Review

Cardiopulmonary Resuscitation during Covid-19 Pandemic : A Review

Yanny Trisyani[1], Donny Nurhamsyah[1], Karti Nur Aryanti[2], Nabila Rifa Zahara Heriawan[2], Guztap Jabarul Haq[2], Indah Enriani Wulansari[2], Nilamsari[2], Burhan Nurdin[2], Intan Madulara[2]
[1]Department of Emergency and Critical Care, Faculty of Nursing, Universitas Padjadjaran
[2]Undergraduate Students, Faculty of Nursing, Universitas Padjadjaran

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Other information:
Email of Author:
yanny.trisyani@unpad.ac.id
donny.nurhamsyah@unpad.ac.id
karti15001@mail.unpad.ac.id
nabila16013@mail.unpad.ac.id
gustztap16001@mail.unpad.ac.id
indah16005@mail.unpad.ac.id
nilamsari16001@mail.unpad.ac.id
burhan15001@mail.unpad.ac.id
intan13010@mail.unpad.ac.id
Corresponding Author:
Yanny Trisyani,
Donny Nurhamsyah.

ABSTRACT
Cardiopulmonary Resuscitation (CPR) is a procedure that can be done before the arrival of ambulance which aims to save lives of cardiac arrest patients. In covid-19 pandemic, safe CPR is still needed by considering the safety of patients and rescuers. The study aims to determine best method for performing CPR during covid-19 pandemic. The Method is literature review, with database used is Google Scholar, Pubmed and Ebscohost which obtained 10 articles. The results are to permorming CPR using personal protective equipment, minimized the provision of ventilation, use a surgical maskand use the LUCAS 3 aid for chest compressions.. The conclusion is to implement CPR in the covid-19 pandemic, must use PPE at least use surgical mask for rescuers and victim, only perform chest compressions without providing ventilation, , perform compression in prone position, and compression cycle for 2 helpers was done with alternate after 2-3 cycles.

Introduction

Cardiopulmonary Resuscitation (CPR) is an action that can be done before the arrival of an ambulance which aims to increase the chances of survival for someone who has had cardiac arrest. Cardiac arrest is one of the biggest causes of death in the world (Ewy, 2017).

The high mortality rate was causedthe victim does not get first aid outside the hospital. Cardiac arrests that often occur outside of a health facility require prompt action to save lives. Prompt relief action for cardiac arrest patients can increase the patient's chances of life (Hasselqvist-Ax et al., 2015; McNally et al., 2011). In addition, the cause of the high mortalityrate of cardiac arrest is also caused by health workers and health facilities that are difficult to reach (Wirasakti & Wulansari, 2020).

Therefore, it is necessary for someone who has adequate knowledge both cognitive, affective and psychomotor about how to take initial action to deal with cardiac arrest patients, so they will tend to behave according to what they have got, so they can do help quickly and appropriately namely people who generally lack knowledge of CPR (Wirasakti & Wulansari, 2020).

According to Atmojo et al. (2020) Cardio Pulmonary Resuscitation conducted before the arrival of an ambulance will increase the chances of survival by up to three times. However, there are concerns for health workers about contracting the acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or what is commonly known as Covid-19 when doing CPR, but on the other hand, cardiac arrest is something that requires immediate treatment (Atmojo et al., 2020).

According to Neumar et al. (2010) ninety-two percent of victims who experience cardiac arrest outside the hospital or Out-of-Hospital Cardiac Arrest (OHCA), are at high risk of dying before arriving at the Emergency Room In connection with the current Covid-19 pandemic and the transmission route through droplets containing viruses or air flow (aerosols), it is the main route that causes the virus to spread. This has a high transmissibility during a pandemic, so it is very important to control the source of the infection. In Indonesia until 26 May 2020 there were 23,165 cases with a death rate of 1418 people, this result makes Indonesia the country with the highest CFR 6.12% (case fatality rate) death rate in ASEAN due to COVID 19.

