



The Experience of the Burmeso Tribe in Using Crocodile Oil to Treat Scabies in Burmeso Village, Mamberamo Raya Regency

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ABSTRACT

Scabies is a contagious skin disease caused by the *Sarcoptes scabiei* mite and is a significant public health problem, especially in remote areas with limited access to modern health services. This qualitative phenomenological study aims to explore the experiences of the Burmeso people in using crocodile oil as a traditional treatment for scabies in school-age children in Burmeso Village, Mamberamo Raya Regency, Papua. Through in-depth interviews with 10 informants consisting of medical personnel, traditional leaders, parents, and the general public, this study reveals the practice of traditional crocodile oil processing, how to use it, the effectiveness of the treatment, and the reasons why people choose traditional medicine. The results show that crocodile oil is processed from crocodile fat through a traditional heating process without additional chemicals, is used topically by being applied 2-3 times daily after heating, and shows high effectiveness with healing within 3-5 days. People choose traditional medicine due to cultural beliefs, limited access to health facilities, proven effectiveness, and the availability of local ingredients. This study contributes to the understanding of the integration of local wisdom in the public health system and the importance of preserving traditional knowledge as a sustainable alternative treatment.

INTRODUCTION

Scabies is a skin infestation caused by the microscopic mite *Sarcoptes scabiei* var. *hominis*, which causes symptoms of intense itching, especially at night, skin rashes, and burrow-like lesions (WHO, 2013). In 2017, the World Health Organization (WHO) classified scabies as a "Neglected Tropical Disease (NTD)" requiring comprehensive, community-based public health interventions (El-Moamly, 2021). The prevalence of scabies is very high in tropical and subtropical regions, with the highest rates reported in Pacific countries such as Papua New Guinea, Panama, and Fiji, as well as areas with inadequate sanitation (Karimkhani, 2017).

School-aged children are the most vulnerable group to scabies infection due to their behavioral characteristics involving close physical contact, sharing of personal items, and limited understanding of hygiene (Ararsa et al., 2023). Studies show that the prevalence of scabies in children can reach 19.26% (95%CI: 17.20-22.52) in school-aged children (5-14 years), especially in high-density environments such as boarding schools and areas with poor sanitation. Factors such as poverty, overcrowding, limited access to clean water, and lack of health education contribute significantly to the high infection rate in this group (Misganaw, 2022).

In Indonesia, particularly in eastern regions like Papua, scabies remains a serious public health problem. Remote geographic conditions, limited health facilities, limited medical personnel, and difficult transportation access mean that communities in remote areas like Kampung Burmeso rely more heavily on traditional healing systems passed down through generations (Abdullah et al., 2023). Standard treatment for scabies generally involves the use of topical 5% permethrin or oral ivermectin, but access to these medications is often limited in remote areas.

Crocodile oil is a traditional medicine long used by Papuans, including the Burmeso people, to treat various skin conditions (Makaba et al., 2021). This oil is obtained from traditionally processed crocodile fat and is believed to have effective healing properties for skin conditions such as wounds, eczema, and scabies. Research shows that crocodile oil contains essential fatty acids and has a composition similar to human skin oil. It is safe to use with minimal skin sensitization, toxicity, and irritation.

Burmeso Village, located in the Central Mamberamo District, Mamberamo Raya Regency, Papua Province, is a remote area that still maintains strong cultural values and traditional healing practices. With an area of approximately 208.41 km² and a population of approximately 2,100, the village serves as the district's administrative center but still faces limited access to modern healthcare. The majority of residents work as shifting cultivators, traditional fishermen, and hunter-gatherers of forest products, including those involved in the processing of crocodile oil for medicinal purposes.

Although the use of crocodile oil in traditional medicine has long been known and practiced, scientific research on its effectiveness against scabies remains very limited. Most of the available evidence comes from ethnobotanical reports and empirical practices of local communities without adequate scientific

validation. This creates a gap between time-tested traditional knowledge and modern, evidence-based medical understanding.

This research is highly urgent given that Burmeso Village is an area with limited access to modern healthcare services, forcing the local community to rely heavily on traditional medicine as their primary treatment option. Systematic documentation and evaluation of crocodile oil use practices could make a significant contribution to the development of locally-based and sustainable scabies control strategies. Furthermore, the findings of this study could serve as a basis for integrating traditional medicine into the formal healthcare system as an innovative way to improve access and effectiveness of treatment in remote areas.

