THE ABILITY OF BANANA STEMS AS MEDIA ALTERNATIVE IMMOBILIZATION OF MODIFIED MANNEQUINS WITH CERVICAL BONE FRACTURES IN PRE-HOSPITAL PROCEDURES

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Abstract

Cervical fractures can result in paralysis, damage to the vertebrae, nervous system, and dangerous complications. Causes of cervical spine injuries include accidents, falls from heights, and sports injuries. There is no alternative tool that can be used for cervical immobilization in pre-hospital procedures as long as medical assistance is not available in the location. To measure banana stems as an alternative medium for immobilization in mannequins with cervical fractures in a pre-hospital procedure. This study used pre-experimental methods and a one-shot case study design. This research design has one group to be given treatment, and then the results are observed. The initial position of the installation is 180 before hanging the load when the load is attached, the initial position of the installation is 178, at 10 to 20 the position becomes 1750, at 30 minutes the position becomes 174.5 0, at the 40th minute until the 50th position remains the same, namely 1740, and in the 60th minute the position becomes 1730. The total decrease that occurred was seven within 60 minutes of measurement. There is a 70-degree deviation for 60 minutes. Banana stems can use for ambulance response time categories one and category 2, where the total time needed is 7-15 minutes and 18-40 minutes. For the 3rd and fourth categories, 120-180 minutes can use a response time if there is medical assistance. There is a 70-degree deviation for 60 minutes. Banana stems can use for ambulance response time categories one and category 2, where the total time needed is 7-15 minutes and 18-40 minutes. For the 3rd and fourth categories, 120-180 minutes can use a response time if there is medical assistance. There is a 70-degree deviation for 60 minutes. Banana stems can use for ambulance response time categories one and category 2, where the total time needed is 7-15 minutes and 18-40 minutes. For the 3rd and fourth categories, 120-180 minutes can use a response time if there is medical assistance.

Keywords: Cervical fracture, pre-hospital immobilization, banana stem alternatives

PRELIMINARY

Conditions that can cause paralysis are related to injury or spinal trauma, so the position of the neck is very important to maintain. The nervous system contained in the vertebrae can be disrupted as a result of a very dangerous neck fracture. Neurological disorders can also result from this fracture (Sjamsuhidayat 2007). Of the 1/3 incidence of spinal fractures occur at the C2 level and 1/2 events

occur at the C6 or C7 level of fracture events. Fatal cervical events often occur at a higher level, namely at the C1 or C2 craniocervical junction (Davenport 2009). Cervical vertebrae (C1-C7) are the parts that often experience injury, several factors of the mechanism of injury can be the cause of trauma to the cervical, the level of mobility is higher in this vertebra compared to others (Ika Setio Rini 2019). Several complications can occur due to cervical fracture, including neurogenic shock, spinal shock, hypoventilation, and autonomic hyperflexia (Emma, 2011). Based on the general principles of ATLS (advanced trauma life support), the initial management of cervical injury treatment is by primary ABCD survey (airway and C-spine control, breathing and ventilatory, circulation and stop bleeding, disability and environment) or based on initial evaluation. It is necessary to intubate without moving the head (C-spine protection) if an inadequate airway is found (Foster 2009: Mahadewa 2009). An action that requires prompt, correct, and agile is an emergency service that is needed to choose the main activities based on the patient's emergency condition (Mahyawati and Widaryati 2015).

Call centre calls received by ambulances and paramedics or what is called response time According to Prince Edward Island (2018) can be interpreted as the time it takes for an ambulance to arrive at the scene. According to the 2017 NHS (National Health Service), after medical assistance is called an ambulance and a team are expected to arrive at the place of a patient who has a life-threatening health problem or who has suffered an injury within an average of 8 minutes from the time of the fastest call. In categorizing the response time for an ambulance call of 7-15 minutes is included in category 1, for category 2 response time is within 18-40 minutes, in category 3 the response time is not more than 120 minutes, and for category 4 the response time is not more than 180 minutes. (National Health Service 2017). Looking at several categories of response time or the arrival of ambulances and medical personnel, we need simple tools from nature that can be used as an alternative to immobilization media, while one of them is natural materials such as banana stems that can be modified to be used as cervical immobilization aids that can prevent injury from getting worse. waiting for medical help to arrive. Previously, there were several alternatives to be used as cervical immobilization media based on interviews conducted with UB's 2013 upgrading skills and disaster management training participants. One of the tools used was a raincoat which was used to immobilize the neck. Then in this study prospective researchers wanted to know the ability of banana stems to be used as cervical immobilization media. The smooth surface of the banana stem does not hurt, is flexible but does not bend easily, can follow the curves of the body and is strong enough to withstand the load. The costs used are also affordable so it is very helpful to be used as an alternative until medical help arrives.