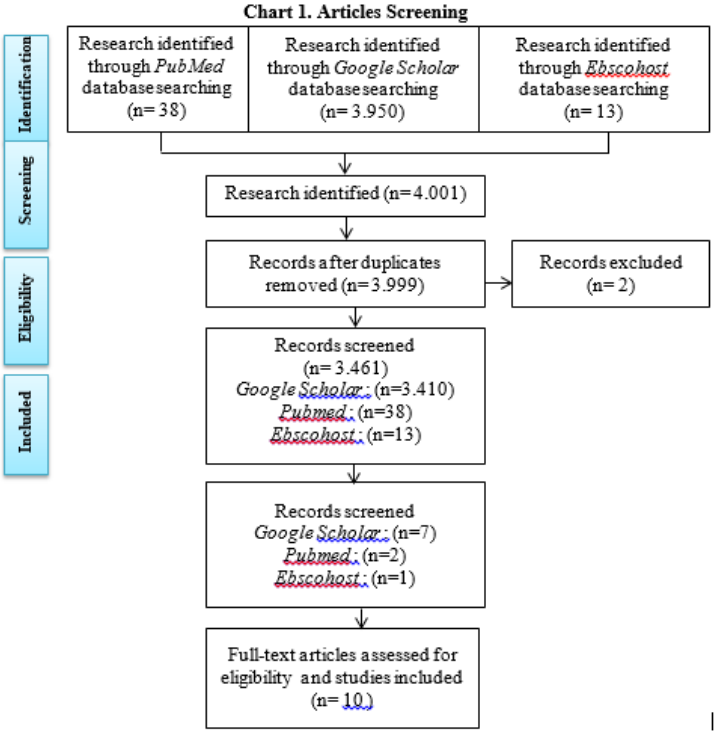
Therefore, it is very important to further strengthen prevention, control and clinical rescue measures in the situation of the Covid-19 pandemic, especially the management of patients with critical illnesses and cardiac arrest. This aims to reduce the death rate and the level of infection transmission in the general public and health workers. In this case the role of the general public and prospective health workers, namely nurses, in this condition it is necessary to increase knowledge in carrying out first aid to victims of emergencies before further handling is carried out by health workers. Because the foregoing can be dangerous when there is a combination of fear and misinformation regarding actions that are in accordance with the conditions during the COVID 19 pandemic as it is now. In addition, it can also reduce someone's willingness to provide assistance to patients with emergencies such as cardiac arrest who suddenly faints in public.

Based on these problems, the authors made a review literature related to how to perform CPR in patients with cardiac arrest, during the Covid-19 pandemic era like now. Which is where the purpose of this study is to find out how to perform CPR in cardiac arrest patients during the Covid-19 pandemic.

Method

The method used in this studywas literature review. Literature searches were carried out on the Google Scholar, Pubmed, and Ebscohost databases published from 2015 to 2020. The inclusion criteria were full text articles, and articles about CPR during the Covid-19 pandemic. The keywords used in this literature review were Indonesian and English, namely "Cardiopulmonary Resucitation, Nurse /Bystander, and Covid-19 Pandemic". There were 3,950 articles from Google Scholar and after being screened, the results were 3,410 articles, and finally its were screened according to the criteria, there were 7 articles. There were 38 articles from PubMed and after being screened 2 articles were obtained. There were 13 articles from Ebscohost and after being screened, 1 article was obtained according to the keywords. After the articles were screened and evaluated according to the criteria, namely cardiopulmonary resuscitation during the Covid-19 pandemic, 10 articles were analyzed and reviewed. Another theory was also used in this literature review to strengthen the reasons for the literature that being studied.