THEORETICAL REVIEW

Concept of Scabies Disease

Scabies is a contagious skin disease caused by an infestation of the mite *Sarcoptes scabiei* var. *hominis*, which burrows into the skin, causing intense itching, particularly at night (WHO, 2013). Common symptoms include rashes, burrow-like lesions, and skin irritation, which can progress to secondary infections if not treated promptly. The disease is generally spread through close physical contact and is often found in densely populated communities such as dormitories, schools, and large households.

The global prevalence of scabies remains high, particularly in tropical and subtropical countries. Research shows that scabies is a neglected tropical disease (NTD) that significantly impacts quality of life, particularly in poor and remote communities (El-Moamly, 2021). Controlling this disease requires comprehensive public health interventions, including early detection, mass treatment, and education on hygiene behaviors.

Elementary School Children's Behavior and the Risk of Scabies

Elementary school-aged children (6–12 years old) are in the concrete operational cognitive development stage according to Piaget's theory, where they begin to understand cause-and-effect relationships and social norms, but are still heavily influenced by their environment and the customs they observe. Hygiene and health behaviors are highly dependent on habits at home and school, so poor knowledge of skin hygiene and minimal supervision from parents/teachers are the main risk factors for scabies in school children (Misganaw et al., 2022).

In many elementary schools, especially in areas with limited facilities, the practice of sharing clothes, bedding, and toiletries still occurs, which accelerates the spread of scabies infestation. Studies show that children who have a history of contact with a confirmed scabies case in the past two months have a 5.28 times higher risk of contracting scabies. Therefore, behavioral changes and increased health knowledge are the keys to effective prevention.

Traditional Medicine and Local Wisdom

Traditional medicine is defined by the WHO as health practices based on knowledge, skills, and beliefs derived from local cultures and used for health

maintenance and the treatment of various physical and mental illnesses (Abdullah et al., 2023). In many remote areas, such as Papua, limited access to health facilities forces communities to rely on local herbs and natural ingredients as alternative treatments.

Ethnomedicinal studies in Papua have shown that the use of crocodile oil is a traditional therapy believed by locals to heal wounds and skin diseases. This practice is a local ethnomedicinal heritage that has been passed down through generations and is highly respected by the local community. Integrating local wisdom into the formal healthcare system is an approach that supports the sustainability of health interventions, particularly in remote areas.

Crocodile Oil Properties

Crocodile oil has a composition similar to human skin oil, differing only in the percentage of components present. Crocodile oil contains both saturated and unsaturated fatty acids, and because of its similar composition to human skin oil, crocodile oil rarely causes allergies when applied to human skin, making it a highly acceptable and safe product to use.

Research on the chemical composition of crocodile oil has shown that it does not exhibit significant antifungal, antibacterial, or antioxidant properties in laboratory tests. However, toxicity studies have shown that crocodile oil does not cause skin sensitization, skin toxicity, or skin irritation, making it a safe product for use. Stability tests indicate that crocodile oil in lotion form remains stable for up to 6 months..

METHODOLOGY

Research Design

This study used a qualitative approach with a phenomenological study design to explore in-depth the experiences of the Burmeso Village community in using crocodile oil as a traditional treatment for scabies in school-age children. The phenomenological design was chosen because it allowed researchers to understand the meanings and subjective experiences of informants related to traditional healing practices that are deeply rooted in local culture.

Research Setting

The research was conducted in Burmeso Village, Central Mamberamo District, Mamberamo Raya Regency, Papua Province. This village was chosen as the research location because it is a remote area that still maintains traditional healing practices, including the use of crocodile oil to treat various skin conditions such as scabies. Burmeso Village is located in the lowlands of the Mamberamo River valley, surrounded by dense tropical rainforest and swamps, with a humid tropical climate and high rainfall throughout the year.

Research Informants

This study involved 10 informants who were purposively selected based on their involvement, knowledge, and experience with the practice of using crocodile oil to treat scabies. The informants consisted of: 1 general practitioner, 1 nurse, 1 religious and traditional leader, 3 housewives who used crocodile oil,

3 parents with experience treating children with scabies, and 1 village head who was also a traditional leader.

Data Collection Techniques

Data were collected through three main methods: (1) semi-structured in-depth interviews to explore community experiences, perceptions, and beliefs related to the use of crocodile oil; (2) participant observation to understand the social and cultural context of traditional healing practices; and (3) documentation studies to collect supporting data from health records, village profiles, and other relevant documents.

