Assessment of Chinese Nursing Students Perception in Cardiopulmonary Preparedness Weifang University of Science and Technologyin China

ABSTRACT

Assessment of Chinese Nursing Students' Perception in Cardiopulmonary Preparedness at Weifang University of Science and Technology in China, .The aim of the study was to this study assesses the preparedness of Chinese ~~N~~Nursing students in c~~C~~ardiopulmonaryr~~R~~esuscitation~~, a~~from selected sections ~~from~~of Weifang University of Science and Technology. This assessment entail~~ed~~s the identification of the preparedness~~"Readiness"~~ of Weifang University of Science and Technology ~~N~~nursing students to perform b~~B~~asic ~~L~~life s~~S~~upport in c~~C~~ardiopulmonary r~~R~~esuscitation when needed in the university, ~~in the~~ community, and ~~the~~ hospital setting.

Aim~~s~~: The primary aim of this research~~is~~was to assess the perception of Chinese ~~N~~nursing s~~S~~tudents on basic life support. The specific objective of this study was ~~is~~ to ~~assess~~ evaluate the level of Chinese Nursing students when it comes to Cardiopulmonary Resuscitation ~~P~~preparedness in order to determine their capability ~~when it comes to~~during emergency situations~~emergencies~~. The~~is~~ study was focused on 309 Chinese Nursing s~~S~~tudents from various levels of education at Weifang University of Science and Technology, a provincial public undergraduate and tertiary vocational college in Weifang, Shandong, China.

Scope and Limitation of the Study: The~~is~~ study focused on the preparedness of Chinese nursing students to perform Cardiopulmonary Resuscitation. The study wasconducted at Weifang University of Science and Technology focusing on 309 Chinese Nursing students from different levels of education~~:~~such as~~as~~a~~Associate~~Associate Degree ~~Degree~~, Bachelor's~~b~~B~~achelor'Degree~~, M~~m~~M~~aster's~~D~~egree~~, and PhD d~~D~~egrees.

Research Design: The researchers used descriptive nonparametric and Q~~Q~~ualtrics online survey toolstoassessthe perceptionofthe respondentson critical steps onb~~B~~asic l~~L~~ife support ~~critical steps and~~ whether it is important or not important.Online perceived "Performance Evaluation Tool" was used to assess respondents' perceived performance on Critical Steps ~~on~~ ofBasic Life Support in Cardiopulmonary Resuscitation.

Results: Mainstream of the Chinese nursing students ~~respondents~~ perceived can perform the critical steps of Cardiopulmonary Resuscitation with a mean score of 97.31 percent while the ~~perceived~~ ones who cannot perform is 2.69 percent.

Conclusion: Chinese nursing students' preparedness is essential in ~~an~~ emergen~~cy~~t in~~Basic Life Support - Cardiopulmonary Resuscitation. Themean score for parameters on critical step perceived canperform~~ed~~ with a score of 97.31 percent. This high

percentage of perceived performance can help the chance of survival and this perception can strengthen the Chinese students to do their task in emergency situations.
Key words: Cardio pulmonary resuscitation,Preparedness,Perception,Nursing Students,Basic life support.

1. INTRODUCTION

Cardiopulmonary resuscitation (CPR) is the most important and critical step in the rescue of patients with cardiac arrest and this must be done immediately because it provides the chance for 90% survival,especially in Out of Hospital Cardiac Arrest (OHCA). Out-of-hospital cardiac arrest (OHCA) is a major public health problem worldwide [1]. In China, there are more than 230 million people with cardiovascular disease, and 550,000 individuals experience cardiac arrest every year [2]. In China, the survival rate of OHCA is less than 1%[3]. There is a considerable body of research demonstrating bystander CPR improves survival rates for OHCA[4-5]. However, the rate of bystander CPR in several large-sized and medium-sized cities in China is only 4.5%[6].In the rapidly developing healthcare field, nursing students play a crucial role in shaping the future of patient care. Nursing students must be able to initiate and perform effective cardiopulmonary resuscitation (CPR) when they start their career in nursing [7-8].Hencelackofsufficientknowledge informationonthis interventionfurtherintensifiedthe recommendationtosupportthe advocacy for more Chinese Nursing Studentstolearn CPR.

This study seeks to assess the current state of knowledge, skills, and attitudes among nursing students at Weifang University of Science and Technologyregarding cardiopulmonary preparedness. By evaluating their self-perceived readiness, we aim to identify potential gaps in education and training that may exist. The findings of this research will be instrumental in enhancing the curriculum, improving educational strategies, and, elevating the quality of care that these future nursesing generation can provide.

