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RESEARCH ARTICLE

A randomized controlled trial comparing 1% permethrin shampoo versus 5% permethrin lotion for treating scabies in adults

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ABSTRACT

Background & Objective: Scabies, caused by the mite *Sarcoptes scabiei* var. *hominis*, is a highly contagious condition with significant public health implications. Standard treatments for scabies can be expensive, particularly in economically disadvantaged areas. This study aimed to determine the efficacy of 1% permethrin shampoo compared to the standard 5% permethrin lotion in treating scabies, assessing Total Lesion Count (TLC), Skin Infection Rating Scale (SIRS), clinical response, adverse events, and treatment acceptability.
Methodology: This is an open-label, randomized clinical trial conducted in Barangay Malagutay, Zamboanga City, Philippines, involving 28 participants (14 per group). After dermatologic confirmation of diagnosis and a skin irritation test, participants were randomly assigned to receive either 5% permethrin lotion or 1% permethrin shampoo. Outcome measurements included Total Lesion Count (TLC) and SIRS, which evaluated erythema, crusting, purulence, itching, and pain. These were assessed on Days 0, 3, and 7. Clinical response, treatment acceptability, and adverse events were also monitored throughout the 7-day study period.
Results: Results showed both treatments were effective with comparable outcomes on Day 3. Improvement in lesions, SIRS-erythema, crusting, purulence, pain, and itching was observed for both groups from Day 0 to Day 7. No significant difference was noted between the groups ($p > 0.05$) on Day 3. Both 1% and 5% permethrin treatments showed complete symptom resolution by Day 7, achieving 100% treatment success with 1% permethrin shampoo and 93% with the 5% permethrin lotion.
Conclusion: 1% permethrin shampoo offers effective treatment for scabies, with comparable efficacy to 5% permethrin lotion.

Introduction

The World Health Organization (WHO) formally designated scabies as a neglected tropical disease with an estimated global prevalence of 300 million cases annually. This contagious disorder was brought about by the microscopic mite *Sarcoptes scabiei* var. *hominis* which imposes a burden on those affected, manifesting through persistent itching and variable skin eruptions of diverse intensity [1], which spreads through direct skin-to-skin contact particularly in overcrowded communities [2,3].

The Philippines ranked ninth globally in 2017 for disability-adjusted life years (DALYs), with scabies emerging as the second highest contributor among skin diseases [4-6]. With its severity, scabies can lead to complications such as skin and soft tissue infections, sepsis, invasive infections, and immune-related diseases like rheumatic fever and glomerulonephritis [7].

The WHO and the Centers for Disease Control and Prevention (CDC) recommend 5% permethrin lotion in treating scabies [8,9] and 1% permethrin shampoo for lice infestation [10]. However, a 60 mL bottle of 5% permethrin lotion can be relatively expensive ranging from Php 205.80 (3.58 USD) to Php 320.00 (5.60 USD) which can hinder financially-challenged individuals from obtaining treatment leading to complications and further spread of this infectious disease.

Permethrin is a neurotoxic synthetic pyrethroid that disrupts sodium transport across neuronal membranes, causing depolarization, respiratory paralysis and eventual death of scabies mites [9,10].

Given its effectiveness, 5% permethrin lotion has been well-established as a first-line treatment for scabies. However, no clinical trials have evaluated the use of 1% permethrin shampoo for this condition. Most studies have focused on the 5% permethrin cream and oral ivermectin, which are known as effective interventions for scabies [11]. The 1% permethrin shampoo has only been studied for head lice, with higher cure rate of up to 90.3% after three applications [12]. In contrast, a comparative study on scabies treatment assessed the efficacy of 5% permethrin cream versus 1% lindane lotion in 467 scabies patients, stating both were effective [13]. Studies have shown the safety of 5% permethrin lotion and 1% permethrin shampoo in human trials with mild irritation as a rare adverse effect [14-16]. In a recent double-blind randomized controlled trial by Meyersburg in 2023, 5% permethrin was compared to 25% benzyl benzoate (BB) in 110 scabies patients. After three days of daily treatment, BB showed a significantly clinical cure rate (87%) compared to permethrin (27%). While permethrin was well-tolerated, BB caused a burning sensation in 43% of patients. Despite the evidence for other treatments, no studies have specifically investigated 1% permethrin shampoo for scabies. Anecdotal reports show that some local physicians advise the use of 1% permethrin shampoo for scabies at approximately Php 40.00 (0.7 USD) per 10 ml sachet. The potential of 1% permethrin shampoo as an alternative in treating scabies will primarily rely on its biochemical mechanisms specifically the presence of Sodium lauryl sulfate (SLS) as a surfactant which can allow for better distribution and deeper penetration of permethrin into the skin and mites' burrows, which is not present in 5% permethrin lotion [17-18].

