

## Self – Care Training for Wound Diabetic Foot Using Guava Leaves Decoction

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### ABSTRAK

The complications of diabetes mellitus (DM) is diabetic ulcers. The principles of Preparation of the wound (3 M principles) are cleansing, removing necrotic tissue in the wound, choosing the right topical therapy. The aim of this community service to implementation research result about effectiveness of boiling guava leaves as wound washing for diabetic clients. The community service method was wound care diabetic training through guava leaves boil. The program have done as long as a week which the participant were diabetic client in Sidangkal public health center. Before doing community service, the client experienced on caring wound diabetic was used Na-CL, closed wound with cotton, washed every day, and used insulin as preventive diabetic complication. The result of training, the participant said the information about guava leaves boil was new information for them. And all participant also given positive response for this training. And the lead of public health center also said this program improve the knowledge of clients about caring wound diabetic foot.

**Keywords:** wound care, diabetic mellitus, guava leaves

### INTRODUCTION

The one of complications diabetes mellitus (DM) is diabetic ulcers (Tresierra-Ayala and García Rojas, 2017). Probability wound diabetic foot is 15%; where 60-80% was healed, and 5-24% was amputation (Wallace, 2007). Wound bed preparation is beginning procedure (Moffat, Marison and Pina, 2004). The principles of Preparation of the wound (3 M principles) are cleansing, removing necrotic tissue in the wound, choosing the right topical therapy (Bellingeri *et al.*, 2016).

There are many fluids to wash of wound diabetic foot as Na-CL (0.9%), tap water, distilled water, and cool boiled water (Fernandez and Griffiths, 2008). The research Ljubic A (2013) showed tap water normal salin is fluid that can used to wash wound (Ljubi, 2013).

Guava is one of the tropical plants that is empirically used by the community as medicine (Metwally *et al.*, 2010). Guava leaves (*Psidium guajava*) contains antitumor, antihyperglycemic and antioxidant properties (El-Ahmady, Ashour and Wink, 2013). There are four types of flavonoids in Guava leaves that efficacious as antibacterial, anti-inflammatory, analgesic and anti-oxidant (Metwally *et al.*, 2010).

Guava leaves contain vitamins A, C and anti-oxidants that can protect skin layer (Mishra *et al.*, 2017). And flavonoids in guava leaves can be used as antibacterial and antimicrobial. The activity of flavonoids can reduce the number of bacteria and reduce infection so that it can reduce the production of exudate. The reduced production of exudate can reduce the odor that occurs in the wound (El-Ahmady, Ashour and Wink, 2013).

Cases of Diabetes Mellitus in the area of the Sidangkal Public Health Center in 2021 were found as many as 94 patients who visited for treatment, while many people with diabetes who did not receive treatment were found in the community and had not been diagnosed. From DM patients who came for treatment there were those who had suffered from diabetic foot wounds. Among the patients who came for treatment with a diabetic foot wound, they carried out medical care and treatment, namely the use of drug consumption, insulin injections and management of wound dressing replacement care by health workers. In 2019, a study was conducted on the effectiveness of guava leaf decoction as a wound washing liquid against malodor levels in diabetic

foot wounds. The results of the study (Antoni and Harahap, 2019) showed that a decoction of guava leaves can be used as a wound washing liquid in overcoming the level of malodor in diabetic foot wounds. From this study, it can be concluded that DM patients with diabetic foot wounds have not applied traditional treatments by washing wounds using a decoction of guava leaves. In fact, guava leaves are among the types of plants that are easily found in Padangsidempuan, especially Sessions.

The case of diabetes mellitus is a health problem that many people suffer from in the working area of the local health center. Health care efforts obtained by patients at the health center are treatment and management of diabetic foot wounds using Na-CL fluid. These services can be obtained by patients from health workers. The congregational health center has never provided training for treating DM with diabetic foot wounds independently for patients. So that it becomes a natural potential that can be developed and utilized in the local community. Based on the results of the research, community service was carried out which aims to increase the ability of the community in self-care for DM patients with diabetic foot ulcers by using a decoction of guava leaves.