1.1 Objective

The primary aim of this research is to assess the perception of Chinese nursing students on basic life support.

The specific objective of this study wasis to assess evaluatethe level of Chinese nursing students'performance when it comes to Cardiopulmonary Resuscitation preparednessto determine their capability in basic life supportduring emergencies.when it comes to emergencies.

The study was focused on 309 Chinese nursing students from various levels of education atWeifang University of Science and Technology,a provincial public undergraduate and tertiary vocational college in Weifang, Shandong, China.

The resultof thisstudycan give recommendationsforpolicydirectives on BLS development based on thestudyresult. The scope of this study focused on Chinese Nursing students from various levels of education, and they were assessed based on their perception of the critical steps of basic life support, specifically in Cardiopulmonary Resuscitation ~~when it comes to~~ during emergencies.

2. METHODS

2.1 Respondents of the Study

The study was conducted at Weifang Technology University focusing on 309 Chinese Nursing students from different levels of education~~:~~ likea~~A~~ssociate,b~~Degrees, B~~achelor~~'Degrees~~, ~~M~~master's~~Degrees~~, and PhD Degrees. The Chinese students were chosen because of their various levels of education,and they are similar in their chosen ~~profession~~professions.

The Weifang University of Science and Technology Research Ethics Review Boardapprovedthe research protocol. Beforestarting the study, the researchers seekapproval and informed consent from the respondents.

Using Block Sampling, 309 respondents were selectedfrom Weifang University of Science and Technology, with 98 Associate Degrees, 193 Bachelor'sDegrees, 12 Master'sDegrees, and 6 PhD. Degree.Inclusion age criteria ~~were~~ ranges from 17 years old to 50 years old at the time of BLS assessment and at least associate degree level.

2.2 Tool of the Study

Qualtrics online survey toolwas used toassessthe perceptionofthe respondentson Critical steps and whetherthe steps are important or not important.Online perceived "Performance Evaluation Tool" was used to assess respondents' perceived performance on Critical Steps on Basic Life Support in Cardiopulmonary Resuscitation.

2.3 Data Gathering Procedure

The questionnaire method was the mode of data gatheringwith a quantitativeapproach.(1) The studywasconductedat Weifang University of Science and Technology, a provincial public undergraduate and tertiary vocational college. (2) They answeredtheOnline self-administered

questionnairetodetermine the Chinese Nursing Students' perception of critical steps in Cardiopulmonary Resuscitation.

2.4 Statistical Analysis

Thedatagatheredfrom the Chinesenursing studentswere properly tabulatedandsummarizedintotablesto clarify and simplify the presentation of the data collected. Statistical analyseis were applied to the datausingthe following descriptive-nonparametric technique:
Percentage was used to describe theperception of Chinese nursing students on basic life support specifically in critical stepsif it is important or not important.. The researchers gathered the perceived perception of the Chinese Nursing students if they can perform the BLS Critical Steps or not ..they cannot not perform the BLS Critical Steps.

3. RESULTS AND DISCUSSION

Table 1 shows the Demographic Profile of the respondents in Weifang Technology University. The tTotal respondents were 309 Chinese students at different levels of education. The most dominant gender waswasfemales,whichconstituted 196 or 63.4 percent followed by 101 or 32.7 percent males.
The most dominant gender is female in the nursing profession which could be mirrored because the ethical reasoning is theconfidence and self-esteem among female nursing students [9]. Inthe Philippines, it is supportedby 87.9% of nursing are women. Comparatively, fFemale dominance in healthcare is not just a U.S. phenomenon. The results of a 2019 survey show that female nurses dominate healthcare in every country [10]. The feminization of nursing constitutes a significant barrier to men choosing to enter nursing and in part accounts for the dwindling numbers of men in the profession. [11]

The most dominant age of respondents waserе between 22-25 years old,whichconstituted 169 or 54.7 percent and followed by 19-21 years old,whichconstituted 113 or 36.6 respondents. The age range of 19 years old to 25 years old is dominant in student nurses.when it comes to age.

The age range of student nurses typically falls between 19 and 25 due to various factors influencing their educational and career choices. Research on nursing education indicates a rising number of nursing graduates, potentially attracting younger individuals seeking opportunities for international migration [12].