Therefore, this study aims to determine and compare whether there is a significant difference in the efficacy of 1% permethrin shampoo and 5% permethrin Lotion in treating Scabies among adults. Specifically, the study aims to determine and compare clinical outcomes based on the Total Lesion Count (TLC), Skin Infection Rating Scale (SIRS) scores and clinical responses before treatment, on Days 3 and 7 after treatment. Clinical responses on Day 3 will be categorized as treatment success, clinical improvement, or treatment failure, while clinical relapse will be assessed on Day 7.

Methodology

2.1 Research Design and Setting

This study is an open-label, randomized clinical trial conducted over a 7-day period in Barangay Malagutay, Zamboanga City, Philippines. The study protocol was approved by the Zamboanga City Medical Center – Ethics Review Board with ERB Protocol No. 2024-05.

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2.2 Sample size

The sample size of 28 was based on Open Epi's equation for a Cohort/RCT, following the parameters adopted in a double-blinded randomized controlled trial by Meyersburg *et al.* (2023), which compared the efficacy of 5% permethrin and 25% benzyl benzoate in scabies treatment with 95% confidence level, 95% power, 1:1 ratio and 10% dropout rate which was based on the outcome of clinical cure by day 7 after treatment.

2.3 Study Population

The participants of the study are 18 to 49 years old, with diagnosed scabies infection, without other skin diseases and allergies, no open wounds, not on other medications, not considered immunocompromised nor high-risk population. Consent was taken, and the procedures and the purpose of the study were thoroughly explained.

2.4 Sampling Design

Purposive sampling design was used for participant recruitment and screening. Only individuals who specifically met the defined inclusion and exclusion criteria were considered. Participants were recruited from the Malagutay Health Center and included only those aged 18 to 49 years, clinically diagnosed with scabies by a dermatologist, and residents of Barangay Malagutay, Zamboanga City. Patients with other skin diseases, ongoing dermatological treatments, or considered high-risk (e.g., pregnant individuals, immunocompromised) were excluded to maintain sample homogeneity.

2.5 Randomization

Participants (n=28) were randomized into two groups using the Research Randomizer tool. Each treatment assignment was placed in a sealed, opaque envelope numbered 1 to 28. Upon enrollment, participants were assigned their treatment based on the envelope opened in sequence, ensuring allocation concealment and minimizing selection bias.

2.6 Documentation

Participants' affected areas were photographed, maintaining confidentiality. Images were taken from front, oblique left, and oblique right angles, with a camera-to-skin distance of 10 to 30 cm, and referred to a dermatologist for assessment.

2.7 Instruments

Total Lesion Count (TLC) was assessed using a dermatologist-validated adapted from Davis *et al*. (2013), based on affected body surface area and presence of skin shedding. For analysis, TLC scores were categorized as:

- **Absent:** No visible lesion(s) present
- **Mild:** Lesions limited to wrists, web spaces, and feet, involving <10% of total body surface area (TBSA)
- **Moderate:** Lesions extending to forearms, lower legs, buttocks, or trunk, corresponding to 10–30% TBSA
- **Severe:** Lesions >10mm in diameter with profuse skin shedding and involvement >30% TBSA

This clinical grading served as the outcome measure for lesion improvement from baseline (Day 0) to Day 3 after treatment.

