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Scabies Transmission and Therapeutic Outcomes in a Primary Care Setting in Bandar Lampung, Indonesia

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Abstract

Scabies is a contagious parasitic skin disease caused by *Sarcoptes scabiei* var. *hominis*, characterized by nocturnal pruritus, erythematous papules, and burrows. Transmission occurs readily in households and communities with close contact and poor hygiene. Although scabies is a common public health problem in Indonesia, clinical documentation of household transmission and integrated management strategies in primary care settings remains limited. This study aims to describe the clinical presentation, transmission pathway, and therapeutic management of scabies in a household setting, highlighting the importance of integrated treatment and hygiene measures to prevent reinfestation. A 33-year-old male presented to Labuhan Ratu Public Health Center, Bandar Lampung, with severe itching localized to the wrists, interdigital spaces, and genital region. Clinical examination revealed erythematous papules and burrows consistent with scabies. Diagnosis was established clinically based on cardinal signs and a history of close contact with his son, who had similar symptoms. No laboratory investigations were performed. Management included topical 5% permethrin applied according to protocol, oral cetirizine for symptomatic relief, vitamin B complex supplementation, and simultaneous treatment of all family members. Environmental interventions included washing clothes and bed linen with hot water and reinforcing personal hygiene practices. The patient demonstrated clinical improvement following therapy, with resolution of pruritus and regression of lesions. Family members treated simultaneously also showed recovery, and no reinfestation was reported during follow-up. Vital signs and systemic examinations remained within normal limits, confirming localized disease. This case underscores the ease of household transmission of scabies and the necessity of integrated management strategies in primary care. The novelty of this report lies in emphasizing a holistic approach—combining pharmacological therapy with family-wide treatment and hygiene reinforcement—as a practical model for scabies control in resource-limited settings. Such documentation contributes to global understanding of scabies management and highlights the role of community health centers in addressing neglected parasitic diseases.



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1. Introduction

Scabies is a parasitic skin disorder caused by *Sarcoptes scabiei* var. *hominis* infestation and sensitization to its metabolic products, leading to intense nocturnal pruritus and characteristic lesions such as burrows, erythematous papules, and excoriations (Djuanda et al., 2016). In Indonesia, scabies is widely known as kudis, gudik, or buduk, reflecting its longstanding presence in local communities. According to the World Health Organization (WHO), scabies is classified as a water-related disease, as transmission is often associated with humid environments that favor mite survival (WHO, 2023). The parasite burrows into the stratum corneum, producing tunnels that trigger hypersensitivity reactions, resulting in severe itching and polymorphic lesions (Nurmawaddah et al., 2023).

Globally, scabies remains a major public health concern, with an estimated 130 million cases at any given time (WHO, 2023). In tropical countries such as Indonesia, the prevalence is higher due to climatic conditions that facilitate transmission. Data from the Indonesian Ministry of Health reported a prevalence of 2.9% in 2020, rising to 3.6% in 2022, underscoring its persistence as a neglected tropical disease (Indonesian Ministry of Health, 2022). At the provincial level, scabies continues to burden local health systems. The Lampung Provincial Health Office recorded 1,068 cases in 2021, reflecting both endemicity and underreporting in community health centers (Lampung Provincial Health Office, 2021). These figures highlight the need for improved surveillance and integrated management strategies.

Scabies disproportionately affects individuals of low socioeconomic status, particularly those living in crowded environments with poor sanitation and limited access to clean water (Muhsina et al., 2021). Risk factors include inadequate personal hygiene, communal living

arrangements, and shared use of clothing or bedding, all of which facilitate rapid transmission. Clinically, scabies is diagnosed based on four cardinal signs: nocturnal pruritus, multiple simultaneous infections within a group, the presence of burrows (cuniculi), and detection of mites on examination (Djuanda et al., 2016). Diagnosis is typically made when at least two of these signs are present, often without the need for laboratory confirmation in primary care settings.

The predilection sites of scabies lesions include areas with thin stratum corneum such as interdigital spaces, volar wrists, elbows, axillae, areolae, umbilicus, buttocks, and external genitalia in males. In infants, palms and soles may also be affected (Djuanda et al., 2016). These characteristic distributions aid clinicians in differentiating scabies from other dermatological conditions. Pathophysiologically, scabies infestation triggers immune sensitization involving IgE, eosinophils, and T-cell activation, leading to cytokine release such as IL-4, IL-5, and IL-17, which drive pruritus and inflammation (Kurniawan et al., 2020; Sharaf, 2024). Reinfection accelerates symptom onset, often within two days, compared to the 4–6 weeks required for primary infestation.