Data Analysis

Data were analyzed using the Miles and Huberman analysis technique, which consists of three stages: data reduction, data presentation, and drawing conclusions with verification. The analysis process was repeated to ensure the validity and consistency of the findings. Data validity was ensured through triangulation of sources and methods, as well as member checking with key informants.

RESEARCH RESULTS

Characteristics of Regions and Communities

Burmeso Village covers an area of 208.41 km² with a population of approximately 2,100, the majority of whom are Christian (89.28%). The community uses Burmeso or Taurap as the local language, spoken by approximately 250 people. Primary livelihoods include shifting cultivation, traditional fishing on the Mamberamo River, hunting and gathering forest products, and informal work in government agencies. Health facilities consist of the Burmeso Community Health Center (Puskesmas) with limited medical personnel, so the use of traditional medicines such as crocodile oil is still very strong and often the first choice due to factors of access and cultural beliefs.

Crocodile Oil Processing Process

Research results show that the people of Burmeso Village have a strong knowledge of the traditional crocodile oil processing process. This oil is obtained from the fat of the crocodile, particularly from the belly, thighs, and along the spine to the head. The process begins by collecting all the crocodile fat, then cooking it in a cauldron or pot for 1 to 3 hours, depending on the heat.

One informant explained: "We collect all the fat inside the crocodile, then we cook it. After cooking for a long time, it becomes liquid like cooking oil, which is what we pour into bottles." The color change is the main indicator that the oil is cooked, from its initial cloudy or brownish condition to a clear, cooking oil-like consistency. After the cooking process is complete, the oil is cooled, manually filtered, and stored in bottles for medicinal purposes.

This processing process is passed down through generations and is carried out using simple equipment without the addition of chemicals or other substances, making it completely natural and traditional. This knowledge has

been passed down from generation to generation, forming a strong and sustainable tradition within the Mamberamo Raya community.

How to Use Crocodile Oil to Treat Scabies

The use of crocodile oil as a treatment for scabies in school-age children is traditionally carried out using consistent procedures. Before use, crocodile oil must be heated to increase its effectiveness. One informant stated: "Before use, the oil is heated first, then rubbed onto the child's skin."

The oil is applied to the affected skin area 2-3 times daily, regularly. The application procedure involves heating the oil in a spoon and then applying it to the wound or itchy area. In addition to topical use, some people also take crocodile oil orally for internal ailments. However, for cases of scabies in children, the topical method with preheating is the most common practice.

Routines such as rubbing oil in several times a day demonstrate the community's understanding of the importance of consistency in treatment. This procedure not only reflects traditional healing techniques but also demonstrates the community's belief in the effectiveness of natural ingredients in addressing skin health issues.

The Effectiveness of Crocodile Oil in Treating Scabies

The people of Burmeso Village consider crocodile oil to be highly effective as a traditional remedy for treating scabies. This effectiveness is not only felt by direct users but also confirmed by medical personnel and local community leaders. A general practitioner stated: "Most people who have tried using this crocodile oil instead of the ointment we prescribe usually say there's a difference. Crocodile oil seems to be effective for both internal and external treatment, especially for skin conditions."

Healing times reported by various informants are consistent, ranging from 3 to 5 days with regular use. One parent reported: "It healed in three days. After using crocodile oil, the wound immediately dried." This effectiveness is evident in the rapid drying of the wound, a significant reduction in itching, and minimal side effects experienced by users.

Comparisons with medical treatments indicate that the community places greater trust in crocodile oil. One informant stated: "Crocodile oil heals faster than ointment. If you use it regularly, it dries quickly." This combination of empirical experience and cultural support makes crocodile oil a primary choice in traditional medicine in the region.

Changes in Scabies Symptoms After Use

Based on observations and experiences of sufferers and their parents, the use of crocodile oil has shown significant changes in symptoms. The most noticeable change is rapid wound drying, where wounds that were initially wet and spreading can dry up within 3-5 days of regular use. One informant reported: "It's healed in three to five days. The wet wounds immediately dry up after using crocodile oil."

The itching symptoms, a key characteristic of scabies, also decreased dramatically after using crocodile oil. Direct observations by parents showed that

children who previously experienced sleep disturbances due to itching were able to rest better after a few days of treatment. The consistency of experiences across informants indicates a reliable pattern of positive response to crocodile oil use.