SIRS assessed erythema, purulence, crusting, itching, and pain, each scored from 0 to 3. Evaluations were conducted at Baseline, Day 3, and Day 7 to monitor treatment response and symptom resolution, as follows:

- **Erythema:** 0 (absent), 1 (minimal), 2 (moderate), 3 (severe)
- **Purulence:** 0 (absent), 1 (minimal), 2 (moderate), 3 (severe)
- **Crusting:** 0 (absent), 1 (minimal), 2 (moderate), 3 (severe)
- **Pain:** 0 (absent), 1 (minimal), 2 (moderate), 3 (severe)
- **Itching:** 0 (absent), 1 (minimal), 2 (moderate), 3 (severe)

The SIRS tool was adapted from a clinical trial by Ferrer Internacional, S.A. (2015) and further supported by applications in dermatological research as summarized by the CADTH Common Drug Review [19]. While it is not a standard measure for scabies, it was selected for its capacity to quantify resolution of inflammatory signs.

Clinical responses, Adverse events and Treatment acceptability were assessed on Day 7 after treatment. Clinical responses were classified as follows:

- **Treatment Success** – A total SIRS score of 0 on the 3rd day after treatment.
- **Clinical Improvement** – A decrease in the total SIRS score by more than 10% from baseline on the 3rd day after treatment.
- **Treatment Failure** – No improvement or a worsening of the SIRS score on the 3rd day after treatment.
- **Clinical Relapse** – Participants who were classified as treatment success on the 3rd day but developed a total SIRS score >1 on the 7th day post-treatment.

2.8 Pre-intervention

Participant data, including demographics, clinical findings, lesion photographs, and TLC and SIRS scores, were compiled and submitted to the dermatologist for diagnosis verification.

Only participants with a confirmed diagnosis of scabies were enrolled. Before treatment allocation, a skin irritation test was performed using the Draize Dermal Irritation Scoring System (DDISS). A volume of 0.5 mL of the assigned treatment (5% permethrin lotion or 1% permethrin shampoo) was applied to the inner forearm and covered with a sterile dressing for 24 hours. Erythema and edema were assessed at 24 and 48 hours and scored from 0 to 4 based on the Draize System Index of Average Irritation.

2.9 Intervention and Data gathering

2.9.1 Treatment application Day 0

Participants were instructed according to the treatments assigned to them:

A. 5% permethrin lotion was applied from the neck down on Day 0, with no washing for 24 hours.
B. 1% permethrin shampoo was used as bathing soap on Day 0, left for 10 minutes and rinsed: no other bath within 24 hours.

Strict adherence to the study protocol, proper application, and duration were individually instructed to each participant. They received a pamphlet with hygiene guidelines, treatment instructions, and contact numbers for purok leaders and the researcher.

2.9.2 Reassessment Day 3 and Day 7

Participants were reassessed on Day 3 and Day 7 to monitor treatment progress and safety:

- **Day 3:** Participants were evaluated using TLC, Skin Infection Rating Scale (SIRS), and clinical responses. This assessment focused on early improvements in lesion severity and skin infection, as well as initial treatment efficacy.
- **Day 7:** Participants had the same evaluations of TLC, SIRS for clinical responses to assess the final treatment outcome, and check for signs of treatment relapse or failure.

Throughout the 7-day treatment period, participants were interviewed for any adverse effects or side effects experienced. On Day 7, in addition to clinical assessments, a 3-item treatment acceptability questionnaire was distributed to all participants to assess their overall experience.

2.9.3. Referral System and Safety Protocol

To ensure safety, a referral system was in place. If, on Day 3, a participant from 5% permethrin lotion group was classified as a treatment failure, they would be referred to a dermatologist. If a participant from 1% permethrin shampoo group was classified as a treatment failure, they would be transferred to 5% permethrin lotion for standard treatment. If, on Day 7, any participant was classified with clinical relapse, they would be transferred back to 5% permethrin lotion for treatment.

2.9.4 Data analysis

In-group comparisons of TLC scores and SIRS scores at baseline (Day 0) and Day 3 within each treatment group were analyzed using pairwise comparisons with Bonferroni-adjusted significance levels to evaluate improvements over time in the same treatment group.