The most dominant level of education was Bachelor Level of Education consisting of 193 or 62.5 percent followed by Associate Degree Level whichconstituted 98 or 31.7 percent. It was explained in the age range of 19 to 25 years old. These two age brackets are the most dominant level of education because it is college life in China. The associate degree Level in China startsat 18 years old to 21 years old, a three-year course while the Bachelor's Degree in China startsat 18 years old to 22 years old, a four-year course in China. This is the reason the most dominant at this level are the Bachelor and Associate Levels. [13]

Table 1. Demographic Profile of the Respondents in Weifang Technology University, June 2024

N=309

Variables	Category	Number of Respondents	Percentage (%)
Gender	Male	101	32.7
	Female	196	63.4
	Transgender	6	1.9
	Bisexual	3	1
	lesbian	3	1
Age	Below18 years old	21	6.8
	19-21 years old	113	36.6
	22 - 25 years old	169	54.7
	26-29 years old.	6	1.9
Level of education	Associate degree	98	31.7
	Bachelor's Degree	193	62.5
	Master's Degree	12	3.9
	Ph.D. or higher	6	1.9
	~~Total~~	~~309~~	

Table 2. Assessment of Chinese Nursing Students' Perception of the BLS Critical Steps on Cardiopulmonary Resuscitation if it is Important or Not Important, June 2024

N=309

Steps perceive to be Important or Not Important	Important		Not Important	
	NO	%	NO	%

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1. Check for responsiveness: Taps and shouts, Hey, hey; are you ok? Are you alright? (If the victim is unconscious step 2)	300	97.1	9	2.9
2. Shout for help.	303	98.1	6	1.9
3. Check for the pulse and check for breathing (5-10 secs but not more than 10 secs.) Ifthe victim has a negative pulse and negative breathing proceed to step 4.	301	97.4	8	2.6
4. Tell someone to activate the Emergency Medical System and grab an AED. “Hey, you activate the EMS and grab an AED!”	295	95.5	14	4.5
5. Barethe patient's chest and locate the CPR hand position. (2 inches above the xiphoid process)	304	98.4	5	1.6
6. Delivers the first cycle of compressions at the correct rate (acceptable: 30 compressions/cycle)	303	98.1	6	1.9
7. Give 2 breaths (1 second each). Not used during the COVID-19 pandemic, just pausefor 2-3 seconds then continue Chest Compression.	304	98.4	5	1.6
8. After 1 minute when the AED arrives, Turnthe AED on, Place the machine beside the victim’s head, and follow the voice prompt. After the shock……	305	98.7	4	1.3
9. Delivers the second cycle of compressions at the correct hand position (acceptable greater than 30 compressions)	305	98.7	4	1.3
10.After 2 minutes of CPR, assess the victim for Pulse and breathing, if the victim has pulse and breathing. Position the victim in a recovery position.	302	97.7	7	2.3
Mean		97.81		2.19

Table 2 shows the mean score of parameters for critical steps in Basic Life support ~~if it is important is~~ of 97.81. The most important step is Step 8; After 1 minute when AED arrives, Turnthe AED on, place the machine beside the victim’s head, and f~~F~~ollow the voice prompt. After the shockand step 9; Delivers a second cycle of compression at the correct hand position with a shared percentage of 98.7. Followed by step 5; Bares the patient’s chest and locate the CPR position (2 inches above the xiphoid process) and step 7; give 2 breaths (1 second each) Not use during the Pandemic, just pause for 2 -3 seconds then continue Chest Compression with a shared percentage of 98.4. Lastly, the important steps are step 2; Shout for help, and step 6; Delivers of first cycle of compression at a correct rate with a shared percentage of 98.1.

Comparatively, the mean score on the critical step of Cardiopulmonary Resuscitation “not important” is 2.19 percent. The most perceived not important critical step inCardiopulmonary Resuscitation is step 4; Tell someone to activate the Emergency Medical System and grab an AED. “Hey, you activate the EMS and grab an AED with a percentage of 4.5. Followed by step 1; Check for responsiveness: Taps and shouts, Hey, hey; are you ok? Are you alright? With a percentage of 2.9. Lastly, step 3;Check for the pulse and check for breathing (5-10 secs but not more than 10 secs.) with a percentage of 2.6

The most important step is Step 8; After 1 minute when the AED arrives, Turnthe AED on, Place the machine beside the victim's head. This critical step is important and supported by 9 in 10 cardiac arrest victims who receive a shock from an AED in the first minute live [14]. It means the earlier application of AED the victim survived cardiac arrest. The step 9; which Delivers the second cycle of compression at the correct hand position with a shared percentage of 98.7 is also an important critical step in Cardio Pulmonary Resuscitation because your chance of survival while waiting for emergency medical services during a cardiac emergency decreases by 10% every minute without CPR [15].

