Awareness level should be elevated among Taif city community to prevent further growth of osteoporosis. Another study with large sample must be conducted in Taif region.

Basic Life Support (BLS) and other resuscitation skills should be a part of the undergraduate curriculum and students should master the skills during their studies.

Acknowledgment :

The authors thanks radiology staff at King Abdul Aziz Specialist Hospital (KAASH) , King Faisal Hospital and Pediatric Hospital , Taif city , Saudi Arabia for their cooperative in data collection , also thanks extended to Dr. Magda Ahmed Mohammed Mansour and all book authors and sources from where the data discussed and reviewed.

Conflict of interest :

Not present.

References :

1. Bakhsha F . Assessing the Need and Effect of updating the Knowledge about Cardio-Pulmonary Resuscitation in Experts. Journal of Clinical and Diagnostic Research.2010; 4: 2512-2514.
2. Weisfeldt ML (2004) Public access defibrillation: good or great? BMJ 328: E271-272.
3. Lee J, Kirschner J, Pawa S, Wiener DE, Newman DH, Shah K. Computed tomography use in the adult emergency department of an academic urban hospital from 2001 to 2007. Ann Emerg Med. 2010;56(6):591–6.
4. Peden M. World report on road traffic injury prevention .Geneva: World Health Organization; 2004.
5. Saadat S, Mafi M, Sharif-Alhoseini M. Population based estimates of non-fatal injuries in the capital of Iran. BMC Public Health. 2011;11:608.
6. Tuckel P, Milczarski W, Maisel R. Pedestrian injuries due to collisions with bicycles in New York and California. J Safety Res. 2014;51:7–13.
7. Nekooei Moghaddam M, Saeed S, Khanjani N, Arab M. Nurses' requirements for relief and casualty support in disasters: a qualitative study. Nurs Midwifery Stud. 2014;3(1): 9939.
8. Hogan DE, Brown T. Utility of vital signs in mass casualty-disaster triage. West J Emerg Med. 2014;15(7):732–5.
9. Almesned, A., Almeman, A., Alakhtar, A., AlAboudi, A., Alotaibi, A., Al-Ghasham, Y., Aldamegh , M. Basic life support knowledge of healthcare students and professionals in the Qassim University. International Journal of Health Science, Qassim University .2014; 8(2):141-150.
10. Cardiopulmonary resuscitation: statement by the Ad Hoc committee on cardiopulmonary resuscitation of the division of medical sciences, National Academy of Sciences, National Research Council. Cardiopulmonary Resuscitation. JAMA.1966;198:372-379.
11. Phillips P S, Nolan J P. Training in basic and advanced life support in UK medical schools: questionnaire survey. BMJ. 2001; 323:22-3.
12. Steen PA, Kramer-Johansen J. Improving cardiopulmonary resuscitation quality to ensure survival Curr Opin Crit Care. 2008; 14:299-304.
13. Chandrasekaran S, Kumar S, Bhat S, Sara vanakumar, Shabbir M, Chandrasekaran V. Awareness of basic life support among medical, dental, nursing students and doctors. Indian Journal of Anaesthesia. 2010;54(2):121-26.
14. Narayan D. Assessment of knowledge and attitude about basic life support among dental interns and postgraduate students in Bangalore city, India. World J Emerg Med. 2015;6(2):118-22.
15. Stotz M, Albrecht R, Zwicker G, Drewe J, Ummenhofer W. EMS defibrillation-first policy may not improve outcome in out-of-hospital cardiac arrest. Resuscitation. 2003;58:277–82.
16. Steen P A, Kramer-Johansen J. Improving cardiopulmonary resuscitation quality to ensure survival Curr Opin Crit Care. 2008;14:299-304.
17. Van Kalmthout PM, Speth PA, Rutten JR, Vonk JT. Evaluation of lay skills in cardiopulmonary resuscitation. Br Heart J.1985;53:562-6.