Comparisons between the 5% permethrin lotion group and the 1% permethrin shampoo group for TLC scores, SIRS scores, and clinical responses were conducted using Fisher's exact test and Chi-square test, as appropriate.

Treatment acceptability and adverse reactions were summarized using descriptive statistics.

All statistical analyses were conducted using Stata software.

Results

Demographics and Professional Profile of Respondents

3.1 Participants

Table 1 shows the Characteristics of participants. All 28 screened participants were eligible, with no withdrawals, dropouts, or treatment failures (Refer to Figure 3. Participant Flowchart). The two treatment groups had no significant demographic differences. The mean age was 35.4 years (SD = 9.3) for the 5% permethrin lotion group and 34.14 years (SD = 11.5) for the 1% permethrin shampoo group, with an overall mean age of 34.75 years (SD = 10.27, p = 0.7611). The lotion group had 92.86% females, and the shampoo group had 71.43% females (p = 0.3068).

For educational attainment and occupation between groups, in the 5% permethrin lotion group, 6 of 14 (42.9%) were high school graduates; in the 1% permethrin shampoo group, 3 of 14 (21.4%) were college undergraduates. However, the differences were not statistically significant (Fisher's exact, p = 0.561). For occupation, 12 of 14 (85.7%) in the lotion group and 7 of 14 (50.0%) in the shampoo group were housewives, with no statistically significant difference (Fisher's exact, p = 1).

Previous scabies diagnoses were 57.14% in the 5% permethrin lotion group and 42.86% in the 1% permethrin shampoo group (Fisher's exact, p = 0.706). Participants with prior diagnoses couldn't afford the prescribed lotion, leaving their scabies untreated. Symptom duration, contact with infected individuals, pet ownership, and nocturnal itching were comparable (p-values not significant), indicating no significant confounding factors affecting the groups.

3.2 TLC and SIRS scores of participants

Table 2 shows TLC scores and SIRS scores over 7 days. At baseline, there were no significant differences between the two treatment groups in terms of TLC severity (Fisher's exact test, p = 0.678). Clinical improvement was observed by Day 3, with 7 participants in the 5% permethrin lotion group and 5 in the 1% permethrin shampoo group showing no lesions (Fisher's exact test, p = 0.704). By Day 7, all participants in both groups had no lesions.

For SIRS subcategories at baseline, no significant differences were found between groups in erythema (Pearson Chi-square test, p = 1.000), purulence

Table 1. Characteristics of participants.

Characteristic	5% Permethrin lotion (n=14)	1% Permethrin shampoo (n=14)	Total (n=28)	p-value
Age				
Mean ± SD	35.4 ± 9.3	34.14 ± 11.5	34.75 ± 10.27	0.7611
Range	18-49	18-49	18-49	
Sex				
Female	13 (92.86%)	10 (71.43%)	23	0.3068
Male	1 (7.14%)	4 (28.57%)	5	
Educational Attainment				0.561
Elementary undergrad	2 (14.3%)	1 (7.1%)	3	
Elementary graduate	1 (7.1%)	2 (14.3%)	3	
Highschool undergrad	2 (14.3%)	1 (7.1%)	3	
Highschool graduate	6 (42.9%)	2 (14.3%)	8	
College undergrad	2 (14.3%)	3 (21.4%)	5	
College graduate	0	0	0	
College Student	0	2 (14.3%)	2	
Vocational graduate	0	3 (21.4%)	3	
None	1 (7.1%)	0	1	
Occupation				1
Housewife	12 (85.7%)	7 (50.0%)	19	
Vendor	0	0	0	
Farmer	1 (7.1%)	1 (7.1%)	2	
Driver	0	0	0	
Security Guard	0	0	0	
Student	0	0	0	
None	1 (7.1%)	1 (7.1%)	2	
Previously with Scabies				0.706
Yes	8 (57.14%)	6 (42.86%)	14	
Skin conditions or allergies				-
Yes	0	0	0	
Antibiotic treatment				-
Yes	0	0	0	
Duration of symptoms				0.615
<2 weeks	4 (28.57%)	2 (14.29%)	6	
2-6 weeks	8 (57.14%)	10 (71.43%)	18	
>6 weeks	1 (7.14%)	2 (14.29%)	3	
Contact with scabies				0.209
Yes	12 (85.71%)	8 (57.14%)	20	
Has pets (dog/cat)				1
Yes	10 (71.43%)	11 (78.57%)	21	
Nocturnal itching				0.222
Yes	14 (100.00%)	11 (78.57%)	25	
Family members with the same symptoms Yes	11 (78.57%)	9 (64.29%)	20	0.678

