

Community Preparedness of Laypeople in Doing Cardiac Pulmonary Resuscitation (CPR) on Cardiac Arrest Victims

Tori Rihiantoro^a, Purbianto^b, Gustop Amatiria^c, Lisa Suarni^d,
^{a,b,c,d}Poltekkes Kemenkes Tanjung Karang, Sumatera, Indonesia, Email:
^atoririhiantoro@gmail.com

The incidence of coronary heart disease in the world and Indonesia increase so that the risk for sudden cardiac arrest (HJM) in the future is increasing. In Indonesia, there is no data on the number of laypeople who can help in the HJM (bystander). This study is a descriptive study that aims to determine the knowledge and attitudes of ordinary people in Bandar Lampung in cardiac arrest with CPR rescue. The population is ordinary adults working in the area of public services in the city of Bandar Lampung with a sample size of 168 people who are determined by purposive sampling. Data were collected by the paper-based test with questions (instrument test) and an attitude questionnaire. Research data will be processed and analysed descriptively to describe the amount (frequency) and the percentage of respondents' knowledge and attitudes. The research result shows that the knowledge of society in Bandar Lampung about cardiopulmonary resuscitation was 93.45%, while aspects of public attitudes toward CPR actions balanced between the support (50.6%) and unfavourable (49.4%). Based on these results, we made several recommendations, among others: the need for advocacy of groups of people concerned about the importance of CPR by laypeople to help policymakers at the local and national levels, the need for increased awareness and public concern about the aid CPR by the lay public through socialisation.

Keywords: *Sudden cardiac arrest (HJM), Cardiopulmonary resuscitation (CPR), Coronary heart disease.*

Introduction

The World Health Organization (WHO), in 2012, shows the data on the incidence of deaths of cardiovascular disease was 17.5 million, and this figure is equivalent to 31% of the 56.5 million deaths worldwide. More than 75% of deaths from cardiovascular disease occurred in developing countries. Furthermore, as many as 7.4 million (42.3%) of these deaths are caused by coronary heart disease (CHD). According to Riskedas 2013, CHD is a cardiovascular disease with the highest prevalence (1.5%) of the disease in Indonesia. Meanwhile, based on the survey results from the Sample Registration System (SRS) in 2014 in Indonesia, CHD is the second most common cause of death (12.9%) in all age groups. Based on Riskedas 2013, the incidence of CHD in Lampung province is estimated as many as 11,121 people (0.2%) by doctors' diagnosis and 22,242 people (0.4%) by symptom diagnosis.

CHD can lead to sudden cardiac arrest (HJM) or cardiac arrest (heart attack). HJM is a situation where the pumping function of the heart stops suddenly. This situation may still be recoverable if immediate aid measures, but can also cause multi-organ failure and lead to death if no immediate action is taken (Fuster, 2011).

The incidence of cardiac arrest ranged HJM or 10 of 100,000 people aged under 35 years and 300000-350000 events per year. An HJM incident leads to reduced oxygen supply to the whole body, especially the brain and the heart itself. Lack of oxygen to the brain causes the death of brain cells that cause loss of consciousness and other brain functions. At heart, the heart cells will experience a shortage of oxygen, resulting in tissue death. If not quickly treated, it can lead to death (PERKI, 2015).

HJM can happen anywhere, anytime, and to anyone. HJM incidents occurring more outside the hospital are known as Out of Hospital Cardiac Arrest (OHCA) or cardiac arrest occurring outside the hospital. In some countries, the incidence of OHCA is constantly increasing. The survival of victims of HJM can be maintained through the actions of CPR since the victims were found. CPR actions will give the best results when it is done in less than 5 minutes when the patient was found unconscious. When CPR is performed for more than 5 minutes, then the patient will begin to experience brain damage and can lead to death. For the role of the person who first discovered the victim, HJM in performing CPR aid is urgently needed to sustain the victim's life.

According to Berg (2000), several obstacles can cause a lack of people who want to perform CPR when encountering them are victims HJM for lack of knowledge and public awareness to perform CPR (WHO, 2011). CPR is an action that can help maintain the viability of HJM victims. Therefore, efforts should be made to increase the number of CPR lay rescuers (*bystander*) in society (Cave et al., 2011).