Step 5; Barethe patient's chest and locate the CPR position (2 inches above the xyphoid process) and step 7; give 2 breaths (1 second each) Not use during the Pandemic, just pause for 2 -3 seconds then continue Chest Compression with a shared percentage of 98.4.

Bares the patient's chest and locating for CPR is important becausethere is growing evidence that open-chest cardiopulmonary resuscitation is superior to closed-chest cardiopulmonary resuscitation [16] but open chest is much more effective ifcardiac arrest patients with non-trauma showed that open-chest cardiopulmonary resuscitation was associated with higher ROSC compared with closed-chest cardiopulmonary resuscitation (OR = 3.12 95%CI 1.23–7.91, P < 0.05) [17].

Rescue breathing is also important especiallyin the state of cardiac arrest with no idea how long they~~'ve~~ have been in this state, they likely need the rescue breathing [18] but there is also a study that said, providing two insufflations during pauses in mechanical chest compressions is mostly unsuccessful [19]. Whatever the result ~~we~~ one must do high-quality compression to maintain the manual circulation that picks up the oxygen and distributes it to the brain and vital organs.

Table 3. Assessment of Chinese Nursing Students' Perception of the BLS Critical Steps of Cardiopulmonary Resuscitation if They Can Perform or Can't Perform, June 2024

N=309

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Steps Perceived can Performed or cannot be Performed	Perform		Not Perform	
	NO	%	NO	%
1. Check for responsiveness: Taps and shouts, Hey, hey; are you ok? Are you alright? (If the victim is unconscious step 2)	300	97.1	9	2.9
2. Shout for help.	309	100	0	0
3. Check for the pulse and check for breathing (5-10 secs but not more than 10 secs.) Ifthe victim has a negative pulse and	300	97.1	9	2.9

negative breathing proceed to step 4.				
4. Tell someone to activate the Emergency Medical System and grab an AED. “Hey, you activate the EMS and grab an AED!”	298	96.4	11	3.6
5. Barethe patient's chest and locate the CPR hand position. (2 inches above the xiphoid process)	302	97.7	7	2.3
6. Delivers the first cycle of compressions at the correct rate (acceptable: 30 compressions/cycle)	301	97.4	8	2.6
7. Give 2 breaths (1 second each). Not used during the COVID-19 pandemic, just pausefor 2-3 seconds then continue Chest Compression.	300	97.1	9	2.9
8. After 1 minute when the AED arrives, Turnthe AED on, Place the machine beside the victim’s head, and Follow the voice prompt. After the shock……	300	97.1	9	2.9
9. Delivers the second cycle of compressions at the correct hand position (acceptable greater than 30 compressions)	297	96.1	12	3.9
10. After 2 minutes of CPR, assess the victim for Pulse and breathing, if the victim has pulse and breathing. Position the victim in a recovery position.	300	97.1	9	2.9
Mean		97.31		2.69

Table 3 shows the mean for parameters on critical step on Chest Pulmonary Resuscitation perceived can be performed is 97.31 percent. The most critical step perceived can perform is step 2; Shout for help with a percentage of 100. Followed by step 5; Bares patient's chest and locates CPR hand position. (2 inches above the xiphoid process) with a percentage of 97.7. Lastly, step 6; Delivers the first cycle of compressions at the correct rate (acceptable: 30 compressions/cycle) with a percentage of 97.4.

Comparatively, the mean score for parameters on critical step perceived cannot performed is 2.69 percent. The most step perceived cannot performed is step 9; which Delivers the second cycle of compressions at the correct hand position (acceptable greater than 30 compressions) with a percentage of 3.9. Followed by step 4; Tell someone to activate the Emergency Medical System and grab an AED. “Hey, you activate the EMS and grab an AED!” with a percentage of 3.6. Lastly, the step perceived cannot be performed is step 1; Check for responsiveness: Taps and shouts, "Are you alright, are you ok?" (If the victim is unconscious step 2), step 3; Check for the pulse and check for breathing (5-10 secs but not more than 10 secs.), step 7; Give 2 breaths (1 second each). Not used during the COVID-19 pandemic, just pausefor 2-3 seconds then continue Chest Compression, step 8; After 1 minute when the AED arrives, Turnthe AED on, Place the machine beside the victim’s head, Follow the voice prompt, and step 10; After 2 minutes of CPR, assess the victim for Pulse and breathing, if the victim has pulse and breathing. Position the victim in a recovery position with a shared score of 2.9 percent.