Chart 1. Articles Screening



Results

Table 1. A summary of the articles analyzed

No	Title Article dan Author	Design Research	Results
1.	Title : Resuscitation of the patient with suspected/ /confirmed COVID-19 when wearing personal protective equipment: A randomized multicenter crossover simulation trial Authors : Malysz, M., Dabrowski, M., Böttiger, B. W., Smereka, J., Kulak, K., Szarpak, A Year : 2020	Randomized multicenter crossover simulation trial	According to the results of this simulation test, automated chest compression devices (ACCD) should be used for chest compressions in patients with suspected / confirmed COVID-19. In the absence of ACCD, it appears necessary to change the cardiopulmonary resuscitation algorithm (for the context of suspected / confirmed COVID-19 patients) by reducing the duration of the cardiac pulmonary resuscitation cycle from the current 2 minute cycle to 1 minute, to a statistically significant reduction in quality. chest compressions among rescuers wearing PPE. To simulate real action against SARS-CoV-2 patients, the participants also wore protective masks with filters, goggles and visors and dual nitrile gloves.
2.	Title: An optimal chest compression technique using personal protective equipment during resuscitation in the COVID-19 pandemic: a randomized crossover simulation study Author: Marek Małysz, Jacek Smereka, Miłosz Jaguszewski, Marek Dąbrowski, Klaudiusz Nadolny, Kurt Ruetzler, Jerzy R. Ładny, Maciej Sterliński, Krzysztof J. Filipiak, Łukasz Szarpak Year: 2020	A randomized crossover simulation study	Based on the results of this simulation it was found that automatic chest compressions using the device were not recommended for routine use during resuscitation. However, it should be assumed that resuscitation of patients with suspected/confirmed COVID-19 is not a routine measure and that the PPE used by rescuers reduces motor capacity and affects rescuers' overheating and fatigue. In the case of manual chest compressions performed by paramedics wearing PPE, it is advisable to change rescuers every 1 minute
3.	Title: The Effect Of Different Personal Protective Equipment Masks On Health Care Workers' Cardiopulmonary Resuscitation Performance During The Covid-19	RCT	The article comparing only a few masks. FFR masks (filtering facepiece respirators) and ordinary masks gave worse statistical results than wearing surgical mask during resuscitation. Using surgical mask had been shown to be more effective in the amount of compression and depth of compression.

	Pandemic Author: Suha Serin and Bahadir Caglar Year : 2020		Ordinary masks and FFR masks (filtering facepiece respirators) caused more fatigue for helper during resuscitation. To prevent fatigue, it was recommended that helper should be replaced every 2 minutes during CPR to maintain high quality of CPR Conclusion: Masks that used as PPE in addition to surgical masks, caused an increase in the level of helper fatigue during compression and had negative impact on the quality of chest compressions.
4.	Title: Increasing Knowledge and Skills of Youth Organization through Basic Life Assistance (CPR) Training during the Covid-19 Pandemic in Kota Utara District, Gorontalo City. Author: Yusrin Aswad, Herman P. Luawo, Samin M Ali (2021). Search engine: Google Scholar total 17, full text, 4 last year.	Quasi experimental with one group dengan pretest-posttest.	a. Based on the results of the pre-test and post-test, there was an increase in knowledge and skills of the members of the Karang Taruna in Dulomo Utara Village, Gorontalo City, from the lack of knowledge and skills to the level of good knowledge and skills after presentation andCPR simulation. b. Participants were able to carry out Basic Life Support for victims with cardiac arrest during the Covid-19 Pandemic, by teaching them to practice CPR steps without assistance with breathing/ ventilation to minimize the possibility of exposure to the virus.
5.	Title: Giving Feedback on Home Learning CPR to Improve Bystander's CPR Ability. Author: Pria Wahyu Romadhon Girianto (2020). Search engine: Google scholar total: 17, full text, 4 last year.	Randomized Controlled Trial with a comparative research design	a. Based on the results of the research, the CPR home learning method can be recommended during the Covid 19 pandemic to minimize meetings beforehand before being practiced directly at the next meeting which will also be given feedback by someone who is an expert in performing CPR (nurse) on the day of implementation/practice day. When using the home learning method, the participants were given guidelines and CPR learning videos. This home learning method of CPR also seeks to emphasize ordinary people in handling cardiac arrest victims who they find one day, namely by using hands-only CPR and teaching CPR techniques during the pandemic that it is not allowed to provide ventilation assistance/breath support to minimize the spread Covid-19 virus infection, so only hands-only CPR is emphasized. b. Based on the research results, the ability of respondents before getting feedback from the results of CPR home learning and the ability of respondents after receiving feedback has increased. The ability of respondents after home learning without feedback, the majority of participants with sufficient abilities, namely 66%, and