American Heart Association (AHA) in 2013 showed that OHCA incidence in the United States reached 359,400 people. Of these 40.1% Cardiac Pulmonary Resuscitation (CPR) or Cardiopulmonary Resuscitation (CPR) actions by people who are close to the victim, the result is that the success rate of life of the victim who performed CPR is 9.5%. While in Indonesia, up to now, there is no data on the number of laymen (*bystander*) who have the ability of CPR and have given CPR actions when they meet the HJM victim (Kleinman et al., 2018).

Method

The study was conducted through a survey research design with a descriptive approach that aims to explain the readiness of ordinary people in Bandar Lampung to rescue sudden cardiac arrest by CPR actions. The availability of the community in question in this research is the knowledge and attitudes.

The population in this study is the ordinary people who work in the area of public services in hospitality, entertainment, and commerce. A sample of 168 respondents was determined by purposive sampling technique.

The research data consists of data about knowledge and attitudes. Knowledge data were collected from the paper-based test (PBT), while the attitude data were collected using a questionnaire. Instruments test the knowledge of laypeople's CPR/BHD, and the questionnaire/attitude questionnaire will be tested for the public in the region 30 Pasawaran. Results of analysis of validity and reliability values yielded the r-value of each item ranged between 742 and 380, and the Cronbach alpha of 0.776, thus declared a valid and reliable instrument.

Collected data were subsequently processed and analysed to obtain the data in the form of a percentage proportion of the knowledge and attitudes of the ordinary in Bandar Lampung towards HJM aid with CPR.

Results and Discussion

Knowledge

The results of the analysis of 168 respondents' knowledge can be seen in Table 1.

Table 1. Frequency Distribution of Responses of Knowledge of Cardiac Pulmonary Resuscitation

| Knowledge | f | % |
|------------------|----------|----------|
| Less | 157 | 93.45 |
| Enough | 9 | 5.36 |
| Well | 2 | 1.19 |
| Total | 168 | 100 |

Table 1 indicates that most respondents have less understanding of cardiopulmonary resuscitation (93.45%).

Low levels of knowledge and understanding of CPR in Bandar Lampung is a common problem which is prevalent in Indonesia. Little knowledge about CPR also occurred in various cities and regions in Indonesia. Pasawaran districts showed an average knowledge of the public about CPR before training less, with an average value of 28-33% (Mohammed, 2017).

Low knowledge about the CPR occurred not only for ordinary people but also for health college students in Indonesia. Results of research on knowledge of Basic Life Assistance (BHD) to students at Udayana University showed that out of 170 respondents, 6.2% medical students, 8.7% nursing students and 5% psychology students had good knowledge, while physiotherapy, public health and dentistry students accounted for 0% (Suranadi, 2017). This shows that the lack of knowledge about CPR is experienced by not only ordinary people but also trained health personnel. The study of a rapid response team showed that knowledge of health personnel in the group about BHD was low (97.3%). Even the lack of knowledge occurred in all of the indicators including knowledge of basic concepts, assessment of response in BHD, in BHD pulmonary resuscitation, cardiac resuscitation in BHD and AED use in BHD (Wiliastuti, Anna, & Mirwanti, 2018; Ojifinni K & Motara F, 2019).

In countries with advanced economies and higher levels of education, society turns on CPR is still lacking. This can be seen in the results of research in New Zealand, where the percentage of knowledgeable respondents who had performed CPR training and evaluation of knowledge in the following year was only 4% and only 9% was for people knowing the ratio of chest compressions and ventilation (Larsen P1, Pearson J, 2004; Heczková & Bulava, 2017). The results of research conducted on graduates of medicine in India also showed that knowledge of CPR was mostly at a fairly level, with the average score of 64% (Chatrath C, Khetarpal R, Kumari H, H Kaur, 2018; Lim, Wee, & Chee, 2017).

The lack of public knowledge about CPR in Bandar Lampung and other areas in Indonesia is a reality and a fact that must be accepted. This problem occurs as a result of a lack of attention and concern of the government and the public about the high number of deaths from

sudden cardiac arrest (HJM) outside the hospital. Based on data from PERKI (2015), the incidence of cardiac arrest ranged HJM or 10 of 100,000 people aged under 35 years and 300000-350000 events per year. Deaths from HJM were due to a decrease in oxygen supply, especially to the heart and brain.