### **METHOD**

The implementation of community service is carried out by providing counseling and training on wound care for DM sufferers by using a decoction of guava leaves in the Working area of the Sidangkal Health Center. The extension method is lectures using slides, and module distribution. The procedure for implementing community service by involving partners and students. The training was carried out using a demonstration method, namely making a decoction of guava leaves and practicing wound care in DM patients. The implementation of the service starts from the preparation, implementation and evaluation stages of activities that will take place from 18 to 26 December 2021. The implementation of counseling and training is carried out face-to-face, namely at the congregational health center and home visits in the working area of the regional health center. This community service is a Funding Assistance Activity for the Independent Study Policy Research Program for the Independent Campus and Community Service Based on Private Higher Education Research Results organized by the Directorate General of Research, Technology and Higher Education in 2021.

### **RESULT**

The results of the implementation of this service provide knowledge and skills to the community in the use of guava leaf decoction as a wound washing liquid. Community efforts in handling diabetic foot wounds before being given training are using Na-CL fluid assisted by health workers at the Health Center Treatments carried out by DM patients in wound cleaning are not appropriate, such as not regularly changing wound dressings, using antiseptics on wounds and applying wound dressing creams.

Providing training is able to increase public knowledge about foot wound treatment techniques. Public knowledge about diabetic foot wound care is 76% good, 34% less after being given information. The ability of the community in washing diabetic foot wounds is classified as good after being given information by 67% and less than 33%. This training also increases the knowledge and skills of the community in the use of guava leaf decoction as a diabetic foot wound washing fluid. The attitude of the community with the technique of using seed leaf stew is very positive and interested in using the guava leaf decoction as a wound wash.

### **DISCUSSION**

The results of the implementation of activities are carried out starting from the preparation, implementation to reporting stages. At the implementation stage, activities are carried out from December 18 to December 25, 2021. Submission of service implementation materials is carried out through lecture and demonstration methods. The lecture method can be used as an outreach method to groups and individuals/families. Making a decoction of guava leaves is 20 pieces of guava leaves (guava leaf) added 750 cc of water, then boiled until boiling. Then it is cooled and

ready to be used for wound washing (Antoni and Harahap, 2019). A decoction of guava leaves can be used as a wound cleanser for diabetes mellitus because guava leaves contain antibacterial, anti-inflammatory, antitumor, antiallergic, antihyperglycemic and antioxidant properties (El-Ahmady, Ashour and Wink, 2013). The content of flavonoids in guava leaves can reduce the spread of bacteria (Metwally *et al.*, 2010).

Guava leaves also contain tannins that can control inflammation (El-Ahmady, Ashour and Wink, 2013). The content of flavonoids in guava leaves can be used as antibacterial and antimicrobial. The activity of flavonoids can reduce the number of bacteria and reduce infection so that it can reduce the production of exudate. The reduced exudate production can reduce the odor that occurs in the wound (El-Ahmady, Ashour and Wink, 2013). Guava leaves contain vitamins A, C and anti-oxidants that function to protect the skin layer (Mishra *et al.*, 2017). Malodor management using the wound washing method using a decoction of guava leaves is one of the first steps in preparing the wound bed (wound bed preparation) (Moffat, Marison and Pina, 2004).

Wound washing is an act of cleaning the wound from residual dressings, loose necrotic tissue and foreign objects/particles that are not useful to the body (Fernandez and Griffiths, 2008). The results of previous research by Guintu and Chua (2013) found that guava leaves can be used as a liquid for washing wounds in the oral cavity ( $p < 0.001$ ). Guava leaves can reduce the size of the wound in the oral cavity from 1.44 mm to 0.25 mm compared to normal saline from 0.88 mm to 0.75 mm for one week (Guintu and Chua, 2013). The purpose of wound washing (Antoni and Harahap, 2019) is to clean the wound from the rest of the old dressing and dead tissue; Clean the wound from germs / bacteria; Optimizing the wound healing process; Reduces odor (odor) in the wound. Washing wounds using guava leaves is the right step in overcoming problems in chronic wounds such as malodor. The use of decoction of guava leaves is an appropriate effort to treat chronic wounds such as malodor. The flavonoid content in guava leaves contains morin-3-O-lycoside, morin-3-O-arabinoside, Quercetin and Quercetin morin-3-O-arabinoside reported to have strong anti-bacterial and anti-viral properties (Arisma, 2002).

