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ORIGINAL RESEARCH **E-ISSN:**

THE EFFECT OF PIPER BETLE LEAF EXTRACT LOTION TO OLDER PEOPLE SKIN MOISTURE

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ABSTRACT
Background: Elderly has obvious anatomic and physiological changes in all of their body systems. Some of common skin problems are xerosis, the appearance of skin folds, skin damage due to moisture problems, and impaired wound healing. There is one alternative skin care that can be applied and has been scientifically reviewed such as utilization of green betel leaf (*Piper betle* L.). This plant is scientifically proven to have antibacterial activity.
Objective: The aim of this study is to provide an alternative skin care for elderly people who are frequently in contact with urine and faecal using betel leaf.
Methods: The research design used in this study was quasi-experimental with a pre-test and post-test approach in the treatment group.
Results: Statistical analysis showed that the water content of the skin in the control group showed a result of p = 0.325 (p> 0.05) and the oil content in the control group showed a result of p = 0.783 (p> 0.05). It can be concluded that there is no significant effect between bathing in the normal way with the level of skin moisture. The treatment group showed that the water and oil content had a value of p = 0,000 (p <0.05).
Conclusion: Based on the results of research and discussion it can be concluded that the administration of betel leaf extract lotion (*Piper beetle*) significantly influences the skin's moisture.

Key words: Skin moisture, piper beetle, older people.

INTRODUCTION

The older people underwent very obvious anatomic and physiological changes in all body systems. One of them was the integument system, which can cause damages to the skin. One of the reasons was due to the cutaneous tissue loss of functioning during the aging process. Some common skin problems in older people include xerosis, the appearance of skin folds, skin damage as a consequence of moisture problems, and impaired wound healing (Makrantonaki, Steinhagen-Thiessen, Nieczaj, Zouboulis, & Eckardt, 2017).

One study in Turkey geriatric outpatient ward mentioned that there were some skin problems which was reported by older people. The most prevalent problems were dermatitis eczema (21,7%), fungal infection (16,7%), and bacterial infection (7,1%). Meanwhile, the most common complaint was pruritus (Polat & N İlhan, 2015). This complaint was frequently delivered by older people whose undergone hospitalization, and worsened when hospitalization period was longer. (Makrantonaki et al., 2017). The older people at nursing home also suffered for skin problem. The most common problem

is skin tear (3,8%) (Sanada, Nakagami, Koyano, Iizaka, & Sugama, 2015).

Considered to this condition, some preventive precautions need to be taken by nurses, especially for older people who undergone long-term care. They were at risk of experienced problems related to skin moisture, whether too dry or vice versa. Very dry skin conditions commonly found on the heels, elbows, or at the pruritus location (Lichterfeld, Lahmann, Blume-Peytavi, & Kottner, 2016). Skin damage can be occurred when the skin had long term contact with urine or feces. Normal bacteria population, skin pH balance, and skin moisture would be disrupted. This condition was frequently found in older people who suffered from urine or fecal incontinence (Fujimura et al., 2016).

Changes in older people skin conditions demand unique management because it was entailed many facets. This would determine the difference in nursing actions to fulfil the older people skin basic need. Nevertheless, research in this area was rarely conducted. This lead to lack of standard operational procedure which explained older people skin care whether they have secondary health problem or not (Humbert et al., 2016; Makrantonaki et al., 2017).

Indonesia has plenty natural resources as an alternative solution to cope with this condition. We could utilize green betel leaf (Piper beetle L.) which has been scientifically reviewed for its advantages. This plant had scientifically proved too had antibacterial effect. Betel leaf could be used both as astringent and antiseptic because it contained saponins which had antimicrobials effect, flavonoids which could damage bacterial proteins, and polyphenols. Natural phenols contained in betel leaves had 5 times stronger effect than ordinary phenols (Shah, Garg, Jhade, & Patel, 2016). A research which was conducted by Nagori et al, showed that 0,01 – 1 mg/ml of ethanol bethel leaf extract was effective as an antifungal. This effectiveness was 10 times better than 10 mg/ml Clotrimazole and 2,5 mg/ml prochloraz (Nagori et al., 2011).

Based on the above phenomenon, this study tried to determine the effect of betel leaf extract to the older people skin moisture. The aim of this study was to provide alternative skin care for older people who were frequently contacted with urine and feces.

METHODS

Study Design

The research design used in this study was quasi-experimental with a pre-test and post-test approach in the treatment group.

Setting

This research was conducted at the Panti Werdha Pangesti Lawang, Jl. Sumber Mlaten No. 3, Lawang Malang.

Research Subject

The subjects of this study were elderly who were willing to be respondents, aged> 55 years, GCS 3 to 10, ADL scale ≥ 50, did not suffer from pressure ulcers, elderly with neurological diseases (Cerebral Vascular Accident, Guillain Barre Syndrome), endocrine (diabetes mellitus), cardiovascular (Acute Myocardial Infarction, Chronic Heart Failure), and respiration (Acute Lung Edema, Chronic Obstructive Pulmonary Disease), unable to fulfill their basic need independently.

Instruments

The instruments which is used such as observation sheets to obtain an overview of patients, questionnaires, lotion of betel leaf extract at 0.5 mg / mL. The extract lotion is obtained by maceration and evaporation techniques using 70% ethanol until thick

betel leaf extract is obtained. Skin moisture measurement is done by Digital Moisture Oil Content Analyzer.

Data Analysis

Univariate analysis in this study illustrates the general identity of respondents which contains data on gender, age, recent education, and marital status. In this analysis also shows specific data that discusses the health status of the skin, as well as nutritional status and hydration. Another data included in this study is the Barthel Index calculation results for each elderly respondent.