			the ability of respondents after receiving feedback, the majority of participants with good abilities, namely 61.7%.
6.	Title: Cardiopulmonary resuscitation during the COVID-19 pandemic: a scientific statement on CPR management protocol of Kasr Al Ainy University Hospital is presented Author: Hesham S. Taha , Mirna M. Shaker and Mohamed M. Abdelghany Year : 2020	literature review	Cardiopulmonary resuscitation in patients with cardiac arrest and respiratory arrest in the Covid-19 period had significant effects, and it was a challenge for all health services to deal with every heart attack victim who faces an emergency that must be handled immediately and officers or helpers must use appropriate PPE (Level 2: Head protection, Google/eye protection, N95 mask, Handscoon/gloves, gown, and footwear) and perform CPR actions must be according to established procedures. The chest compression procedure in the hospital should be done in one room with one person and the door must be closed. Chest compressions were carried out in standard manner, taking precautions to minimize the spread of infection and taking some modifying measures to prioritize early intubation on the patient was prone position by pressing the patient's back to provide chest compressions while the other team prepares to turn the patient over.
7.	Title: Prone cardiopulmonary resuscitation: A scoping and expanded grey literature review for the COVID-19 pandemic Author: Matthew J. Douma, Ella MacKenzie, Tess Loch, Maria C. Tan, Dustin Anderson, Christopher Picard , Lazar Milovanovic , Domhnall O'Dochartaigh , Peter G. Brindley Year : 2020	Scoping review and literature review	Based on the results of the study found, compression with the prone position resulted in higher systolic values and mean arterial pressure during circulatory arrest in ICU patients compared to standard CPR. The UK Council also does not recommend changing the client's position when doing CPR, the effectiveness of CPR with the prone position needs to be studied more deeply, and at this time no research is allowed and recommends the use of prone position resuscitation techniques
8.	Title: COVID-19 cardiopulmonary resuscitation: Guidelines and modifications Resusitasi kardiopulmoner COVID-19: Panduan and modifikasi Author: Pankaj Kundra, Stalin	Article Review	From the four international guidelines, it was explained that during the Covid-19 pandemic, CPR implementation of cardiac arrest victims must use PPE at least by using mask for the helper and the victim themselves, and when the victim did not wear a mask, the nose and mouth must be covered by cloth or towel and CPR were only done by doing chest compressions only for victim outside the hospital, while victim who was inside the hospital must minimize ventilation to

	Vinayagam Year : 2020		prevent aerosols.
9.	Title: Cardiovascular Resuscitation in the Covid 19 Pandemic Era Author : Tri Atmojo Joko, Dewi Arradini , Ernawati , Aris Widiyanto , Aquartuti Tri Darmayanti Year : 2020	Literature review	Transmission of the COVID-19 virus to nurses who performed CPR when using a complete PPE can occurred, through droplets or aerosols from patients who were in the air and entered through gaps that were formed accidentally by health workers when correcting positions, starting positions, wiping sweat or occurring when opening protective clothing. Changes in the CPR sequence by ignoring airway assessment provides opportunities in minimizing transmission. Compression the chest uses very tools it is recommended to do up to the patient arrive at the hospital or can be given tools breathing aids.
10.	Title: Saudi Heart Association, National Heart Center and National Cardiopulmonary Resuscitation Committee taskforce statement on CPR and resuscitation during COVID-19 pandemic Peneliti : Abdul Majeed S. Khan, Abdullah M. Kaki, Abdulrahman R. Bakhsh, Ahmed SA Hersi, Jameel T. Abu Alenain, Jubara S. Alallah, Fayez A. Bokhari, Nasser AlQahtani, Bandar M. AlKabli, Abdulrahman Al Qahtani, Nawfal AlJerian, Rashid AlOtaibi Year : 2020	Riview artikel	The result of this article leads to the riview cpr on patients covid-19 using an instrument in patients with additional protection to shut up and nose the victim with a piece of cloth and compression 30x at 100-120x /. Minutes