METHOD

This study uses a pre-experimental research method and the design used is a one-shot case study. This research design has one group that is used in the study to be given treatment and then the results are observed. (X) the independent variable being treated (O) is the dependent variable to be observed. the procedure will be carried out 1 (one) time in 1 (one) implementation. Measurements were carried out for 60 minutes of observation and documentation with the initial position of the installation 180^0, and observations and measurements were carried out every 10 minutes.

RESULTS

It can be seen that the initial position of the modified mannequin is in the 180 positions before hanging the load. Then after hanging the load, the position of the mannequin decreased by 2^0 in the first zero minutes of loading the load, which changed to 178 positions.

The first measurement was carried out for 10 minutes with a modified mannequin attached to the load. Seen the previous position was at 178and then after 10 minutes the neck position of the modified mannequin decreased by 3^0 where after 10 minutes the mannequin position decreased to 175^0.

The measurement was continued with the total measurement time being 20 minutes. After walking for 10 minutes the researcher took measurements again and the results of the modified mannequin neck position were at 175where this position is still the same as the measurement in the previous 10 minutes.

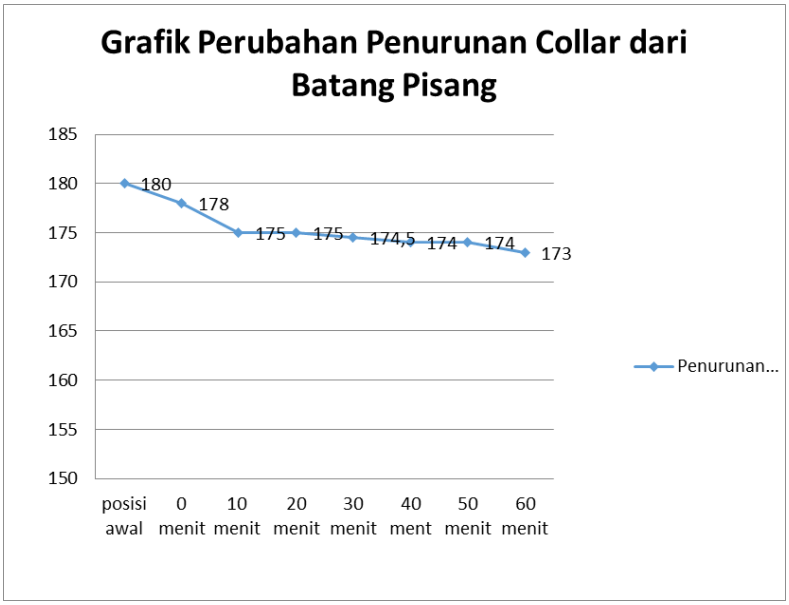
Measurements were then continued with a total time that had been running for 30 minutes. Seen after 10 minutes, the measurements were taken again and the results of the neck position of the modified mannequin were 174.5which decreased by 0.5^0 from the previous position.

Measurements were continued with the total measurement time running for 40 minutes. Then the measurements were taken again and the modified mannequin neck position was in the 174 positions where the previous position was 174.5^0, the position of the modified mannequin neck again decreased by 0.5^0 in the fourth minute of measurement.

Measurements were continued for a total time of 50 minutes. Judging from the measurement results after 10 minutes the position of the modified mannequin neck is 174then again there is no decrease in position in the fifth minute of measurement the same as in the previous measurement which was in position 174^0.

The last of the measurement time with a total time has been running for 60 minutes. It can be seen from the results of this sixth measurement that the neck position of the modified mannequin is in the 173 positions then again there is a decrease in position within 60 minutes of running, which is 1^0 a decrease from the previous minute which was at position 174^0 in the 50th minute.

Graph 1. Position Change



From the total measurement time for 6 measurements in an interval of 10 minutes for each measurement and a total installation time of 60 minutes or 1 hour the research was carried out, it can be seen that within 60 minutes there were several decreases in position and there were also those who did not experience a decrease and remained stable in their position. the same in the previous 10 minutes of measurement. The total decrease in all minutes of measurement is a decrease in the slope of less than 10^0, i.e. there is only a decrease in the position of 7^o a decrease or inclination of the position within 1 hour of the measurement is made.