The study shows that more HJM incidents occurred outside the hospital, which is known as Out of Hospital Cardiac Arrest (OHCA) or cardiac arrest occurring outside the hospital. The world's OHCA prevalence ranges from 50 to 60 per 100,000 people per year (Berdowski, Berg, Tijssen, & Koster, 2010). The incidence of OHCA in some countries continues to increase. American Heart Association (AHA) in 2013 reported that OHCA events in America were up to 359,400 people (McCarthy et al., 2018; Chong, 2018).

In addition to a high incidence of OHCA, the survival rate of OHCA victims is very small (12%) (AHA, Highlights of The 2015 American Heart Association Guidelines for CPR and ECC Update, 2015). The high mortality rate and low survival rate of OHCA victims can be due to delays in reporting and immediate CPR actions (Wnent et al., 2013; Korber, Köhler, Weiss, Pfister, and Michels, 2016).

Data of AHA (2014) showed that the percentage of Yanga people suffered from OHCA was 40.1% in the American Cardiac Pulmonary Resuscitation (CPR) or Cardiopulmonary Resuscitation (CPR) actions by people who are close to the victims. The result shows that the success rate of victims who performed CPR actions reaches 9.5% (Korber et al., 2016).

The high mortality rate and low survival rate of OHCA victims are due to the lack of public response when the victim is found to perform CPR OHCA (Ganthikumar, 2016). Several obstacles can cause a lack of community participation to perform CPR when he met the OHCA victims, some of which are because of lack of knowledge and community care for performing CPR (Banerjee, 2016).

The results of this study illustrate a lack of the general public's knowledge about CPR Bandar Lampung. This is evident from the results of research which shows 98.4% of respondents less knowledgeable. If seen by the level of knowledge of the C1, C2, and C3, 19% of respondents are knowledgeable enough (C1), 1.6% is at the understanding level, and 17.5% is at the good knowledge level.

According to Notoatmodjo (2012), the knowledge gained from the human senses, or results to know someone of the object through its senses, sight, hearing, smell, taste, and touch itself. Most human knowledge is obtained through the eyes and ears (Notoatmodjo, 2012). Knowledge is also an important factor in the formation of a person's actions. Knowledge is the basis to act, so that each person to commit an act is usually preceded by the next idea to



have the initiative to take action based on knowledge (Notoatmodjo, 2007; Rahayu, Widiati, & Widyanti, 2014).

Based on this theory, the lack of public knowledge about CPR will lead to low response and participation of the community in doing CPR on an HJM victim. The low participation of the community to undertake urgent assistance to victims outside the hospital HJM will increase mortality and reduce the low survival rate of victims outside the hospital HJM (Sumekto 2011 & Faizal, Medicine, Medical, & Maret, 2018).

Various factors can cause a lack of knowledge about CPR. Limitations and lack of information through CPR training become a major factor. According to Notoatmodjo (2012), the level of knowledge of a person is affected by several factors such as age, information, education, and experience. Furthermore, according to Notoatmodjo (2003), the information influenced an individual that would result in a change or an increase in knowledge, so that information about BHD should be increased, because the more information, the more the knowledge gained (Wiliastuti et al., 2018). Training is the most important method in the dissemination of information about CPR. Standardised training was expected to increase the knowledge, attitudes, and skills of the general public about CPR. The training is part of the non-formal education that can be obtained by the community to improve the knowledge, attitudes, and behaviour in specific areas.

The study of vocational students in Banjarmasin shows the relationship between knowledge and handling BHD. The relationship is positive and proportional, which means the better knowledge of the BHD, the better the handling BHD. The relationship between knowledge and the handling of live assistance due to vocational students had never received information about BHD.

It can be concluded that the low level of public knowledge of Bandar Lampung and other areas in Indonesia about CPR is due to lack of information. Training is a major part of the deployment process in structured information that can improve the knowledge, attitudes, and behaviour of individuals and communities to perform an act. CPR training to standardise and correct knowledge to individuals and society is believed to be able to improve the knowledge, attitudes, and skills to help the victims of HJM with CPR.

Increased knowledge, attitudes, and skills of individuals and communities in the CPR are expected to have an impact on increased community participation in immediate aid to the victims of HJM outside the hospital. Thus, it is expected to have an impact on mortality reduction and increased survival rate in HJM victims outside the hospital.

