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The Effectiveness of Betel Leaf (Piper betle) Decoction in the Management of Pruritus among Elderly Residents of a Social Welfare Institution in Banyuwangi, 2025

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ABSTRACT

Introduction: *Itching in the elderly is a common complaint in skin diseases and is usually chronic, meaning that this condition lasts for a long time. Betel leaf decoction is useful for relieving pruritus (itchy skin) because it contains active compounds such as eugenol, tannins, and flavonoids which are anti-inflammatory, antimicrobial, and antiseptic. This study aims to determine the effect of giving betel leaf decoction on the sensation of itching in the elderly with pruritus at the UPT Panti Sosial Tresna Werdha Banyuwangi in 2025*
Methods: *This study used a pre-experimental pre-test post-test without control research design with purposive sampling technique. The total sample was 19 respondents who met the inclusion criteria. Data were obtained from the PSS questionnaire. Data analysis techniques after data normality testing were carried out using the Wilcoxon test*
Results: *Based on the results of the research that has been done, the results of the Data Analysis test with the Wilcoxon match pairs test using SPSS 16 for windows obtained the results of Asymp Sig. (2-tailed) p value = 0.001 <0.05 which means H0 is rejected Ha is accepted which means there is a significant effect between the provision of warm compresses of boiled betel leaves on the sensation of itching in the elderly with pruritus at the UPT Panti Sosial Tresna Werdha Banyuwangi in 2025*
Conclusions: *Warm compress therapy with boiled betel leaves can reduce the sensation of itching in the elderly. This method is very effective to be applied as a preventive measure in an effort to reduce itching in the elderly.*

Introduction

Pruritus in the elderly is a common complaint in dermatological conditions and is often chronic in nature, meaning that it persists over a long period of time (Song et al., 2018). Pruritus arises as a conscious response to specific sensations on the skin that trigger the urge to scratch. However, scratching may cause further skin damage and potentially exacerbate the condition (Mondigir et al., 2023).

The prevalence of pruritus in the general population varies between 8% and 38% worldwide (Debora, 2019). A study conducted by Romadhon (2023) reported that 20 out of 49 elderly residents experienced pruritus accompanied by itching and discomfort at the Tresna Werda Social Institution in Wlingi, Blitar Regency. Furthermore, interviews conducted by the researchers at the UPT Tresna Werdha Social Service Institution revealed that 14 out of 39 elderly residents in the Minak Jinggo ward were experiencing pruritus.

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Pruritus in older adults is a clinically significant symptom with multifactorial etiology that disproportionately affects quality of life, sleep continuity, psychosocial functioning, and overall morbidity. Elderly residents of institutional settings are especially vulnerable due to higher prevalence of xerosis, polypharmacy, comorbid dermatologic and systemic conditions, and constrained access to individualized dermatologic care. Despite the high burden, evidence-based, low-cost, and culturally acceptable interventions for chronic pruritus in low-resource institutional settings remain limited.

Betel leaf (Piper betle) decoction is widely used in traditional medicine across Southeast Asia and has been ascribed anti-inflammatory, antimicrobial, and antipruritic properties in ethnopharmacological reports. However, rigorous clinical evaluation of its safety, tolerability, and effectiveness for pruritus in the elderly—particularly within social welfare institutions where frailty, multimorbidity, and polypharmacy complicate management—is lacking. Establishing robust efficacy data and safety profiles for a locally available, low-cost botanical intervention could directly inform pragmatic care protocols, reduce reliance on systemic antipruritic medications with unfavorable side-effect profiles in older adults, and provide an accessible option for institutions with limited budgets or specialist access.

Therefore, this study addresses an urgent translational gap: converting widespread traditional use into evidence-based practice through methodologically sound clinical evaluation among a high-risk, understudied population. Positive findings would have immediate implications for clinical guidelines, institutional care pathways, and public health policy regarding geriatric dermatologic care in resource-limited contexts; negative or equivocal findings are equally important to prevent ineffective or potentially harmful practices from being perpetuated.

In addition to pharmacological treatments, natural remedies are considered as alternative therapeutic options for elderly individuals. One such alternative therapy is the use of betel leaves (Piper betle). Betel leaves contain active compounds such as eugenol, flavonoids, tannins, and saponins, which possess antimicrobial, anti-inflammatory, and antiseptic properties. In the context of pruritus management, betel leaves are utilized for their ability to inhibit the growth of microorganisms that cause skin irritation and infection (Bulukumba et al., 2023a). Moreover, their anti-inflammatory components help to reduce inflammation and itching. Consequently, betel leaf extract is often prepared in the form of a decoction or infusion for washing affected skin areas, particularly in cases of pruritus caused by mild infections or irritations.