Discussion

Amidst the COVID-19 outbreak, a social phenomenon has emerged the potential to exacerbates the situation, namely social stigma or negative associations for a person or group of people who experienced symptoms or have certain diseases (Dinkes, 2020). Covid-19, which spreads rapidly makes people no longer dare to help others through physical touch even though someone is suddenly sick and suddenly falls in an open space, so in this condition, the role of the community to help victims before being found by health workers is very important. There was training for CPR during the Covid-19 Pandemic, so one way that can be done is to change the stigma and provide knowledge to the community, especially in studying cardiac pulmonary resuscitation (CPR) in the Covid 19 pandemic era given by nurses, doctors, or trained people. Therefore, these CPR steps need to be considered and understood the difference between CPR before the Covid 19 pandemic and the time after the Covid 19 pandemic appeared. Not only the public or ordinary people must know the difference but also health workers must know how CPR is different before and after the Covid 19 pandemic. Based on several articles that have been analyzed, there are several differences in CPR actions before and after the Covid 19 pandemic, especially for workers, health and society or common people.

1. **CPR Cycle Duration from 2 Minutes to 1 Minute Cycle and Use of Automated Chest Compression Devices (ACCD)**

Based on the results of research conducted by Malysz, Dabrowski, Böttiger, & Smereka (2020) on 35 medical students who have completed Advanced Cardiac Life Support (ACLS) training at a medical simulation center at Lazarski University (Warsaw, Poland) and Poznan University of Medical Sciences (Poznan, Poland), automated chest compression devices (ACCD) are indispensable for performing Cardiac Pulmonary Resuscitation (CPR) in patients with suspected/confirmed COVID-19. In the absence of automatic chest compressions, it seems necessary to change the cardiopulmonary resuscitation algorithm (for the context of a patient with suspected/confirmed COVID-19) by reducing the duration of the cardiac pulmonary resuscitation cycle from a cycle of 2 minutes to 1 minute. The quality of compression decreases significantly after 2 minutes due to continuous compression performed by rescuers who use Personal Protective Equipment (PPE) for procedures that risk the emergence of aerosol-generating procedures (AGP) so that they are easier to tire and have an impact on the quality of chest compressions The low one. In line with the research of Malysz et al. (2020), excessive fatigue in participants who perform compression as a result of using complete PPE can result in reduced effectiveness of the entire CPR process.

2. **Use of PPE during CPR and Observed Using LUCAS 3**

During the Covid-19 pandemic for safety reasons, both for the rescuers themselves and patients requiring chest compressions or airway procedures, CPR must be performed with complete PPE. Chest compressions should be performed with the following parameters: compression depth: 5–6 cm, chest compression rate: 100–120 x / minute. Also, a full chest recoil should be performed, and interruptions in chest compressions should be

minimized. During CPR simulation with LUCAS 3 or with manual compression as well as the True CPR feedback device substantially improves the quality of CPR. When the LUCAS 3 device was used, it turned out that the most constant observed CPR rate and the fastest was still manual compression. Guidelines recommend chest compressions at a rate of 100–120 x / min, as shown by the AHA and ERC that there is a positive correlation between the number of compressions given per minute and the success of resuscitation, and a rate of 120 BVM or higher or less than 100x / min is associated with decreased chances of survival. In line with the study conducted by Idris, et al confirmed that a compression rate of 100-120x / min was associated with the greatest survival.