Comparisons of its effectiveness with medical ointments also showed favorable results for crocodile oil. One informant shared his experience: "Crocodile oil applied to the right hand healed faster than the ointment applied to the left hand. It dried up in three days." This indicates that the community has developed consistent empirical observations regarding the effectiveness of this traditional treatment.

The people of Burmeso Village have several strong reasons for choosing traditional medicine over medical treatment. The main reason is their belief in ancestral traditions, as stated by a traditional figure: "This crocodile oil has been used by our ancestors, from generation to generation, and is very useful for itching and wounds."

Limited access to healthcare facilities is a significant practical factor. One nurse explained: "Medical treatment is good, but transportation is difficult, and the community health center is far away, making it difficult for people to come for follow-up check-ups." Remote geographic conditions and limited transportation make access to formal healthcare a major challenge for the community.

A preference for natural ingredients is also an important consideration. A local general practitioner observed: "People prefer to use crocodile oil because they consider it safer and chemical-free." The village head emphasized: "People trust crocodile oil more than external medications. They go to the hospital only if it doesn't work."

Availability and ease of use are other practical factors. Crocodile oil can be obtained directly in the village without having to wait for external supplies, providing a quick and accessible solution for the community. This reflects the community's self-reliance in addressing health issues using locally available resources.

DISCUSSION

The findings of this study align with similar studies in other areas of Papua, which show nearly identical crocodile oil processing practices. Research in Merauke indicates that crocodile oil is processed traditionally without the addition of chemicals and is widely used to treat wounds, skin infections, and respiratory problems. The similarities in procedures, tools, and belief in its efficacy confirm that crocodile oil processing is not only a health practice but also a symbol of community self-reliance in maintaining their health using local natural resources.

The effectiveness of aloe vera oil reported in this study is also supported by other research on the use of natural ingredients in treating scabies (Shiven et al., 2020). Studies show that natural ingredients such as aloe vera have anti-inflammatory and antibacterial effects that can help reduce itching and accelerate the healing of scabies wounds. Clove oil is also reported to have antimicrobial properties and can kill scabies mites in a relatively short time (Akca et al., 2023).

The community's preference for traditional medicine aligns with research findings from other parts of eastern Indonesia (Abdullah et al., 2023), where economic background, belief in ancestral healing practices, and the availability of local resources were key determinants of traditional medicine choice. Social factors such as the influence of family and community leaders also play a significant role in influencing treatment choices, with informal sources of information more trusted than formal education from medical professionals.

CONCLUSIONS AND RECOMMENDATIONS

This research has uncovered important aspects of the traditional healing practices of the Burmeso people using crocodile oil. The traditional method of producing crocodile oil involves heating fat from specific crocodile parts to produce a clear liquid without any chemical additives. This knowledge has been passed down through generations and reflects local wisdom in utilizing natural resources.

Crocodile oil is used to treat scabies in school-age children by regularly applying the heated oil to the infected area 2-3 times daily. This treatment is highly effective, with healing occurring within 3-5 days, marked by drying of the lesions and a significant reduction in itching.

People choose traditional medicine due to strong cultural beliefs, limited access to modern health facilities, empirically proven effectiveness, preference for natural ingredients, and the availability of easily accessible local resources. This combination of factors makes crocodile oil the main and trusted choice in the Burmeso people's medical system.

Based on the research findings, several recommendations can be put forward. First, documenting and preserving community knowledge about the processing and use of crocodile oil as a cultural heritage and local wisdom is essential. Second, further scientific research is needed regarding the content, effectiveness, and safety of crocodile oil for medical validation and integration into complementary medicine systems.

Third, crocodile oil has the potential to be developed as a local herbal product with economic value through training in sustainable production, packaging, and marketing. Fourth, the Health Department needs to consider integrating traditional medicine into primary healthcare services by developing guidelines for safe and standardized use. Fifth, increasing access to medical services remains necessary to ensure the public has a balanced alternative between traditional and modern medicine.

This research demonstrates that traditional medicine based on local wisdom has great potential to be developed as an integral part of the public health system, particularly in areas with limited access to modern health services. Appropriate integration of traditional knowledge and evidence-based medical approaches can create a more holistic, sustainable, and tailored health care system tailored to local community needs.

FURTHER STUDY

The findings of this study enrich scientific studies in the fields of traditional health and ethnomedicine, particularly regarding the use of animal oils in treating

skin diseases. This research also broadens understanding of the transdisciplinary approach between local knowledge and modern health sciences and demonstrates the importance of recognizing local wisdom in public health systems.

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