

## Literature Review: The Effectiveness First Aid Pressure Immobilization Bandages Technique of Snake Bite

Dian Nopita<sup>1</sup>, Ridlwan Kamaluddin<sup>2</sup>  
Department Of Nursing Faculty of Health Sciences  
Jenderal Soedirman University, Indonesia

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**\*Corresponding author** : Dian Nopita  
Email: diannopita.dn@gmail.com

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### ABSTRACT

**Backgrounds:** Snake bites are a medical emergency that can cause permanent disability and even death (Wintoko and Prameswari 2020). The main principle recommended for the first treatment of a snakebite is to immobilize the area with a pressure bandage (pressure immobilization bandages) then immediately referred to the hospital for further treatment.

**Objective:** To know the effectiveness of pressure immobilization bandages (PIB) first aid against snake bite.

**Methods:** Article searches were conducted electronically using Google Scholar, PubMed, Science direct, National Library and Pro quest databases. Articles used from 2016 to 2021. The keywords in this article search were “pressure immobilization bandages” and “snake bite. So that 5 research articles were reviewed. Inclusion criteria included articles published in 2016-2021, articles in Indonesian and English, involving snake bite patients and being given the Pressure immobilization bandage technique intervention. Meanwhile, the exclusion criteria include articles that cannot be accessed, based on meta-analysis, and journals that discuss snake bites but are not in accordance with the topic to be reviewed.

**Results:** Pressure immobilization bandages (PIB) can be used in first aid because they can inhibit the spread of snake venom and are 20 times faster in the healing process if done in first aid.

**Conclusion:** Pressure immobilization bandages (PIB) are effective in first aid for snake bites.

**Keywords:** Pressure immobilization bandages; snake bite

### Introduction

Meanwhile, according to Panji (2016) said that snakebite is an occupational disease whose risk of occurrence is closely related to the work of farmers, fishermen, hunters, and snake charmers. Meanwhile, according to Panji (2016) said that snakebite is an occupational disease whose risk of occurrence is closely related to the work of farmers, fishermen, hunters, and snake charmers.

Data from the World Health Organization (WHO), snake bites in the world kill up to 4.5 million people every year. This number resulted in serious injuries to 2.7 million men, women and children and killed around 125,000. Meanwhile, many snakebite victims survived who later became disabled and paralyzed. The World Health Organization (2018) also notes that 4.5-5.5 million

cases per year are the highest cases in the Neglected Tropical Disease (NTD) category.

The risk of infection from a bite is greater than an ordinary wound because it is toxic / poison causes a more severe infection. Not all snakes are venomous but because the patient's life depends on the accuracy of the diagnosis, in doubtful circumstances take the attitude of assuming all snake bites are venomous. Therefore, the role of nurses is to carry out nursing care for patients with Snake Bite appropriately and correctly as long as the patient is treated. The first treatment is generally carried out by the victim or the person closest to the victim at the time of the incident. But often, giving the first treatment actually gives the effect of worsening the condition of the snakebite victim. This is mainly due to the limited knowledge of the community. People tend to do first aid using traditional methods such as sucking wounds,

burning wounds, giving traditional medicines, or making new wounds, tying snakebite wounds with a strong rope. In theory, everything that is traditionally done by the community will have a negative impact on the condition of the wound (Cindy Nurul Afni and Nasrul Sani 2020).

The main principle recommended for the first treatment of snakebite is to immobilize the area with pressure immobilization bandages and immediately be referred to a hospital for further treatment. The purpose of the Pressure Immobilization Technique (PIT) or Pressure Immobilization Bandage (PIB) is to block lymphatic flow without affecting arterial or venous blood flow so as to reduce the spread and absorption of snake venom.

Thus, the main objective of this literature review is to determine the effectiveness of pressure immobilization bandages against snake bites.

Methods

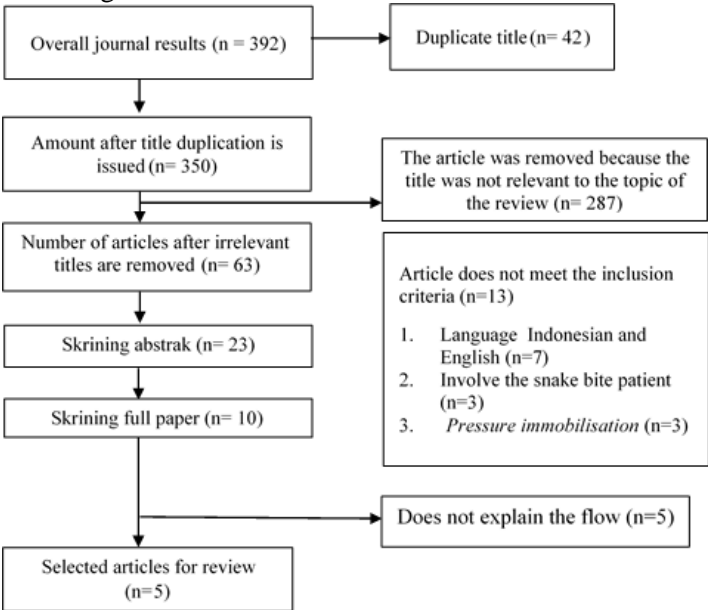
This literature review was obtained, analyzed based on the PICO model which consists of 4 components, namely P (problem or problem), I (intervention or interesting action or problem), C (comparison intervention or compared intervention), and O (outcome or outcome). ) (Roever 2018). The PICO in this literature review is P which is patients with snake bite, I is Pressure Immobilization Bandage, C is absent and O is Pressure Immobilization Bandages effective for snake bite first aid.