Attitude

The analysis of the attitude can be seen in Table 2.

Table 2. Frequency Distribution of Responses of Attitudes towards Cardiac Pulmonary Resuscitation

| Attitude | f | % |
|--------------|-----|------|
| Less Support | 83 | 49.4 |
| Support | 85 | 50.6 |
| Total | 168 | 100 |

According to Table 2, it can be explained that the attitudes of respondents to the Cardiac Pulmonary Resuscitation somewhat balanced between the support (50.6%) and unfavourable (49.4%).

The study shows that, among 63 respondents, public attitudes in Bandar Lampung towards CPR behaviours are balanced between the support/positive (50.8%) and unfavourable/negative (49.2%). Based on the theory of Thomas and Znaniecki (1920) in (Henry & Goddess, 2011), attitude is a predisposition to perform a specific behaviour. So the attitude is not only a purely internal condition of individual psychological (purely inner-state physics), but the attitude is more a process of an individual's consciousness. That is, this process that occurs is subjective and unique to every individual. This uniqueness can occur due to individual differences derived from the values and norms to be maintained and managed by the individual.

Meanwhile, according to the theory of Lawrence Green (1980) in Notoatmodjo (2010), one is forming behaviours predisposing factors (predisposing factor). The predisposing factors include knowledge, attitudes, beliefs, values and norms. So, in addition to knowledge, attitude is also an important factor in the formation of a person's behaviour. The behaviour of individuals and society when finding HJM victims outside the hospital is determined by the level of knowledge and attitude to make decisions to help the victim with CPR action.

The results showed that a majority of respondents is less knowledgeable (98.4%), but the attitude tends to favour/RJP positively to the action (50.8%). It also occurs in a study conducted in Saudi Arabia on 2250 students in the city of Riyadh, where the result is mostly a positive attitude towards CPR, but the knowledge is relatively lacking. Other research results in New Zealand show that among 400 respondents who are the general public, 73% want to know more about resuscitation, and 70% found resuscitation should be a mandatory requirement of a New Zealand driver's license test, 63% are willing to do mouth to mouth ventilation for strangers. However, the knowledge of CPR of respondents is mostly lacking. Only 4% know how to perform chest compression, and only 9% know the correct CPR

compression-ventilation ratio. In conclusion, although the attitude of society towards CPR is positive, the knowledge of CPR is less (Larsen, Pearson, & Galletly, 2004).

Important factors that relate to the manner of someone to perform CPR on victims who need HJM aid outside a hospital are the confidence (efficacy) and courage that is based on knowledge and skills. Results of research conducted on 110 students of SMK in Malang shows the experience of most respondents about CPR is not never (96.4%); perceptions of positive CPR accounts for a large part (53.6%); the awareness of CPR is mostly low (95, 5%); knowledge of CPR is mostly low (75.5%), and efficacy to CPR is mostly too low (56.5%). Results of the analysis showed that the level of effectiveness is associated with the experience and awareness, and from both, the conclusion is that consciousness is the most dominant factor affecting the efficacy of CPR to take action. Likewise, students who have a high awareness to perform cardiopulmonary resuscitation is likely to have high self-efficacy of 4,443 times greater than those who have low awareness.

Thus, to build a positive attitude and support the community to aid CPR measures on HJM victims outside the hospital is to increase public confidence in the ability to take action on their own. High confidence in performing CPR on an HJM victim outside a hospital is highly dependent on the experience and awareness of the importance of CPR to an HJM victim. The awareness and knowledge of these can only be obtained through continuous training, continuous and sustainable standards, and best practices, monitoring and ongoing evaluation. The practice is also an important part that must be implemented in every training program.

In the end, to improve knowledge and a positive attitude towards CPR actions of common people, there should be fundamental steps and strategies. The measures in question should involve all stakeholders from both the policymakers (government) and the community. Non-governmental organisations (NGOs), professional organisations, mass organisations, as well as informal social organisations, were also encouraged to participate actively in efforts to improve the knowledge, attitudes, and skills of people about CPR. Improved knowledge, attitudes, and abilities of CPR in the community help victims of HJM outside hospitals, which in turn is expected to reduce mortality and improve the survival rate of HJM cases outside the hospital.