	PROCEDURE	SCREENING	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
PRE-INTERVENTION	Demographics & Clinical Diagnosis	X							
	Photograph Taking	X							
	Send to Dermatologist	X							
	Feedback by Dermatologist using TLC, SIRS classification	X							
	Skin Irritation Test	X							
INTERVENTION	Assignment of Groups		X						
	Application of Treatment		X						
	Assessment and Photograph taking				X				
	Send to Dermatologist				X				
	Feedback by Dermatologist using TLC, SIRS classification				X				
	Monitoring for any AR/SE	X	X	X	X	X	X	X	X
POST INTERVENTION	Assessment of CR, TA and AR/SE								X
	Survey Questionnaires								X
	Photograph taking								X
	Final Assessment by Dermatologist								X
REPORTING	Data Collation								X
	Data Management								X

TLC: Total Lesion Count | **SIRS**: Skin Infection Rating Scale | **CR**: Clinical Responses | **TA:** Treatment Acceptability | **AR/SE:** Adverse Reactions/Side Effects

Figure 1. Data gathering

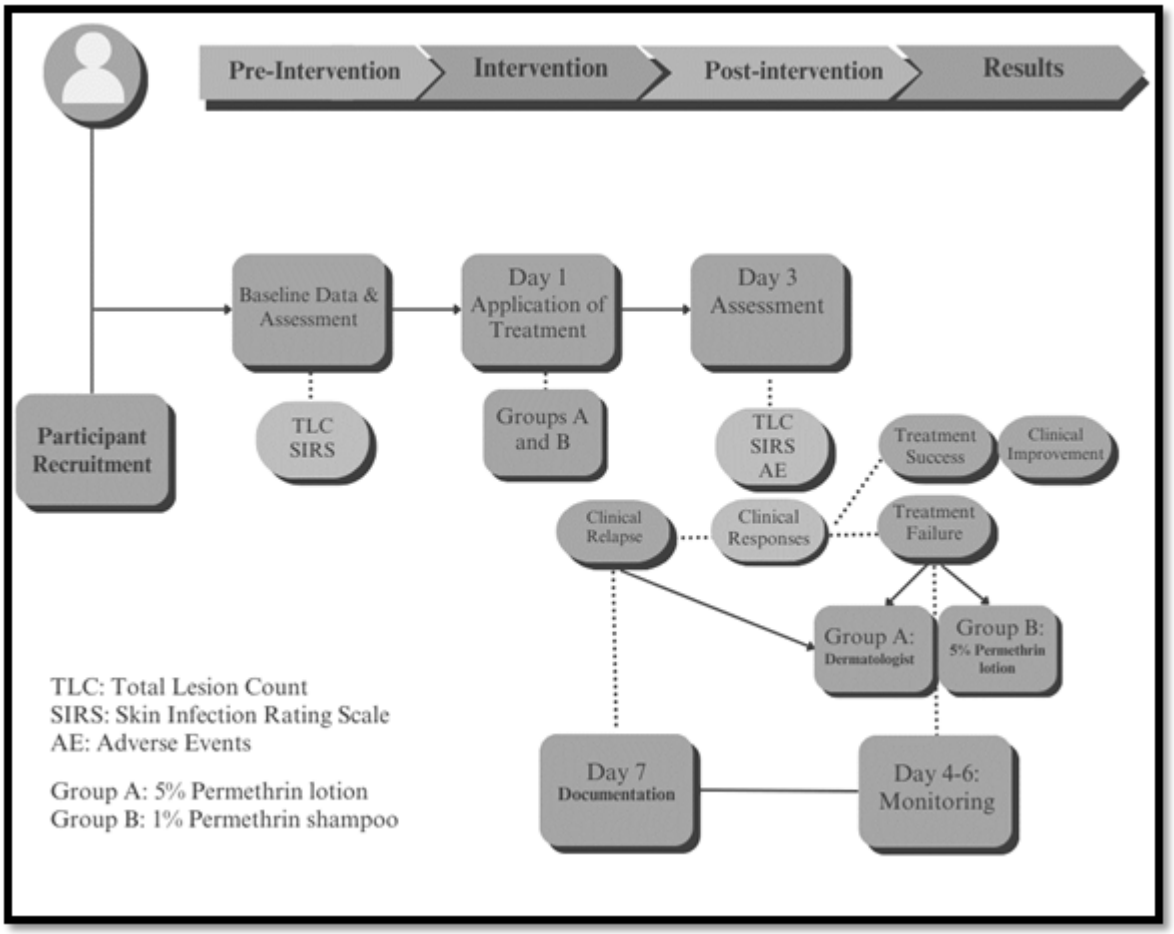

Figure 2. Flow of Intervention

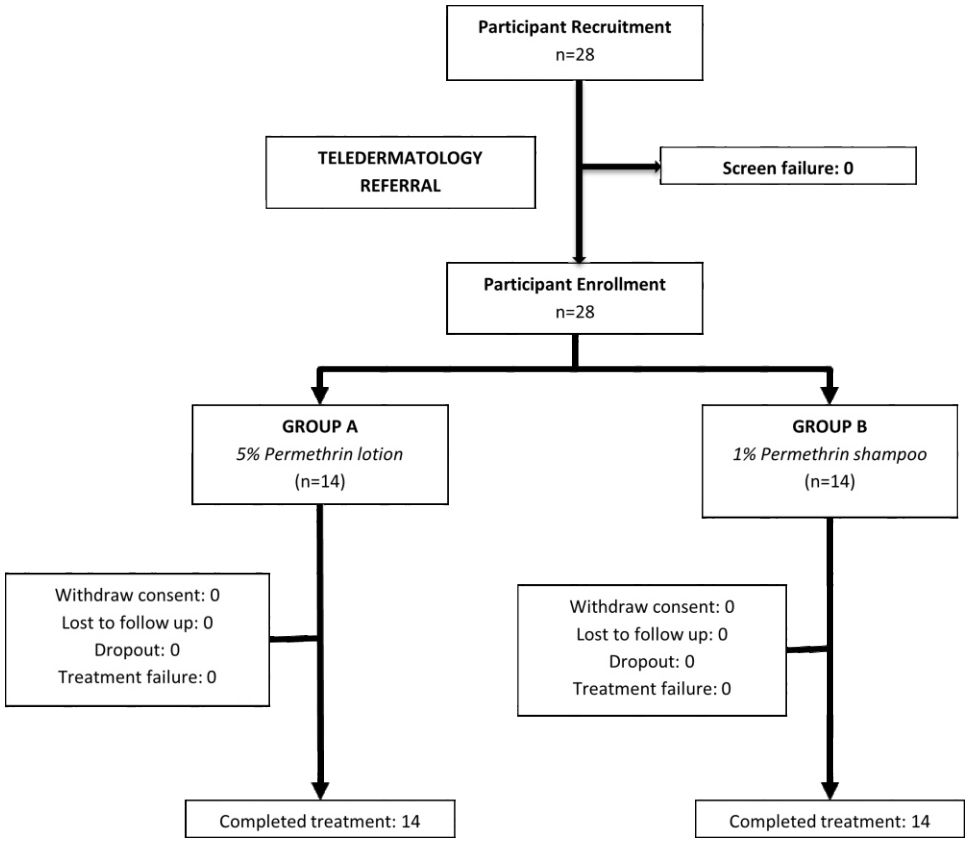

Figure 3. Participant Flowchart

Table 2. TLC and SIRS scores of participants.