The use of PPE during CPR in the era of the COVID-19 pandemic greatly affects the quality of CPR given to victims/patients. These results are consistent with other studies and apply to paramedics, doctors, and nurses. Also, it was seen that the depth of chest compressions performed by paramedics wearing PPE was significantly reduced after the first minute of intervention, taking into account CPR guidelines regarding changes in rescuers in 2-minute cycles (maybe considered introducing, the CPR algorithm for suspected/confirmed COVID-19 patients. -19), reducing the duration of the CPR cycle from 2 to 1 minute. In line with the study conducted by Kılıç et al, which stated that there was no difference in the measurement of the quality of chest compressions between cycles of 1 and 2 minutes in the normal scenario (without PPE) as well as changes in the duration of CPR1 or 2 minutes, there was still no difference in terms of quality. chest compressions. As stated by Chen et al. the use of PPE can reduce the rate of chest compressions. Compression rates higher than 120x / min may increase organ perfusion but do not improve survival. This can cause faster rescuer fatigue, which as a result results in lower quality chest compressions. Full chest recoil also showed a significant effect on improved survival and favorable neurological outcomes. Full chest recoil combined with chest compressions at an appropriate depth is essential for optimal perfusion pressure. Lee et al. in Kundra & Vinayagam (2020). Show a much less complete chest recoil with a speed of more than 120x / minute compared to other speeds. In the case of manual chest compressions performed by paramedics wearing PPE, it is advisable to change rescuers every 1 minute to minimize fatigue for each rescuer.

3. **Use of masks during CPR**

According to research conducted by Serin & Caglar (2020), PPE used during the Covid-19 pandemic in carrying out CPR, especially masks, consists of various types of medical (surgical) masks, respiratory filtering raptor masks (FFR) (namely, N95, FFP2, FF3), elastomeric half-face respirator mask, and full elastomeric face mask respirator. The various types of masks have different effects, such as different masks have good effectiveness compared to other masks because surgical masks do not affect the quality of CPR and do not cause fatigue to the helper when doing compression, but in the use of FFR masks and half masks. the face provides a significantly increased fatigue effect and the quality of chest compressions is reduced.

According to research conducted by Taha, Shaker, & Abdelghany (2020), it is clear that conducting CPR during a pandemic must be

carried out according to appropriate procedures. In the article, it is explained that there are principles that are recommended in performing CPR in pre-hospital. Before taking action, rescuers must wear an N95 mask, ensure that the patient has no pulse and breath followed by compression, and ensure that the patient is not infected with Covid-19. In addition to the pre-hospital procedure, it also explains the principles of doing CPR in the hospital, when doing CPR in the room you have to be alone and in a closed room, after doing CPR the room must be immediately disinfected to be sterilized. In addition to the space that must be considered, the helper's PPE must also be appropriate, such as wearing gloves, N95 masks, gowns, and eye protection. This is done to minimize the presence of aerosols from the victim to the helper. In the implementation of giving CPR, especially in providing ventilation, several things need to be considered, namely when assessing breathing, do not place the helper's face near the victim's mouth and nose, in a state of Covid-19 it is advisable to only compress it not by providing ventilation because it minimizes the risk of spreading the virus. It is recommended to use a talented bearing for defibrillation, to provide shock without direct contact between the defibrillator operator and the victim. If intubation is to be given, several things need to be considered, namely rapid sequence intubation with suitable personal protective equipment (PPE) can be used, proceeding directly to endotracheal intubation in patients with acute respiratory failure can be considered, avoiding, wherever possible, procedures that produce aero-sol (eg, non-invasive positive pressure ventilation, nebulizer), and use HEPA filter filtration.