Complications of scabies include secondary bacterial infections such as impetigo and pyoderma, caused by *Staphylococcus aureus* or *Streptococcus pyogenes*. Severe forms, such as crusted scabies, involve massive mite proliferation and immune dysregulation, increasing morbidity in vulnerable populations (Kurniawan et al., 2022). These complications emphasize the importance of early diagnosis and comprehensive management. Despite its prevalence, scabies remains underprioritized in public health agendas. Household transmission is a critical challenge, as reinfestation occurs when family members are not treated simultaneously. This study therefore aims to document scabies transmission and therapeutic outcomes in a primary care setting in Bandar Lampung, Indonesia, highlighting the novelty of integrated management that combines pharmacological therapy with hygiene reinforcement to prevent reinfestation (Nurmawaddah et al., 2023; Wibowo & Musyarofah, 2024).

2. Materials and Methods

This study employed a descriptive case study design to document the clinical presentation, transmission pathway, and therapeutic management of scabies in a primary care setting. Case studies are widely used in dermatology and parasitology to provide detailed clinical insights into neglected tropical diseases, particularly when randomized controlled trials are not feasible (Yin, 2018; Sharaf, 2024).

2.1. Setting and Patient Selection

The case was identified at Labuhan Ratu Public Health Center, Bandar Lampung, Indonesia, in 2025. The patient was a 33-year-old male presenting with severe nocturnal pruritus and characteristic lesions. Selection was based on clinical suspicion of scabies, confirmed by cardinal signs including erythematous papules, burrows, and a history of close contact with an infected family member (Djuanda et al., 2016; Nurmawaddah et al., 2023).

2.2. Diagnostic Approach

Diagnosis was established clinically without laboratory confirmation, consistent with WHO and Ministry of Health guidelines that emphasize clinical criteria in resource-limited settings (WHO, 2023; Indonesian Ministry of Health, 2022). Supporting examinations such as dermoscopy or skin scrapings were not performed, as the presence of nocturnal pruritus, burrows, and household transmission was sufficient for diagnosis. This approach aligns with previous studies that highlight the reliability of clinical diagnosis in endemic regions (Hengge et al., 2006; Wibowo & Musyarofah, 2024).

2.3. Intervention Protocol

Therapeutic intervention included topical 5% permethrin applied according to international dermatology protocols, oral cetirizine for symptomatic relief, and vitamin B complex supplementation to support recovery. Simultaneous treatment was administered to all household members to prevent reinfestation, following recommendations from the American Academy of Dermatology and WHO guidelines (Muhsina et al., 2021; WHO, 2023). Environmental interventions included washing clothes and bed linen in hot water, drying in direct sunlight, and improving household ventilation to reduce mite survival (Kurniawan et al., 2020).

2.4. Data Collection and Outcome Assessment

Clinical data were collected through direct patient examination, medical records, and follow-up visits. Outcomes were assessed based on resolution of pruritus, regression of lesions, and absence of reinfestation within two weeks. This evaluation framework is consistent with prior scabies management studies that emphasize both clinical improvement and prevention of recurrence as key indicators of therapeutic success (Liu et al., 2021; Watlet et al., 2020).

3. Results and Discussion

Scabies is initiated when female *Sarcoptes scabiei* var. *hominis* burrows into the stratum corneum, laying eggs and producing metabolic waste that trigger hypersensitivity reactions. The immune response involves IgE elevation, eosinophilia, and mixed T-cell activation (Th2 and Th17), leading to cytokine release such as IL-4, IL-5, and IL-17, which drive pruritus and inflammatory lesions (Kurniawan et al., 2020; Sharaf, 2024). This explains the intense nocturnal itching and polymorphic lesions observed in patients. The parasite's life cycle egg, larva, nymph, and adult supports prolonged infestation, as female mites can survive 30–60 days within burrows while maintaining reproductive capacity (Kurniawan et al., 2020). Transmission occurs through direct skin contact or shared clothing and bedding, with household clustering being a common epidemiological feature (Wibowo & Musyarofah, 2024).

Environmental conditions such as poor ventilation, high humidity, and limited sunlight exposure facilitate mite survival. Behavioral factors including crowded living, communal sleeping, and inadequate sanitation further increase transmission risk. These determinants explain the higher incidence of scabies in boarding schools, dormitories, and shelters (Wibowo & Musyarofah, 2024; Muhsina et al., 2021). Symptoms typically appear 4–6 weeks after primary infestation due to immune sensitization. However, reinfestation accelerates symptom onset to within two days, reflecting immunological memory (Kurniawan et al., 2020). This rapid recurrence underscores the importance of treating all household contacts simultaneously to prevent reinfestation.