Variable	5% Permethrin lotion (n=14)			1% Permethrin shampoo (n=14)		
	Baseline	Day 3	Day 7	Baseline	Day 3	Day 7
TLC						
No lesion	0	7 (50%)	14 (100%)	0	5 (35.7%)	14 (100%)
Mild	11 (78.6%)	7 (50%)	0	9 (64.3%)	9 (64.3%)	0
Moderate	3 (21.4%)	0	0	5 (35.7%)	0	0
Severe	0	0	0	0	0	0
SIRS Erythema						
Absent	0	10 (71.4%)	13 (92.9%)	0	5 (35.7%)	14 (100%)
Minimal	8 (57.1%)	4 (28.6%)	1 (7.1%)	8 (57.1%)	9 (64.3%)	0
Moderate	6 (42.9%)	0	0	6 (42.9%)	0	0
Severe	0	0	0	0	0	0
SIRS Purulence						
Absent	12 (85.7%)	14 (100%)	14 (100%)	13 (92.9%)	14 (100%)	14 (100%)
Minimal	2 (14.3%)	0	0	1 (7.1%)	0	0
Moderate	0	0	0	0	0	0
Severe	0	0	0	0	0	0
SIRS Crusting						
Absent	3 (35.7%)	13 (92.9%)	14 (100%)	3 (35.7%)	14 (100%)	14 (100%)
Minimal	9 (64.3%)	1 (7.1%)	0	9 (64.3%)	0	0
Moderate	1	0	0	2 (14.28%)	0	0
Severe	1	0	0	0	0	0
SIRS Pain						
Absent	0	12 (85.7%)	14 (100%)	0	8 (57.1%)	14 (100%)
Minimal	11 (78.6%)	2 (14.3%)	0	8 (57.1%)	6 (42.9%)	0
Moderate	3 (21.4%)	0	0	6 (42.85%)	0	0
Severe	0	0	0	0	0	0
SIRS Itching						
Absent	0	4 (28.6%)	14 (100%)	0	3 (21.4%)	14 (100%)
Minimal	5 (64.3%)	10 (71.4%)	0	5 (35.7%)	11 (78.6%)	0
Moderate	9 (35.7%)	0	0	9 (64.3%)	0	0
Severe	0	0	0	0	0	0

Table 3. Clinical responses between 5% permethrin lotion group and 1% permethrin shampoo group

Clinical Response Status	5% Permethrin Group n (%)		1% Permethrin Group n (%)	
	Day 3	Day 7	Day 3	Day 7
Treatment success	2 (14.3%)		3 (21.4%)	
Clinical Improvement	12 (85.7%)		11 (78.6%)	
Treatment Failure		0		0
Clinical Relapse		0		0

(Fisher's exact test, p = 1.000), crusting (Pearson Chi-square test, p = 1.000), pain (Fisher's exact test, p = 0.420), and itching (Fisher's exact test, p = 0.209). By Day 3, improvement was observed in all subcategories, but differences between groups were still statistically non-significant. As shown in the table, 10 participants in the 5% lotion group and 5 in the 1% shampoo group had no erythema (Pearson Chi-square test, p = 0.058). Crusting was resolved in 13 (92.9%) of the 5% lotion group and 14 (100%) of the 1% shampoo group (Pearson Chi-square test, p = 1.000). For pain, 85.7% in the 5% lotion group and 57.1% in the 1% shampoo group reported no pain (Fisher's exact test, p = 0.209). For itching, most participants reported minimal to no symptoms, with no significant group difference (Fisher's exact test, p = 1.000). By Day 7, all participants in both groups had complete resolution of erythema, purulence, crusting, pain, and itching.

3.3 Clinical response of participants

Table 3 shows clinical responses at Days 3 and 7 between the 5% permethrin lotion and 1% permethrin shampoo groups. On Day 3, 3 (21.4%) participants in the 1% permethrin shampoo group showed treatment success compared to 2 (14.3%) in the 5% permethrin lotion group. The difference was not statistically significant (Pearson chi-square test, p = 0.622).

3.5 Adverse events between 5% permethrin lotion and 1% permethrin shampoo

No adverse events were reported by any participant using either 5% permethrin lotion or 1% permethrin shampoo. These findings suggest that both treatments were well-tolerated and safe in managing scabies in this study.