Kundra & Vinayagam (2020), explains the modification of CPR guidelines during the pandemic of 4 international guidelines, namely from the International Liaison Committee on Resuscitation (ILCOR), the American Heart Association (AHA), the UK Resuscitation Council, and the European Resuscitation Council (ERC). Of the 4 international guidelines, it explains that during the Covid-19 pandemic, the implementation of CPR for victims of cardiac arrest must use Personal Protection Equipment (PPE) at least using a mask for the helper and the victim himself, and when the victim does not wear a mask, the nose and mouth must be removed. cover with a cloth or towel and this CPR is only done by doing chest compressions and minimizing to open ventilation, while for patients who are positive for Covid-19 who will be doing CPR, the rescuer must use PPE level 3, and the entire patient's body must be covered by clear plastic and minimize ventilation and better recommended to use oxygen with a nonrebreathing mask (NRM) or use a bag valve mask (BVM).

4. **Not Providing Ventilation Assistance for Lay Helpers**

Providing simulations of cardiac pulmonary resuscitation (CPR) to ordinary people is very important and useful to increase the number of people who are trained in doing CPR so that they can become a bystander in their respective environments. Also, it is in line with the research conducted by Krammel et al. (2018), which states that the level of knowledge in dealing with emergency patients is a very important factor in determining the success of accident relief. Mistakes or inaccuracies in providing pre-hospital first aid in assisting can cause disability or death of

emergency patients. Efforts that must be made to minimize the mortality rate for emergency patients must shorten the response time. However, the level of knowledge and skills that have been obtained must still be trained to remember the steps and be able to improve CPR skills again. In line with Krammel et al. (2018), abilities or skills can be improved through regular training, self-taught knowledge, and correct techniques.

According to research conducted by Aswad et al. (2021), it is proven that there is an increase in knowledge and skills of members of the Karang Taruna Kelurahan Dulomo Utara, Gorontalo City, from the level of knowledge and skills being less to the level of good knowledge and skills after presentation and CPR simulation. The level of knowledge and skills of participants was measured through pre and post-tests in the form of Google Form, and participants were able to perform Basic Life Assistance (CPR) for victims with cardiac arrest during the Covid-19 Pandemic, namely by teaching participants to practice the steps of CPR without assistance breath / ventilate to minimize the likelihood of exposure. Also, the advantage of this study is that it can change the negative stigma in patients or families who are exposed to Covid-19, especially when CPR is needed. In line with the research of Mauri et al. (2016), it is very necessary to teach CPR skills to anyone, especially adults. In this case, it means that we all need an increase in the number of CPR bystanders in the community.

In line with Cristhenson (2013) research, sometimes bystander is afraid to provide basic life support to Cardiac Arrest victims, especially in providing Rescue Breathing. A bystander is often afraid of contracting infections or infectious diseases suffered by victims of Cardiac Arrest. But now the bystander doesn't need to worry about this because various studies have shown that just giving chest compressions without Rescue Breathing is as effective as conventional CPR using Rescue Breathing. There is no significant difference between the two things the help of the bystander is very much needed for the safety of the lives of Cardiac Arrest victims. According to Ewy (2016) who discusses CPR without Rescue Breathing, AHA states that CPR without Rescue Breathing can be given to Cardiac Arrest victims by lay rescuers or bystanders and this will not reduce the effectiveness of giving CPR, especially if we encounter victims we don't know. on the side of the road or in public places and it is okay if we give Chest Compression to minimize the risk of spreading the infection to the helper because according to the AHA the best strategy to increase the chances of life for Cardiac Arrest victims is to start CPR as soon as possible and minimize the cessation of chest compressions.

5. **Home Learning CPR Method for Lay People**

The characteristics of the bystander who were around the victim at the time of the Cardiac Arrest incident greatly influenced the bystander's initiative to provide immediate assistance to the victim. This has been proven through research conducted by a team from the Mader et al. (2012)which shows that the characteristics of bystanders greatly influence the initiative to assist, especially bystanders with a low level of education who are afraid to make decisions about what to do when facing victims. Cardiac Arrest. In the journal entitled "Giving Feedback on Home Learning CPR to Improve the Ability of Bystander CPR", it was

found that the ability of respondents before getting feedback from the results of CPR home learning and the ability of respondents after getting feedback had increased. The ability of respondents after home learning without feedback, the majority of participants with sufficient abilities, namely 66%, and the ability of respondents after receiving feedback, the majority of participants with good abilities, namely 61.7%. Based on the results of research conducted by Starr (1998), Home Learning is a learning/training method carried out independently by participants, with the help of learning media in the form of videos and guidebooks to make it easier for participants to take part in learning/training. This condition is also following the results of research by Kong et al. (2020) which states that the performance or quality of CPR that is carried out with direct feedback is better when compared to CPR that is carried out without feedback.