Search techniques and selection criteria ; this literature review was conducted in June 2021 by browsing databases including Google Scholar, Science Direct, Proquest, National Library and PubMed. The keywords used are a combination of the keywords "Pressure Immobilization Bandages" and "snake bite". The inclusion criteria in this literature are articles published in 2016-2021, articles in Indonesian and English, involving snake bite patients and being given the Pressure immobilization bandage technique intervention. While the exclusion criteria are articles based on meta-analysis, and journals that discuss snake bites but are not in accordance with the topic to be reviewed.

Data Souece	Year	Number Of Articles	Amount
Keyword: "Pressure Immobilization Bandages (PIB)" and "snake bite"			
Google Scholar	2016 - 2021	296	392
Science Direct	2016 -2021	26	
PubMed	2016 - 2021	3	

Data Souece	Year	Number Of Articles	Amount
Proquest	2016 - 2021	20	
Perpusnas	2016 -2021	47	

The author selects studies from the search results, along with an explanation of the process of searching for articles in this literature review.



Picture 1. Study search and selection results

Results and Discussion

Based on the 5 articles reviewed, the research methodology used is the analytical observational research method with the cross-sectional approach (1 article), retrospective study (2 articles), non-experimental: comparative (1 article) and case report method (1 article). .

Based on the 5 articles reviewed, the results show that pressure immobilization bandages are effective in first aid for snake bites. The effectiveness of pressure immobilization bandages can be seen from the process of spreading snake venom in the body and the length of the patient's healing process.

Snakebite cases are a neglected disease. Snake bites are a medical emergency problem that can threaten human life and can interfere with respiratory function, cause bleeding disorders, kidney function, and damage local tissues causing permanent disability and amputation (Wintoko 2020). The importance of one's knowledge to know how to handle a snake bite. In accordance with the above journals, it has been proven that pressure immobilization bandages (PIB) are effectively used for pre-hospital, with the aim of minimizing movement so that what is in the body does not spread quickly.

By performing pressure immobilization bandages on snake bite patients to slow down systemic absorption of venom, save lives and prevent complications before patients get to health services, monitor early symptoms of the effects of dangerous envenomations, arrange patient transport to health services, and most importantly all of these actions. does not harm the patient or make the patient's condition worse (Luman and Endang, 2016). It is proven by research by Melati et al. (2018) showed that wound treatment/immobilization can heal 20 times more effectively than observing without action.

In line with Medikanto's statement, Vanende Silalahi and Sutarni (2017) that the help provided is to calm an anxious victim, immobilize the bitten body part by tying or supporting it with wood so that muscle contractions do not occur (because movement or muscle contraction can increase absorption into the body). in the bloodstream and lymph), consider pressure immobilization in Elapidae bites, avoid disturbing the bite wound because it can increase venom absorption and cause local bleeding.

According to Fry (2018), there are still many people who carry out first aid and inappropriate treatment including cutting wounds, tourniquets, electric shocks, immersion in ice water, and the ineffective use of herbal medicines by traditional medicine.

The application of this treatment in the community needs attention, because it is not uncommon for ordinary people to misinterpret the application of pressure bandage or Pressure Immobilization Bandage (PIB) or Pressure Immobilization Technique (PIT) with the addition of a splint with the use of a rope as a wound binder with the aim of preventing it from spreading (Avau). et al. 2016). The pressure level of the compression bandage should be maintained in the range of 55-70 and 40-70 mm Hg for the lower and upper extremities of a snakebite, respectively, to delay the rate of absorption or of the venom spreading in the body.

Based on the five articles reviewed above, that pressure immobilization bandages (PIB) are effective first aid for snake bites before further assistance is given. In the study of Nduagubam et al. (2020) states that in America it has been recommended to perform first aid using pressure immobilization bandages by doing first aid to slow down the spread of snake venom in the body before being taken to the hospital. Therefore, the need for appropriate and appropriate first aid in cases of snake bite.