Bivariate analysis used to see the effectiveness of the treatment of betel leaf extract lotion against the skin moisture of the elderly as one of the factors that support the occurrence of pressure sores. The data normality test results showed that the data did not have a normal distribution so the analysis was done using the Wilcoxon non-parametric test.

Ethical Consideration

This research has been carried out in accordance with the rules of bioethics as evidenced by the existence of informed consent from research subjects and ethical feasibility testing.

RESULTS

General Data

The majority of respondents are female. Most respondents had a history of stroke (46.7%) which affected their mobility abilities. This is supported by the results of the Barthel Index calculation which shows that the respondent was at a moderate level of dependency. In addition, 75% of respondents were in wheelchairs whose requires the help of nurses to moving, while the remaining 25% were elderly who are bed rested in beds and require total assistance to fulfil all their basic needs.

Specific Data

In this study, researchers took specific data such as skin health status, nutritional fulfillment, and water and oil levels in the skin. The water and oil levels were observed and measured on the first and fourth days of the study. Respondents indicated the need for assistance or dependence in their mobilization. This matter has an effect on several areas of the body exposed to friction and excessive body fluids. The areas which most often attached to the surface are the buttocks, back, heel, and sacrum. The most common complaint that arises from the pressure is that it feels hot and can cause pressure sores. Another problem that arises is the itching due to mixing bacteria with sweat.

Based on specific data relate to skin moisture level (consisting of water and oil content) before and after giving lotion and in the control group who did not get lotion, showed that there was no significant change in the control group for the level of moisture, both from water and oil content in the skin. A noticeable change was seen in the difference that appeared in the water and oil content after three days of the betel leaf extract lotion.

Statistical analysis of the water content of the skin in the control group showed that the result of $p = 0.325$ ($p > 0.05$) and the oil content in the control group showed a result of $p = 0.783$ ($p > 0.05$). It can be concluded that there is no significant effect between bathing in the normal way with the level of skin moisture. The treatment group showed that the water and oil content had a value of $p = 0{,}000$ ($p < 0.05$).

Table 1. Statistical Analysis Results of Moisture Skin Data

	n	Median (minimum-maximum)	p
Water before (control)	56 point	30,60 (12,80-59,50)	0,325
Water after (control)	56 point	13,35 (10,10-34,30)	
Water before (treatment)	56 point	30,60 (12,80-59,50)	0,000
Water after (treatment)	56 point	13,35 (10,10-34,30)	
Oil before (control)	56 point	14,20 (5,70-28,70)	0,783
Oil after (control)	56 point	14,20 (5,80-28,20)	
Oil before (treatment)	56 point	13,65 (1,70-26,70)	0,000
Oil after (treatment)	56 point	5,90 (4,60-18,20)	

DISCUSSION

All respondent in this research were older people who had limitation to occupy their mobility and basic need for integument system. They need assistance to meet toileting necessities. They wore diaper for 24/7 and rarely moved from wheelchair to bed unless it is necessary. Most of the skin location in this study was buttocks. The buttocks area was one area which always had contacted with urine and feces ig they wore diaper. The equilibrium of the skin bacteria ecosystem would be disturbed if the diaper was not regularly replaced, always wet, until it smells. Continuous contact between skin, body fluids (urine or feces), and chemicals in the diaper, were source of irritant. 80% of respondents complained itching at diaper area and the buttocks skin appear reddish. According to Schmidt-Wendtner, those condition can cause Moisture-associated skin damage (MASD). There was no sufficient scientific evidence about this condition, but clinical experience showed that this condition was frequently occur. Skin management was not only emphasized to skin moisture, it was included neutralize skin pH, minimizing friction, pathogen microorganism controlling, and found out the etiology (Schmid-Wendtner & Korting, 2006).

Before Piper beetle extract lotion application, the average of skin water content was 29,63%. After application, it was reduced to 17,73%. Whilst, the oil average was reduced from 12,98% to 7,99%. Noth condition showed that older people still had dry skin category. The observation showed that skin reddish and pruritus were decreased. Physiologically, skin pH was tend to be acid to prevent over multiplication of pathogen microorganism (Ali & Yosipovitch, 2013). This physiologic condition was changed in older people due to aging process. Therefore, long-term contact with urine or feces would affect skin pH. The skin pH would increase because urine which had contacted with air prone to be alkaline. This situation would trigger pathogen microorganism multiplication and pruritus which could lead to skin break. Piper leaf extract contain astringent and antimicrobial effect, so at the same time it prevented bacterial multiplication and soothe the skin (Nagori et al., 2011).

This lotion also contains glycerin and paraffin. This ingredient was basic soluble for lotion. It functions were to moist and coat the skin (Overgaard & Jemec, 1993). Paraffin made a thin layer between skin and diapers, so the friction between two surfaces could be reduced. Glycerin was used to moistened the skin. Both ingredients improve older people skin. Older people skincare was not a convenient task. It was related to many facets. Physiologic changes in older people were complicated and multifactor. the skin must be cleaned, but at the same time it could not be contacted with soap, water, and chemical irritant because it could lead to irritation (Humbert et al., 2016). Piper betel leaf extract lotion with a level of 0.5 mg / ml has been proven to be able to maintain skin moisture in the elderly and reduce pruritus.

CONCLUSION

Based on the result and discussion, it can be concluded that giving lotion from betel leaf extract (*Piper beetle* L.) significantly influences the elderly's skin moisture.

SUGGESTION

Beetle leaf extract can be used as an alternative skin care for the elderly by considering some point such as: duration optimization of lotion administration, temperature and air humidity measurement during lotion giving.

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