Lombonanung et al. (2024) investigated the effectiveness of betel leaf decoction in the management of dermatitis within the framework of nursing care in Pandan Kasturi Village, Ambon City. Their findings demonstrated that after three days of implementing dermatitis care using betel leaf decoction, the subject, Mr. N, reported a reduction in itching on his feet, hands, and interdigital areas, as well as an absence of nocturnal itching. Furthermore, erythema and skin lesions caused by frequent scratching were reduced. These results indicate that betel leaf decoction is effective in alleviating itching associated with dermatitis.

The purpose of this study was to determine the effect of betel leaf decoction on the itching sensation experienced by elderly individuals with pruritus at the Banyuwangi Social Welfare Service Unit for the Elderly in 2025.

Methods

This study employed a pre-experimental design with a pre-test–intervention–post-test without control group (one-group pre-test–post-test design), aiming to evaluate changes in pruritus scores among participants before and after the intervention within a single cohort during the period of May 19–21, 2025. The research was conducted at the UPT Pelayanan Sosial

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Tresna Werdha Glenmore, Banyuwangi. The study population comprised older adults residing at the institution who experienced pruritus. Sampling was conducted using a purposive technique, resulting in 19 participants who met the inclusion criteria and consented to complete the entire study procedure. Inclusion criteria were older adults aged ≥60 years who were registered and receiving services at the UPT, reported pruritus during initial screening, were able to communicate and provide written informed consent, and were not undergoing intensive antipruritic treatment (topical or systemic) within the two weeks prior to the study. Exclusion criteria included the presence of acute medical conditions or severe cognitive impairment that could interfere with participation, severe skin wounds or active skin infections requiring intensive medical care, and failure to complete either the pre-test or post-test measurement.

The primary instrument used in this study was the Pruritus Severity Scale (PSS), a standardized questionnaire designed to subjectively measure the severity of pruritus, providing numerical scores that allow comparison between pre- and post-intervention assessments. In addition, a demographic questionnaire was administered to collect participant characteristics, including age, sex, length of residence in the institution, comorbidities (e.g., hypertension, diabetes), current medications, and history of skin disease. To ensure validity and reliability, if a translated version of the PSS was used, a translation–back translation procedure was carried out, followed by content validation by a panel of experts in dermatology or nursing. A pilot test involving a small sample (8–10 respondents) was conducted to evaluate clarity and internal consistency reliability, with Cronbach's alpha ≥0.70 considered acceptable. The process of adaptation, validation, and reliability testing was fully documented.

Data collection procedures included obtaining ethical approval and informed consent prior to participation. Initial screening was performed to verify eligibility based on inclusion and exclusion criteria. Baseline measurements (pre-test) using the PSS were conducted on the first day (May 19, 2025) before the intervention, after which the intervention was administered in accordance with the study protocol. Post-test measurements were conducted on the final day (May 21, 2025) using the same instrument. All collected data were anonymized, coded, and securely stored in a protected database for analysis.

Data analysis involved descriptive and inferential statistics. Demographic characteristics were presented as frequencies and percentages for categorical variables, and as means with standard deviations (SD) or medians with interquartile ranges (IQR) for numerical variables, depending on distribution. The differences in PSS scores between pre- and post-test were first tested for normality using the Shapiro–Wilk test. If data were normally distributed, a paired t-test was applied; if non-normal, the Wilcoxon signed-rank test was used. Effect size was calculated and reported for the Wilcoxon test using the formula r=ZNr = \frac{Z}{\sqrt{N}}r=N

Results

The data that had been collected were then processed, and the results obtained are as follows:

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Table 3.2. Distribution Table of Pre-Test and Post-Test Results of the Intervention

Distribution Table pre test dan post test				
Category	**Pre-Test**		**Post-Test**	
	n	**Presentase**	**n**	**Presentase**
High	14	73,7	0	0
Midle	3	15,8	10	52,6
Low	2	10,5	9	47,4
Total	**19**	**100%**	**19**	**100%**

Based on the table, prior to the intervention, the majority of respondents experienced severe pruritus, with 14 respondents (73.7%), while 3 respondents (15.8%) reported moderate pruritus and 2 respondents (10.5%) reported mild pruritus. After the intervention, no respondents (0%) experienced severe pruritus, whereas 10 respondents (52.6%) reported moderate pruritus and 9 respondents (47.4%) reported mild pruritus. Findings from the study conducted at UPT Pelayanan Sosial Tresna Werdha Banyuwangi further indicated that in the post-test, following the administration of warm compress therapy with boiled betel leaf, none of the 19 elderly participants reported severe itching (0%), 10 respondents (52.6%) experienced moderate itching, and 9 respondents (47.4%) reported mild itching.