3.6 Treatment Acceptability

All participants in the 1% permethrin shampoo group reported satisfaction and expressed a willingness to recommend the treatment. In contrast, 8 (57.1%) participants in the 5% permethrin lotion group indicated they would recommend the treatment, while six (6) participants chose not to, mentioning cost as a concern.

Both treatments were reported to be easy to administer and use, reflecting patient compliance and satisfaction. The results show acceptability for both treatments.

Discussion

In this study, both 5% permethrin lotion and 1% permethrin shampoo showed improvement in reducing symptoms of scabies caused by *Sarcoptes scabiei* var. *hominis* over the 7-day period. Baseline TLC scores showed no significant difference between two groups (Fisher's exact, p = 0.678), and by Day 3, improvements were comparable between two groups (Fisher's exact, p = 0.704). Both treatments showed complete lesion resolution by Day 7. The efficacy seen in both formulations supports the neurotoxic mechanism of permethrin, which disrupts sodium ion flow in scabies mites, leading to their paralysis and death [20,21].

This study showed that 1% permethrin shampoo has the same efficacy in treating scabies as 5% permethrin lotion. Baseline erythema scores were similar between groups (Fisher's exact, p = 1.000). By Day 3, 71.4% of participants using the 5% permethrin lotion and 35.7% using the 1% permethrin shampoo reported no erythema. Minimal erythema decreased in the 5% group and increased in the 1% group, with borderline significance (Pearson chi-square test, p = 0.058). By Day 7, all participants in the 1% shampoo group had no erythema, compared to 92.9% in the 5% lotion group (Fisher's exact test, p = 1.000).

For crusting, baseline scores were not significantly different (chi-square test, p = 1.000). By Day 3, 100% of participants in the 1% permethrin shampoo group and 92.9% in the 5% permethrin lotion group had no crusting, with complete resolution by Day 7 in both groups. Although treatment success was evaluated only up to Day 3, complete resolution of symptoms was observed until Day 7 in all participants of the 1% permethrin shampoo group and in 92.9% of those in the 5% permethrin lotion group, indicating continued improvement until Day 7 after treatment. This open-label randomized clinical trial showed no statistically significant difference in efficacy between 1% permethrin shampoo and 5% permethrin lotion for treating scabies. While the results suggest potential comparability, the study was not designed to test a predefined equivalence margin and lacked sufficient power to verify therapeutic equivalence. Further research using adequately powered equivalence or non-inferiority trials with established clinical margins is recommended. Despite faster symptom resolution with the 1% shampoo, the nonsignificant differences between groups were observed may be due to the small sample size (n=28). This limitation reduces the power to detect significant differences and limits the generalizability of the findings. However, the results provide important insights into treatment efficacy and support the feasibility of conducting a larger, more adequately powered trial.

The efficacy of the 1% permethrin shampoo is attributed to its formulation, including Sodium lauryl sulfate (SLS), which improves the distribution and penetration of permethrin even with a brief 10-minute exposure. This contrasts with lotions that may create an occlusive barrier, limiting effective contact with the mites [22].

Sodium lauryl sulfate (SLS) is safe at the concentrations used in 1% permethrin shampoo [23]. This enhanced penetration likely contributes to the shampoo's neurotoxic efficacy [24]. No dropouts or treatment failures, no adverse effects, allergic reactions, or side effects among participants, aligning with existing literature that permethrin formulations are well-tolerated, with only mild, transient sensations such as itching or tingling reported [21,25].

While findings suggest that both treatments showed comparable results, given that this is a pilot study, the absence of margin of equivalence and the small sample size (n = 28) limit the strength of these conclusions. These initial findings can help guide future studies with larger samples and clearly predefined equivalence margins.

Future research should ensure balanced scabies severity between groups. Including a range of age groups, such as pediatric populations, and considering an increased number of sample size will help strengthen results and findings. Thus, providing a more comprehensive understanding of the treatment's efficacy across different demographics and populations.

Conclusion

This study showed that 1% permethrin shampoo can be an alternative to the 5% permethrin lotion. No adverse effects or treatment failures were reported, emphasizing the safety and efficacy of the 1% permethrin shampoo. This supports its use as an alternative treatment, especially in resource-limited settings and for financially challenged patients.

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