Author	Research Design	Number of Sample	Result
Pramudya Dani, Haedar Ali, Dradjat Respati (2018)	analytic observational research with the cross-sectional approach	56 patient	In this study, observations were made of several actions that are often carried out in performing first aid for snake bites, including using a rope (32.8%) followed by wound/immobilization (19%), traditional herbs (17.2%), incisions and no treatment. no action (10.3%), and lastly, suction bite (6.9%). In the use of ropes, the results obtained $p = 0.032$ ( $p < 0.05$ ) which means there is a correlation where $OR = 10.7$ (95% CI 1.3 - 86.9) means that the rope can heal 10.7 times more effectively than without action. In the immobilization action and the results showed that $p = 0.028$ ( $p < 0.05$ ) meaning that there was a correlation between immobilization and the results = 20 (95% CI 1.4 - 287.6) indicating that wound treatment/immobilization could heal 20 times more effectively than observing without action. In the act of giving traditional herbal medicine, making incisions in the wound area, applying 0.9% compresses and performing suction on the snakebite area, there was no relationship in reducing snake venom that entered the body.
T. Reginald George Alex, G. R. Divya, John Emmanuel Jesudasan (2021)	A retrospective: kohort	62 patient	In this study, several pre-hospital procedures were performed on patients with snake bites. The results in this study were 3.2% (2 people) doing home care, 1.6% (1 person) herbal, tying the wound or tourniquet 66.1% (41 people), making an incision in the wound area 3.2 % (2 people), ritual/prayer 1.6% (1 person) and no treatment was performed 24.3% (15 people). In this study, it was stated that the patient's limited knowledge greatly affects the actions to deal with snake bites by binding over the bite wound which will result in limb ischemia and amputation. Experimental studies have shown that pressure immobilization bandages can inhibit the spread of venom.
Akhmad Rifai, Tri Andriani Cholifah (2016)	non experimental: komparatif	88 patient	The results of this study stated that snake bite patients in Pacitan Hospital in 2009-2011 were mostly treated without incisions, namely 71 patients (80.7%) and a small proportion were treated with incisions, namely 17 patients (19.3%). In 17 patients (19.3%), of the 17 patients, most of the speed of reduction in wound swelling was in the slow category, namely 10 patients (11.4%), while those who did not have an incision were 71 patients (80.7%). The 71 patients mostly decreased the speed of wound swelling in the fast category, namely 54 patients (61.4%). In this study, non-incision treatment by liberation of blood circulation, tissue oxygenation, immobilization and administration of drugs was found to reduce swelling of snake bites. Taking the right actions can reduce the spread of venom very quickly.
Maula Haqul Dafa, Slamet Suyanto (2021)	Case report	20 patient	The results of this study were 12 patients who were bitten by snakes were taken to the hospital, 1 patient was taken to a healer, 1 patient was treated by a snake charmer and 6 patients were not taken directly to the hospital. It was found that most of the snakebite

Author	Research Design	Number of Sample	Result
			victims were accidental/accidents and 6 people were affected by snake attraction. Only 4 out of 20 people survived because the first appropriate treatment was to immobilize the area affected by the bite.
Obinna Chukwuebuka Nduagubam, Onyinye H. Chime , Ikenna K. Ndu, A. Bisi-Onyemaechi, Christopher B. Eke , Ogechukwu F. Amadi, Obianuju O. Igbokwe (2020)	A retros pective: kohort	7 patient	The results of this study stated that 5 people (71.4%) occurred during the rain and the rest occurred at night. in 6 people (85.7%) the bite wounds were on the lower extremities and the rest were on the hands. Other data were obtained, namely first aid was performed on snake bites using herbal medicine 3 people, 2 people local incisions were made, 2 people used a tourniquet and no first aid was given to one person. While the first aid treatment recommended by WHO avoids the use of a tourniquet of 5 people and using a tourniquet of 2 people. 7 people did not immobilize, only 2 people could avoid dangerous traditional medicine, 2 people who avoided washing, rubbing, massaging or incising wounds and 1 person went straight to the health facility. 6 (87.5%), tried one form of first aid care or another before coming to the hospital, worrying that they largely diverged from WHO recommendations. Patients who did not receive first aid according to WHO were hospitalized longer than those who received first aid according to WHO recommendations.

Conclusion

Based on the literature review above, it can be concluded that pressure immobilization bandages (PIB) are effective for snake bite first aid. The purpose of the Pressure Immobilization Technique (PIT) or Pressure Immobilization Bandage (PIB) is to block lymphatic flow without affecting arterial or venous blood flow so as to reduce the spread and absorption of snake venom. The principle is the same as dressing the location in a patient with an ankle sprain. The bandage should be an elastic bandage (15 cm), not a crepe bandage. A bandage is applied over the bite site and then distal to the proximal to cover the entire limb (WHO, 2016). With proper first aid for snake bites, it will reduce the risk of severity for someone with a snake bite before medical help is given.

The results of this literature review are expected to be useful in the scientific field and can be used as a source of learning or reference by nursing students. The field of nursing services is expected to be applied in performing first aid on snake bites. In future research, it is possible to examine the level of public knowledge about the first treatment of snake bites

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