Scabies must be distinguished from other dermatological conditions such as atopic dermatitis, allergic contact dermatitis, and papular urticaria. Unlike these conditions, scabies is characterized by burrows and nocturnal pruritus, which are pathognomonic features (Nurmawaddah et al., 2023). Accurate differentiation is essential to avoid misdiagnosis and inappropriate therapy. Repeated scratching due to intense pruritus can lead to secondary bacterial infections such as impetigo and pyoderma, commonly caused by *Staphylococcus aureus* and *Streptococcus pyogenes*. Severe forms, including crusted scabies, involve massive mite proliferation and immune dysregulation, increasing morbidity and risk of systemic complications (Kurniawan et al., 2022; Tsoi et al., 2023).

The prognosis for scabies is generally favorable with appropriate therapy. Itching may persist for weeks after treatment due to hypersensitivity to residual antigens, but resolution occurs with correct use of scabicides and adherence to hygiene measures (Nurmawaddah et al., 2023). In this case, permethrin therapy combined with antihistamines and vitamin supplementation resulted in clinical improvement. Although supportive tests such as skin scrapings and dermoscopy can confirm mite presence, diagnosis in primary care is often clinical, based on cardinal signs and epidemiological context. Dermoscopy features such as the “delta wing sign” or “jet with contrail” can aid diagnosis but are not always available in resource-limited settings (Hengge et al., 2006; WHO, 2023).

First-line therapy remains topical 5% permethrin, applied overnight and repeated after one week. Antihistamines provide symptomatic relief, while vitamin B complex supports skin regeneration. Education on personal hygiene, laundering clothes and bed linens in hot water, and avoiding shared items is critical to prevent reinfestation (Hay et al., 2022; CDC, 2023). The success of therapy depends on simultaneous treatment of all household members. International guidelines emphasize that untreated contacts are a major source of reinfestation, and family-wide interventions are essential for sustainable outcomes (WHO, 2020; Wibowo & Musyarofah, 2024).

Scabies remains a neglected tropical disease with significant global burden. WHO’s roadmap for NTDs 2021–2030 highlights scabies control through integrated strategies combining pharmacological treatment, hygiene reinforcement, and community education (WHO, 2020; El-Moamly, 2021). This case illustrates the relevance of such strategies in Indonesia’s primary care context. The novelty of this report lies in documenting scabies management in a primary care facility, emphasizing the integration of pharmacological therapy with environmental and behavioral interventions. This holistic approach provides a practical model for scabies control in resource-limited settings and contributes to global literature on effective community-based management (Liu et al., 2021; Watlet et al., 2020).

4. Conclusions

Scabies remains a significant parasitic skin disease with high transmission potential in household environments. This case demonstrated that close contact with an infected family member was the primary factor facilitating transmission, while environmental conditions such as poor ventilation and limited sunlight exposure further supported mite survival. These findings reinforce the importance of considering both behavioral and environmental determinants in scabies control strategies. Clinical management using topical 5% permethrin, oral antihistamines, and vitamin supplementation proved effective, leading to symptomatic improvement and regression of lesions. However, the persistence of itching for several weeks after therapy highlights the role of hypersensitivity reactions to residual mite antigens, which must be communicated to patients to ensure adherence and avoid premature discontinuation of treatment. The success of therapy in this case was strongly linked to simultaneous treatment of all household members. Reinfestation is a common challenge in scabies management, and this case underscores the necessity of family-wide interventions. Education on personal hygiene, proper laundering of clothes and bed linens, and avoidance of shared personal items are critical components of integrated management. From a public health perspective, scabies continues to be a neglected tropical disease despite its high prevalence and morbidity. The findings of this case align with WHO’s roadmap for NTD control, which emphasizes integrated approaches combining pharmacological therapy, hygiene reinforcement, and community education. Primary care facilities play a pivotal role in implementing these strategies, particularly in resource-limited settings such as Indonesia. The novelty of this report lies in documenting scabies management within a primary care context, highlighting the integration of pharmacological treatment with environmental and behavioral interventions. This holistic approach provides a practical model for scabies control in similar endemic regions and contributes to global literature on effective community-based management. Future research should explore long-term outcomes of integrated interventions and evaluate their scalability across diverse populations.

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Data Availability Statement: All data supporting the findings of this study are contained within the article. No additional datasets were generated or analyzed.

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Conflicts of Interest: All the authors declare that there are no conflicts of interest.

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