Conclusions

The results of this study showed that there is a lack of knowledge of most people in Bandar Lampung on cardiopulmonary resuscitation (93.45%). The lack of information through a training program is thought to be the main factor causing the problem. Meanwhile, in the aspect of public attitudes towards Bandar Lampung, CPR actions balanced between the support (50.6%) and unfavourable (49.4%). This is thought to be influenced by factors of experience and awareness of society to the actions of CPR. Likewise, knowledge and



consciousness are strongly influenced by the amount and the continuous string of information obtained by the public through the efforts and strategic base by involving all components of society.

Based on the description of the discussion and conclusions, the authors give some recommendations to improve the knowledge, attitudes, and skills of ordinary people towards the actions of CPR. Firstly, the need for the socialisation of policies and laws to clarify the position of aid measures of CPR by laypeople. Secondly, the need for advocacy of groups of people concerned about the importance of CPR by laypeople to help policymakers at the local and national level. Thirdly, the need to increase awareness and public concern about the CPR aid by the lay public through socialisation, counselling through standardised training and properly carried out by governments and social groups concerned with this issue.

REFERENCES

- American Heart Association (AHA). (2013). 2013 ACCF/AHA guideline for the management of heart failure: A report of the American College of Cardiology Foundation/American Heart Association task force on practice guidelines. *J Am Coll Cardio*, 62(16), e240-e327.
- American Heart Association. (2014). *Cardiac Arrest Statistic*. American Heart Association, Inc.
- Banerjee, A. (2016). Basic life support in undergraduate dental curriculum. *International Journal of Students Research*, 6(2), 16. https://doi.org/10.4103/ijsr.int_j_stud_res_int_j_stud_res_11_17_18
- Berdowski, J., Berg, R. A., Tijssen, J. G. P., & Koster, R. W. (2010). Global incidences of out-of-hospital cardiac arrest and survival rates: Systematic review of 67 prospective studies. *Resuscitation*, 81(11), 1479–1487. <https://doi.org/10.1016/j.resuscitation.2010.08.006>
- Berg. (2000). Role of mouth-to-mouth rescue breathing in bystander cardiopulmonary resuscitation for asphyxial cardiac arrest. *Crit Care Med*.28(suppl):N193–N195.
- Cave, D. M., Aufderheide, T. P., Beeson, J., Ellison, A., Gregory, A., Hazinski, M. F., ... Schexnayder, S. M. (2011). Importance and implementation of training in cardiopulmonary resuscitation and automated external defibrillation in schools: A Science Advisory from the American Heart Association. *Circulation*, 123(6), 691–706. <https://doi.org/10.1161/CIR.0b013e31820b5328>
- Chatrath C, Khetarpal R, Kumari H, Kaur H, S. A. (2018). . ULBT, RHTMD, inter-incisor gap, modified Mallampati grade, horizontal length of the mandible, head and neck movements, sternomental distance, and TMD. *Anesthesia Essays and Researches*, 12(2), 349–354. <https://doi.org/10.4103/aer.AER>
- Chong, M. C. Y. (2018). Epidemiology and outcomes of traumatic out-of-hospital cardiac arrests (OHCA). *Resuscitation*, 130(2018), e90. <https://doi.org/10.1016/j.resuscitation.2018.07.186>
- Faizal, F. A., Kedokteran, P., Kedokteran, F., & Maret, U. S. (2018). *Pengetahuan Basic Life Support Pada Mahasiswa Kedokteran Tingkat Pertama Universitas Sebelas Maret Terhadap Pasien Henti Jantung Mendadak*.
- Fuster V, Walsh RA, O'Rourke RA, Poole-Wilson P. (2011). *Pathophysiology of Heart Failure*. Hurst's The Heart 13th Ed : McGraw Hill.
- Ganthikumar, K. (2016). Indikasi Dan Keterampilan Resusitasi Jantung Paru (Rjp). *Intisari Sains Medis*, 6(1), 58. <https://doi.org/10.15562/ism.v6i1.20>