Mainstreamthe Chinese Nursing Students respondentsperceived can perform the critical steps of Cardiopulmonary Resuscitation with a mean score of 97.31 percent while the perceived cannot perform is 2.69 percent.

The most important for Chinese Nursing Students on the critical steps in Basic Life Support in Cardiopulmonary Resuscitation is Step 2, Shoutfor Help with a score of 100 percent. It is by asking for help or shouting to attract their attention, but do not leave the casualty alone [20]. It is followed by Step 5; which Bares the patient's chest and locates CPR hand position with a score of 97.7 percent and Step 6; which Delivers the first cycle of compressions at the correct rate (acceptable: 30 compressions/cycle) with a percentage of 97.4. Proper hand position and compression are effective steps during cardiopulmonary resuscitation (CPR) that require depressing the anterior chest wall enough to compress the heart between the sternum and spine [21].

Comparatively, the mean score for parameters on critical step perceived cannotbe performed is 2.69 percent compared to the mean score for parameters on critical step perceived can be performed with a score of 97.31 percent. But survival rate of out-of-hospital cardiac arrest is less than 1% in China (compared with 12% in the United States) [22]. Specifically, the implementation rate for bystander CPR in China is low (4.5% in 8 large and medium-sized cities around China, 11.4% in Beijing, and 4.2% in Shanghai, vs 46.1% in the United States, 29% in Canada, 46%-73% in Sweden, 32.2% in Japan, and 21.2% in Australia)[23]. The quality is also poor, which is reflected by the low survival rates following bystander CPR in China [p]. It means there is a low survival rate in China by bystanderscompared to the perceived performance by the Chinese Nursing Students with a score of 97.31. It is needed to review the critical steps on how to do it and should assess the trainees on the actual performance on the critical steps of Cardiopulmonary Resuscitation to see the actual results of performance.

4. CONCLUSION

Chinese Nursing Students' preparedness is essential in an emergency in Basic Life Support - Cardiopulmonary Resuscitation. Themean score for parameters on critical step perceived canperformed with a score of 97.31 percent. This high percentage of perceived performance can help the chance of survival and this perception can strengthen the Chinese students to do their task in emergencies.

Hence, we also need to assess Chinese students' performance in Cardiopulmonary Resuscitation in actual scenarios. One way to assess the actual performance of the Chinese students and the layperson is toassessthe Basic Life Support (BLS) capability in the communityspecificallythehouseholdmembers [24] becausemost CA occurs inthe home or the community [25].

CONSENT AND ETHICAL APPROVAL

The Weifang University of Science and Technology Research Ethics Review Boardapprovedthe research protocol. Beforestarting the study, the researchers seekapproval and informed consent from the respondents.

REFERENCES

[1] Kiguchi T, Okubo M, Nishiyama C, et al. Out-of-hospital cardiac arrest across the world: first report from the International Liaison Committee on resuscitation (ILCOR). Resuscitation 2020;152:39–49.
[2] Xu F, Zhang Y, Chen Y. Cardiopulmonary resuscitation training in China: current situation and future development. JAMA Cardiol. 2017;2(5):469–70.
[3] Shao F, Li CS, Liang LR, Li D, Ma SK. The outcome of out-of-hospital cardiac arrests in Beijing, China. Resuscitation. 2014;85(11):1411–7
[4] Go, A.S., Dariush, M., Veronique, L.R., Emelia, J.B., Jarett, D.B., William, B.B., et al.,2013. Heart disease and stroke statistics—2013 update: a report from the American Heart Association. Circulation 127 (23), E841.
[5] Iwami, T., Kitamura, T., Kawamura, T., 2012. Chest compression-only cardiopulmonary resuscitation for out-of-hospital cardiac arrest with public access defibrillation. A nationwide cohort study. Circulation 126, 2844–2851.
[6] Xu F, Zhang Y, Chen Y. Cardiopulmonary resuscitation training in China: current situation and future development. JAMA Cardiol 2017;2:469–70.
[7] C. L. Cason and S. M. Baxley, "Learning CPR with the BLS anytime for healthcare providers kit," Clinical Simulation in Nursing, vol. 7, no. 6, pp. e237–e243, 2011.
[8] S. E. Husebø, F. Friberg, E. Søreide, and H. Rystedt, "Instructional problems in briefings: how to prepare nursing students for simulation-based cardiopulmonary resuscitation training," Clinical Simulation in Nursing, vol. 8, no. 7, pp. 307–318, 2012.
[9] Yousef Andargeery, Shaherah, Abdelaliem, Sally Mohammed Farghaly. 2024. Assessing the relationship between ethical reasoning confidence and self-esteem among female nursing students for enhancing the quality of work life: A cross-sectional study. Scopus. ISSN 00257974. DOI 10.1097/MD.0000000000037614.
[10] Alice Blackmore. 2024. ShiftMed. Women's History Month: Why Is Nursing Female Dominated? https://www.shiftmed.com/blog/womens-history-month-why-is-healthcare-female-dominated/
[11] Joan,Evans. 2003. Contradictions and Tensions: Exploring Relations of Masculinities in the Numerically Female-Dominated Nursing Profession. The Journal of Men's Studies.