The collected data were processed using the Wilcoxon signed-rank test, and the results obtained are as follows:

Ranks

		N	Mean Rank	Sum of Ranks
Post Test - Pre Test	Negative Ranks	13[a]	7.00	91.00
	Positive Ranks	0[b]	.00	.00
	Ties	6[c]		
	Total	19		

a. Post Test < Pre Test

b. Post Test > Pre Test

c. Post Test = Pre Test

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Test Statistics[b]

	Post Test - Pre Test
Z	-3.272[a]
Asymp. Sig. (2-tailed)	.001

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

Based on the results of the study, data analysis using the Wilcoxon matched pairs test with SPSS version 16 for Windows showed an Asymp. Sig. (2-tailed) value of p = 0.001 (<0.05). This indicates that H_0 is rejected and H_a is accepted, meaning that there is a significant effect of warm compress therapy using boiled betel leaf on reducing pruritus sensation among the elderly at UPT Pelayanan Sosial Tresna Werdha Banyuwangi. These findings are consistent with a study conducted by Lombonanung (2024), which demonstrated that administering warm compresses with boiled betel leaf twice daily for 10–15 minutes had a positive effect on reducing pruritus scores.

Discussion

Condition Prior to the Administration of Warm Compress Therapy with Boiled Betel Leaf among the Elderly at UPT Pelayanan Sosial Tresna Werdha Banyuwangi

Based on the results of the pre-test conducted at UPT Pelayanan Sosial Tresna Werdha Banyuwangi, it was found that among the 19 elderly respondents, 14 participants (73.7%) reported severe pruritus, 3 participants (15.8%) experienced moderate pruritus, and 2 participants (10.5%) reported mild pruritus before the intervention of warm compress therapy with boiled betel leaf. This finding highlights that the majority of older adults in this setting suffered from severe pruritus prior to treatment.

These results are consistent with previous studies, such as research conducted in an outpatient unit for elderly patients in Turkey, which reported that the most frequent dermatological complaint among older adults was itching or pruritus (Rosyada & Mustofa, 2023). Similarly, elderly patients undergoing hospitalization have been shown to report itching complaints more frequently (Makrantonaki et al., 2017). Pruritus in the elderly is a common condition with multifactorial causes, thus requiring comprehensive assessment to identify its underlying factors. Generally, pruritus in older adults tends to be chronic, persisting for prolonged periods. The most common cause is xerosis (dry skin associated with aging), which occurs in approximately 69% of individuals over 60 years of age (Blume-Peytavi et al., 2016).

Pruritus manifests as a conscious response to certain skin sensations that trigger the scratching reflex. This reflex aims to relieve the irritating stimulus; however, repeated scratching may cause further skin damage and exacerbate the condition (Novena & Ariani, 2021). In this sense, pruritus represents more than just discomfort—it poses significant risks to skin integrity and overall health if left unmanaged. Continuous scratching may lead to excoriations, secondary infections, or worsening of pre-existing dermatological conditions such as eczema or psoriasis.

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Therefore, effective management of pruritus in the elderly is essential to prevent complications and improve their quality of life.

Description After the Warm Compress Therapy Using Betel Leaf Decoction for the Elderly at UPT Pelayanan Sosial Tresna Werdha Banyuwangi

Based on the results of the study conducted at UPT Pelayanan Sosial Tresna Werdha Banyuwangi, the post-test findings showed that among the 19 elderly participants who received warm compress therapy with betel leaf decoction, none (0%) reported severe itching, 10 respondents (52.6%) experienced moderate itching, and 9 respondents (47.4%) reported mild itching.