- Heczková, J., & Bulava, A. (2017). Current practice in paediatric basic life support. *Pielęgniarstwo XXI Wieku/Nursing in the 21st Century*, 16(2), 37–41. <https://doi.org/10.1515/pielxxiw-2017-0016>
- Kleinman, M. E., Goldberger, Z. D., Rea, T., Swor, R. A., Bobrow, B. J., Brennan, E. E., ... Travers, A. H. (2018). 2017 American Heart Association Focused Update on Adult Basic Life Support and Cardiopulmonary Resuscitation Quality: An Update to the American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*, 137(1), e7–e13. <https://doi.org/10.1161/CIR.0000000000000539>
- Körber, M. I., Köhler, T., Weiss, V., Pfister, R., & Michels, G. (2016). Quality of basic life support - A comparison between medical students and paramedics. *Journal of Clinical and Diagnostic Research*, 10(7), OC33–OC37. <https://doi.org/10.7860/JCDR/2016/19221.8197>
- Larsen P1, Pearson J, G. D. (2004). Knowledge and attitudes towards cardiopulmonary resuscitation in the community. *The New Zealand Medical Journal*, 117(1193).
- Lim, S. H., Wee, F. C., & Chee, T. S. (2017). Basic cardiac life support: 2016 Singapore guidelines. *Singapore Medical Journal*, 58(7), 347–353. <https://doi.org/10.11622/smedj.2017063>
- McCarthy, J. J., Carr, B., Sasson, C., Bobrow, B. J., Callaway, C. W., Neumar, R. W., & Nichol, G. (2018). Out-of-Hospital Cardiac Arrest Resuscitation Systems of Care: A Scientific Statement From the American Heart Association. *Circulation*, 137(21), e645–e660. <https://doi.org/10.1161/CIR.0000000000000557>
- Muhammad, F. (2017). Perbedaan Pengetahuan Sebelum Dan Sesudah Pendidikan Kegawatdaruratan Dan Analisis Keterampilan Pada Agen Mantap Di Desa Munca, Kabupaten Pesawaran, Lampung. [Skripsi]. Fakultas Kedokteran, Universitas Lampung.
- Notoatmodjo S. (2012). *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: PT Rineka Cipta.
- Notoatmodjo, S. (2007). *Promosi Kesehatan dan Ilmu Perilaku*. Jakarta : Rineka Cipta
- Notoatmodjo, S. (2003). *Ilmu Kesehatan Masyarakat*. Jakarta: Rineka Cipta.
- Notoatmodjo, S. (2010). *Ilmu Perilaku Kesehatan*. Jakarta: Rineka Cipta.
- Notoatmodjo, S. (2012). *Promosi Kesehatan dan Perilaku Kesehatan*. Jakarta: Rineka Cipta.
- Ojifinni K, Motara F, L. A. E. (2019). Knowledge, Attitudes and Perceptions Regarding Basic Life Support Among Teachers in Training. *Cureus*, 11(12).
- PERKI. (2015). *Pedoman Tatalaksana Hipertensi pada Penyakit Kardiovaskular*. Jakarta: Perhimpunan Dokter Spesialis Kardiovaskular Indonesia.



- Rahayu, C., Widiati, S., & Widyanti, N. (2014). Hubungan antara Pengetahuan, Sikap, dan Perilaku terhadap Pemeliharaan Kebersihan Gigi dan Mulut dengan Status Kesehatan Periodontal Pra Lansia di Posbindu Kecamatan Indihiang Kota Tasikmalaya. *Majalah Kedokteran Gigi Indonesia*, 21(1), 27. <https://doi.org/10.22146/majkedgiind.8515>
- Sumekto, D. R. (2011). *Pengurangan Risiko Bencana Melalui Analisis kerentanan dan Kapasitas Masyarakat dalam menghadapi Bencana* (pp. 28–38). pp. 28–38.
- Suranadi, I. (2017). Tingkat Pengetahuan Tentang Bantuan Hidup Dasar (Bhd) Mahasiswa Fakultas Kedokteran Universitas Udayana.
- Wawan A & Dewi M. (2011). *Teori & Pengukuran Pengetahuan, Sikap dan Perilaku Manusia*.
- Wiliastuti, U. N., Anna, A., & Mirwanti, R. (2018). Pengetahuan Tim Reaksi Cepat Tentang Bantuan Hidup Dasar. *Jurnal Keperawatan Komprehensif*, 4(2), 77. <https://doi.org/10.33755/jkk.v4i2.105>
- Wnent, J., Bohn, A., Seewald, S., Fischer, M., Messelken, M., Jantzen, T., & Gräsner, I. (2013). *Einfluss von Erster Hilfe auf das Überleben Laienreanimation*. 562–565.