[12] Scispace. 2024. Why the age of student nurses in the Philippines ranges 19 - 25? https://typeset.io/questions/why-the-age-of-student-nurses-in-the-philipphines-ranges-19-3yjio45kw1
[13] https://www.google.com/search?q=Age+range+in+China+Bachelor+Degree+and+Associate+Degree&oq=Age+range+in+China+Bachelor+Degree+and+Associate+Degree&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIHCAEQIRigATIHCAIQIRigATIHCAMQIRigAdIBCTIwNjYyajBqN6gCCLACAQ&sourceid=chrome&ie=UTF-8
[14] AHA. 2024. AED Facts Sheet. https://cpr.heart.org/-/media/CPR-Files/Training-Programs/AED-Implementation/2023-updates/AED-fact-sheet-Feb-2023.pdf
[15] AHA. 2024. AED Facts Sheet. https://cpr.heart.org/-/media/CPR-Files/Training-Programs/AED-Implementation/2023-updates/AED-fact-sheet-Feb-2023.pdf
[16] Mao Wang, Xiaoguang Lu, Ping Gong, Yilong Zhong, Dianbo Gong & Yi Song . 2019. Open-chest cardiopulmonary resuscitation versus closed-chest cardiopulmonary resuscitation in patients with cardiac arrest: a systematic review and meta-analysis. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine.
[17] Mao Wang, Xiaoguang Lu, Ping Gong, Yilong Zhong, Dianbo Gong & Yi Song . 2019. Open-chest cardiopulmonary resuscitation versus closed-chest cardiopulmonary resuscitation in patients with cardiac arrest: a systematic review and meta-analysis. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine.
[18] CPR Select. 2024. The Vital Role of Rescue Breathing in CPR Success. https://www.mycprcertificationonline.com/blog/importance-of-rescue-breathing-in-cpr
[19] Lotte C. Doeleman a b, René Boomars c, Anja Radstok c, Patrick Schober b d, Quinten Dellaert e, Markus W. Hollmann a b, Rudolph W. Koster f, Hans van Schuppen a b. 2024. Resuscitation. Volume 199, June 2024, 110234. Elsevier.
[20] https://www.google.com/search?q=shout+for+help+cpr&oq=Shout+for+help&gs_lcrp
[21] Joshua D Stearns 1, Jaffalie Twaibu 2, Dzifa Kwaku 2, Vincent Pizziconi 2, James Abbas 2, Ashwini Gotimukul 3, Dawn E Jaroszewski 3. 2020. Efficacy of standard chest compressions in patients with Nuss bars. PMID: 32944342 PMCID: PMC7475523 DOI: 10.21037/jtd-20-702.
[22] Feng XuYun ZhangYun ZhangYuguo Chen. 2017. Cardiopulmonary Resuscitation Training in China: Current Situation and Future Development. DOI: 10.1001/jamacardio.2017.0035.
[23] Feng XuYun ZhangYun ZhangYuguo Chen. 2017. Cardiopulmonary Resuscitation Training in China: Current Situation and Future Development. DOI: 10.1001/jamacardio.2017.0035.
[24] Vicente T. Baylon III, et Al. 2023. Assessment of Community Preparedness in Cardio Pulmonary Emergencies in Selected Cities in the Philippines. Asian Journal of Research in Nursing and Health. Volume 6, Issue 1, Page 115-121, 2023;Article no.AJRNH.97714.
[25] Vicente T. Baylon III, et Al. 2023. Assessment of Community Preparedness in Cardio Pulmonary Emergencies in Selected Cities in the Philippines. Asian Journal of Research in Nursing and Health. Volume 6, Issue 1, Page 115-121, 2023;Article no.AJRNH.97714.