DISCUSSION

The change in the degree of inclination that occurs is certainly strongly influenced by a force as described in Newton's third law that a force always has a form of action and reaction in the opposite direction (Law of Action and Reaction). while the reaction is a banana stem against a load that is hung on a mannequin (Asriwati, 2017).

Another thing that can also affect the degree of inclination in this study is that there are several factors including the position of the hanging mannequin where when at the scene the patient's neck and head were placed on a flat plane such as the ground or also when medical assistance arrived the head and

neck position was held long. spine board so that it can be more stable, so there is resistance so that it is not easy to extend the neck and head. The second factor is banana stems, researchers have prepared banana stems that have been cut at 08.00 in the morning, and the research was carried out at 13.00 in the afternoon. Of course, this can affect the decrease in the degree of slope of the mannequin, because the banana stem has been left for 5 hours, so if the banana stem has started to wither, the strength of the stem can be reduced.

The total decrease that occurred was $7^0$of several measurements. There is also the position of the neck and head of the mannequin that did not decrease from the position measured at that time, which remained the same as the position of the measurement in the previous minute, which can be seen in the 10th and 20th minutes and can also be seen at the 40th and 20th minutes. -50 the position of the banana stem does not change the tilt position. The decrease that occurred was not enough wherein one decrease there was no decrease of more than 5^0 at once, there is only 2^0 decrease at once during the first 0 minutes the load is hung and also a direct decrease of 3^0 in the first 10 minutes of position 0 minutes.

According to this study, banana stems can be used within 60 minutes with only a total decrease of 7^0 not until there is a decrease of $>10^0$, even with many factors such as the hanging position factor and several other influencing factors. When medical assistance arrives at the location and if medical equipment is available such as a long spine board, the medical officer does not need to rush to release the banana stem because the patient's neck and head will be more stable and can reduce movement that can affect the extension of the neck.

Things that need to be considered in the evacuation action are actions that do not aggravate the condition of the victim and do not cause additional trauma to the victim. Many things fall into the category of evacuation actions, one of which is the Log Roll action. This technique requires 2-5 nurses. For a client who has a cervical injury, a nurse must keep the client's head and neck aligned (Berman, 2009).

The principles for performing spinal immobilization and log rolls are that four adult patients are required to carry out a modified log roll and patient immobilization procedure, such as on a long spine board: (1) one to maintain immobilization in line with the patient's head and neck; (2) one for the body (including the pelvis and pelvis); (3) one for the pelvis and legs; and (4) one administers this procedure and removes the spine board. This procedure keeps the patient's entire body in line, but there is minimal movement of the spine. When performing this procedure, immobilization has been carried out on the extremity suspected of having a fracture (Krisanty P 2009).

Another thing that needs to be considered in the case of cervical fractures is when lifting and moving the patient from the scene to the long spine board to the hospital, caution and good detention from the medical team are needed. Where according to (Saanin 2009) the principle of lifting that needs to be considered, namely, firstly lifting the victim, when going to carry out the lifting of the victim it is necessary to carry out an effective and efficient lifting, secondly the lifting attitude, when in the lifting attitude, to avoid injury a neat and balanced position must be sought. , then the last position is ready to lift and walk, Simultaneously the victim's legs will be in the same direction as the walking position of the rescuer's footsteps.

CONCLUSION

There is a deviation of the degree of slope as much as 7^0 during the study run within 60 minutes with the initial position 180^0 and the final result of measurement for 60 minutes is 173^0. With the results of a decrease that occurs the use of banana stems as cervical immobilization media can still be used even with many factors in this study, one of which is the hanging position. The use of banana stems as an immobilization medium can be used for ambulance calls or medical assistance with a response time of category 1 and category 2 where the total time required is 7-15 minutes for category 1 and 18-40 for category k- 2. The response time for the 3rd and 4th categories with a time of 120-180 minutes can be used if there is assistance from medical devices such as a long spine board so that the medical team does not need to rush to release the banana stems during the trip to the hospital, it will reduce the movement to get to the hospital. avoid extension of the neck and head while the patient is travelling in the ambulance. You can also use additional tools such as a head immobilizer which functions to immobilize the head so that the fixation can be stronger.

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