### **CONCLUSSIONS AND RECOMENDATIONS**

The implementation of community service activities regarding self-care training for DM patients with diabetic foot wounds using a decoction of guava leaves has been carried out on 18-26 December 2021 in the Working Area of the Sidangkal Health Center. The impact of community service on the community is that participants' insight into diabetes, causes, prevention, and control of DM is getting better, participants have new knowledge about correct wound care techniques and new knowledge about guava leaf decoction that can be used as an diabetic and diabetic wound cleanser.

Suggestions for community service are conducting training or counseling on other diseases as health promotion for residents in the Sidangkal Village, South Padangsidempuan sub-district based on the results of university research. The follow-up to the results of the service is the management of IPR and social marketing of processed guava leaf decoction as a wound washing product in the community.

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### **DAFTAR PUSTAKA**

- Antoni, A. and Harahap, Y. W. (2019) 'Efektivitas pencucian luka menggunakan daun jambu biji terhadap tingkat malodor klien luka kaki diabetik', *Angewandte Chemie International Edition*, 6(11), 951–952., 8(2), pp. 152–156.
- Bellingeri, A. *et al.* (2016) 'Effect of a wound cleansing solution on wound bed preparation and

- inflammation in chronic wounds: A single-blind RCT', *Journal of Wound Care*, 25(3), pp. 160–168. doi: 10.12968/jowc.2016.25.3.160.
- El-Ahmady, S. H., Ashour, M. L. and Wink, M. (2013) 'Chemical composition and anti-inflammatory activity of the essential oils of Psidium guajava fruits and leaves', *Journal of Essential Oil Research*, 25(6), pp. 475–481. doi: 10.1080/10412905.2013.796498.
- Fernandez, R. and Griffiths, R. (2008) 'Water for wound cleansing', *Cochrane Database of Systematic Reviews*, (1). doi: 10.1002/14651858.CD003861.pub2.
- Guintu, F. and Chua, A. (2013) 'Effectivity of Guava leaves (*Psidium guajava*) as Mouthwash for Patients with Aphthous Ulcers', *Philipp J Otolaryngol Neck Surg*, 28(2), pp. 8–13.
- Ljubi, A. (2013) 'Cleansing chronic wounds with tap water or saline: A Riview', *Journal Community Nurs*, 27(1), pp. 19–21.
- Metwally, A. M. *et al.* (2010) 'Phytochemical investigation and antimicrobial activity of *Psidium guajava* L. leaves', *Pharmacognosy Magazine*, 6(23), pp. 212–218. doi: 10.4103/0973-1296.66939.
- Mishra, R. *et al.* (2017) 'A comprehensive review on *Psidium guajava* Linn (Amaratafalam)', *International Journal of Ethnobiology & Ethnomedicine*, 4(1), pp. 1–6. Available at: [www.advancejournals.org](http://www.advancejournals.org).
- Moffat, C., Marison, M. and Pina, E. (2004) 'Wound bed preparation: science applied to practice', *Medical Education Partnership*, pp. 12–17.
- Tresierra-Ayala, M. Á. and García Rojas, A. (2017) 'Association between peripheral arterial disease and diabetic foot ulcers in patients with diabetes mellitus type 2', *Medicina Universitaria*, 19(76), pp. 123–126. doi: 10.1016/j.rmu.2017.07.002.
- Wallace, G. F. (2007) 'Debridement of Invasive Diabetic Foot Infections', *Clinics in Plastic Surgery*, 34(4), pp. 731–734. doi: 10.1016/j.cps.2007.07.009.

## APPENDIX



**Figure 1.** Training on making wound washing liquid from Guava Leaves



**Figure 2.** The results of the implementation of self-care training for diabetic foot wounds in DM patients with a demonstration method using guava leaf decoction