Home learning CPR can be recommended during the Covid 19 pandemic to minimize meetings beforehand before practicing directly at the next meeting which will also be given feedback by someone who is an expert in performing CPR (nurse) on the day of implementation/practice day. When using the home learning method, the participants were given CPR learning guidelines and videos. This home learning method of CPR also seeks to emphasize ordinary people in handling cardiac arrest victims who they find one day, namely by using hands-only CPR and teaching CPR techniques during the pandemic that it is not allowed to provide ventilation assistance/breath support to minimize the spread. Covid-19 virus infection, so only hands-only CPR is emphasized. The provision of CPR-related training to the bystander carried out by Girianto (2020) is accompanied by an evaluation by a trainer/researcher which is important so that the Cardiac Arrest victims they face/handle in any situation can be embedded with good and correct techniques/procedures, only in their intervention. emphasized the act of hands-only or chest compressions because according to researchers in the journal it was said that hands-only action alone was sufficient to help victims with Cardiac Arrest.

6. **Chest Compression in Prone Position**

Based on the results of research by Mackenzie & Loch (2020), compression with the prone position results in higher systolic values and mean arterial pressure during circulatory cessation in ICU patients compared to standard CPR. Overall, when blood pressure was reported, there appeared to be an increase in a prone position, (five out of six patients inMackenzie & Loch (2020). And seven out of eight in Wei et al's study). However, the certainty of these findings is very low due to the small study design and methodology. The UK Resuscitation Council recommends performing compression without changing the position of an adult patient especially if the patient is neurologically impaired and during neurosurgery. The effectiveness of CPR should be assessed using a CO2 monitor, and arterial pressure waveform. They suggest that the patient is supine immediately if the feedback from this monitor is judged to be insufficient.

According to DeFilippis et al. (2020), state that for CPR and emergency cardiovascular care it is recommended that when the patient cannot be placed in a supine position, it may be natural for rescuers to administer CPR in the prone position, especially in advanced inpatients. The

Resuscitation Council and American Heart Association do not have specific recommendations regarding prone CPR positions. Two cases of successful prone-position chest compressions (in neurosurgical patients) published in 1992 by Sun et al., Used their designation as "Reverse Precordial Compression." below the lower sternum (lower sternum). Similarly, Dequin et al. reported successful prone-position CPR in ICU patients, where they used two-handed middle chest compressions and a second person for sternal backpressure.

Conclusions

From the ten articles that we analyzed, the result showed that there was several things that need to be considered when doing CPR during the Covid-19 pandemic, namely the duration of the compression cycle, which in this compression duration explained that there were also 2 assistants every 2-3 cycles with rotation, it's explained to reduce the level of fatigue in the helper, where the helper wore PPE, the use of PPE was explained for the events outside the hospital, the helper must use a minimum PPE like mask while for patients, the mouth and nose must be covered by a cloth or given mask to prevent aerosols during compression, compression using LUCAS3 was an automatic machine to perform compression that could be given to patients with positive Covid-19 but the use of this automatic compression machine was not recommended to be used routinely, the use of special mask for officers in the hospital in carrying out CPR, medical mask was more effective than the N95 mask because the N95 mask could cause fatigue for nurses who perform CPR, compression without ventilation outside the hospital and if inside the hospital it must minimized the ventilation, this home learning method for lay people was highly recommended because for ordinary people, of course you had to know how to do CPR only by providing chest compressions which were currently highly recommended during the Covid-19 pandemic and compression with the prone position.

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