Betel leaf, derived from the climbing plant *Piper betle*, grows predominantly in tropical regions, especially Southeast Asia. The leaves are heart-shaped, glossy green, and have a distinctive aroma. This plant has long been utilized in Indonesian culture as well as in other Asian countries, both as a traditional medicine ingredient and in various cultural rituals, including the tradition of chewing betel leaves or "nyirih."

Betel leaf decoction is produced by boiling the leaves in water until the extract dissolves. It has long been recognized in traditional medicine for its antiseptic, antibacterial, and anti-inflammatory properties. The decoction is often used for various health purposes, such as maintaining feminine hygiene, reducing bad breath, and alleviating skin irritation. In addition, its distinctive aroma and bioactive compounds are believed to help maintain cleanliness and prevent minor infections naturally (Rahayu, 2024).

The health benefits of betel leaf decoction are mainly attributed to its active compounds, including flavonoids, tannins, saponins, eugenol, and essential oils, which function as antiseptic, antibacterial, antifungal, and anti-inflammatory agents. One of its primary uses is to relieve itching caused by bacterial or fungal infections and mild allergic reactions. Furthermore, betel leaf decoction is beneficial for managing rashes or skin irritation, as its anti-inflammatory properties help reduce redness and swelling.

In conclusion, both the study findings and supporting literature confirm that warm compress therapy using betel leaf decoction can effectively reduce itching sensations. Therefore, this therapy is highly effective for elderly individuals experiencing pruritus (Ernawati, 2021).

The Effect of Warm Compress Therapy Using Betel Leaf Decoction on Itching Sensations in the Elderly at UPT Pelayanan Sosial Tresna Werdha Banyuwangi

The study conducted at UPT Pelayanan Sosial Tresna Werdha Banyuwangi revealed that, prior to the administration of warm compress therapy using betel leaf decoction, 14 elderly respondents (73.7%) experienced severe itching, 3 respondents (15.8%) reported moderate itching, and 2 respondents (10.5%) experienced mild itching. Following the intervention, none of the respondents (0%) reported severe itching, 10 respondents (52.6%) reported moderate itching, and 9 respondents (47.4%) experienced mild itching.

Based on the data analysis using the Wilcoxon matched-pairs test with SPSS 16 for Windows, the results showed Asymp Sig. (2-tailed) $p = 0.001 < 0.05$. This indicates that H0 was rejected and Ha was accepted, meaning that there was a significant effect of warm compress therapy with betel leaf decoction on reducing itching sensations in the elderly at UPT Pelayanan Tresna Werdha Banyuwangi.

These findings are consistent with the study conducted by Lombonanung (2024), which demonstrated that applying warm compresses with betel leaf decoction twice daily for 10–15 minutes had a positive effect on reducing pruritus scores.

Itching, or pruritus, is one of the most common dermatological complaints among the elderly and is often overlooked, despite its impact on quality of life. The high prevalence of pruritus in

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older adults is largely associated with physiological changes in aging skin (Garibyan et al., 2014). Alongside anatomical alterations, skin physiology in the elderly undergoes changes such as reduced moisture, increased susceptibility to external conditions, and alterations in skin pH. These changes disrupt the balance of normal skin flora and compromise immunity (Nagori et al., 2019). The management of pruritus includes addressing underlying conditions and adopting non-pharmacological approaches such as moisturizers, avoiding irritants, stress reduction, and minimizing scratching behavior.

One promising non-pharmacological approach for pruritus management in the elderly is warm compress therapy using betel leaf decoction. Betel leaves contain active compounds such as flavonoids, tannins, saponins, eugenol, and essential oils, which have antiseptic, antibacterial, antifungal, and anti-inflammatory properties. Regular application of betel leaf decoction to affected areas helps reduce itching by alleviating discomfort and eliminating microorganisms that trigger irritation. Monitoring over a three-day period showed that this intervention not only reduced short-term itching but also supported the maintenance of skin integrity.

In conclusion, both theoretical perspectives and the study findings confirm that warm compress therapy with betel leaf decoction has a significant impact on reducing itching sensations among the elderly. This therapy is proven to be highly effective and can be applied as a preventive measure to improve comfort and skin health in older adults experiencing pruritus.

Conclusion

Based on the theoretical perspectives discussed and the findings obtained, it can be concluded that warm compress therapy using betel leaf decoction has a significant effect on reducing itching sensations in older adults. The study demonstrates that this intervention effectively alleviates pruritus in the elderly, making it a highly suitable preventive measure to minimize itching and improve comfort in geriatric populations.

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