18. Berkebile P. Education in cardiopulmonary-cerebral resuscitation (CPCR) using self-training methods. Prehosp Disaster Med 1985;(Suppl. 1):91-3.
19. Krittayaphong R, Saengsung P, Chawaruechai T, Yindeengam A, Udompunturak S. Factors predicting outcome of cardiopulmonary resuscitation in a developing country: The Siriraj cardiopulmonary resuscitation registry. J Med Assoc Thai 2009;92:618-23. [PubMed]
20. Jacobs I, Nadkarni V, Bahr J, Berg RA, Billi JE, Bossaert L, et al. Cardiac arrest and cardiopulmonary resuscitation outcome reports: update and simplification of the UT stein templates for resuscitation registries. A statement for healthcare professionals from a task force of the international liaison committee on resuscitation. (American Heart Association, European Resuscitation Council, Australian Resuscitation Council, New Zealand Resuscitation Council, Heart and Stroke Foundation of Canada, Inter American Heart Foundation, Resuscitation Council of Southern Africa). Resuscitation 2004;63:233-49.
21. Chamberlain D, Smith A, Wool lard M, Colquhoun M, Handley AJ, Leaves S, et al. Trials of teaching methods on basic life support: comparison of simulated CPR performance after first training and at 6 months, with a note on the value of re- training. Resuscitation 2002; 53: 179-187.
22. Federico S, Luciano S, Erga L. Retention of CPR performance in anesthetists. Resuscitation 2006; 68: 101-108.
23. Cardiopulmonary resuscitation: statement by the Ad Hoc committee on cardiopulmonary resuscitation of the division of medical sciences, National Academy of Sciences, National Research Council. Cardiopulmonary Resuscitation. JAMA. 1966;198:372-379.24.Chandrasekaran S, Kumar S, Bhat SA, Saravanakumar, Shabbir PM, Chandrasekaran V. Awareness of basic life support among medical, dental, nursing students and doctors. Indian J Anaesth. 2010; 54(2):121-6.
25. Hassan Zaheer, Zeba Haque. Awareness about BLS (CPR) among medical students: status and requirements. JPMA 59:57; 2009.
26. Shrestha Roshana , Batajoo KH , Piryani RM , Sharma MW. Basic life support: knowledge and attitude of medical/paramedical professionals. World J Emerg Med, 1 3, 2, 2012.
27. Osinaike BB, Aderinto DA, Oyebamiji EO, Dairo MD, Diya KS. Evaluation of knowledge of doctors in Nigerian tertiary hospital about CPR. Nigerian Medical Practitioner 2007; 52: 16-18.
28. Zaheer H, Haque Z. Awareness about BLS(CPR) among medical students: status and requirements. J Pak Med Assoc 2009; 59: 57-59.
29. Hamid Behroozi, Masoumeh Alboghbeish , Ali Khalafi , et al., Knowledge and Attitude of Radiology Technologists Towards Cardiopulmonary Resuscitation. Jundishapur J Health Sci. 2015; 7(2).279.
30. Parnell MM, Pearson J, Galletly DC, Larsen PD. Knowledge of and attitudes towards resuscitation in New Zealand high-school students. Emerg Med J. 2006;23(12):899–902.
31. Boddu S, Prathigudupu RS, Somuri AV, Lingamaneni KP, Rao P, Kuchimanchi PK. Evaluation of knowledge and experience among oral and maxillofacial surgeons about cardiopulmonary resuscitation. J Contemp Dent Pract. 2012;13(6):878–81
32. Olajumoke To, Afolayan Jm , et al., Cardiopulmonary Resuscitation - Knowledge, Attitude & Practices in Osun State, Nigeria. Journal of the West African College of Surgeons . 2 (2), 2012.23-31.
33. Rudiger A, Tobler D, Estlinbaum W. Frequency and outcome of in-hospital resuscitation outside the ICU-setting. Swiss Med Wkly 2004;134:59-62. [PubMed]