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Management of scabies cases with secondary infection in children through family medicine approach

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ABSTRACT

Scabies is a skin infestation caused by Sarcoptes scabiei (var. hominis). The prevalence of scabies in Indonesia is 4.60% - 12.95% and ranks the third most common disease. The Cikupa Public Health Center experienced an increase in the number of new scabies cases as many as 34 new cases in January - June 2022 compared to June - December 2021 as many as 21 new cases. Female patient aged 5 years and 10 months suffered from scabies with secondary infection and had transmitted it to other family members. Problem analysis was carried out by mapping the Mandala of Health with the principles of family medicine and comprehensive management. Ms. K and her family members recovered from scabies and no new lesions appeared. The patient and her families have been given education about scabies and there are no new infections in them so further transmission of scabies can be prevented. The family medicine approach and Mandala of Health have helped Ms. K and her family in the treatment and eradication of scabies.

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INTRODUCTION

Family medicine is a medical specialization that provides ongoing and comprehensive health care for individuals and families integrating biological, clinical, and behavioral sciences (American Academy of Family Physician (AAFP), 2019). Family medicine is carried out in a comprehensive, integrated, holistic, and sustainable ways (Anggraini et al., 2015). Family medicine is important since family doctors serve patients not only as individuals, but as family members and provide health care, comprehensive attention to the sufferer as needed. It aims to improve health level, prevent the disease, and provide disease management as early as possible (Thompson et al., 2021).

Scabies is a skin infection by *Sarcoptes scabiei* (var. hominis). The most common symptoms of scabies are intense itching and acne-like skin rashes (Vasanwala et al., 2019). Scabies is usually spread through direct and prolonged skin-to-skin contact with a person who has scabies disease (Centers for Disease Control and Prevention (CDC), 2020). It can affect people at all socio-economic levels, young person, old people, with immune disorders or developmental delays are at a much higher risk for scabies and related complications (Banerji, 2015). Recurrent infections often occur in scabies cases,

which is very difficult for the health care system if not treated thoroughly (Matthews et al., 2021; World Health Organization (WHO), 2020).

According to data from The World Health Organization (WHO) globally, scabies has affected more than 200 million people at any time. Prevalence estimates found in recent scabies-related literature range from 0,2% to 71%. Endemic scabies is a resource-poor tropical range with an estimated average prevalence of 5-10% in children. In high-income countries, the cases are sporadic. However, the outbreaks in health institutions and vulnerable communities contribute to significant economic costs to National Health Services (World Health Organization (WHO), 2020). On research of Pruksachatkunakorn, the prevalence of scabies in Thailand in 2000 was 83.7% in children aged 1 year to 7 years old (Sukmawati E et al., 2018; Trasia, 2021).

In 2013, infectious skin disease was the fourth most common disease in East Nusa Tenggara with 136.035 cases (Badan Penelitian dan Pengembangan Kesehatan (Litbangkes), 2018). In Indonesia, the prevalence of scabies is 4,60% - 12,95% and this disease is a disease with the third ranks of the 12 most common skin diseases in Indonesia (Mayrona et al., 2018). According to data from the Ministry of Health of the Indonesian Republic, the prevalence of scabies in 2017 amounted to 6% of the total population in Indonesia. Scabies is related to the personal hygiene and the living environment so often occur in people who live together, for example in densely populated settlements or in boarding schools with high population density. Scabies outbreaks are often found in densely populated environments with close and prolonged skin contact, such as in daycare, orphanages, nursing homes, prisons, refugees, boarding schools, and even hospitals (Sukmawati, 2018; Trasia, 2021).

Based on data from the Cikupa Public Health Center on the distribution of scabies disease within close proximity to the research subject's environment in Talagasari Village, Cikupa Village, Cikupa District, in June – December 2021, there were 21 new cases obtained and increased in January – June 2022 of 34 new cases. Patients who came with a scabies diagnosis from the Cikupa Health Center data had the most age spreading at the age of 5-11 years (Trasia, 2021).

In this case study, it was conducted with a family medicine approach in a 5-year-old girl with a scabies diagnosis accompanied by secondary infection handling in scabies patients is less successful if only carried out individually. Therefore, the authors of this approach aims to provide adequate treatment thoroughly, prevent transmission, and occurrence of relapse prevention, as well as preventing the occurrence of secondary infections using a comprehensive holistic approach. The study was conducted in the expectation that this approach could find the source of the cause, prevent, and break the chain of further transmission in the family and environment, and also prevent recurrence and complications from secondary infection (Chante et al., 2017; World Health Organization (WHO), 2020).

RESEARCH METHOD

This study employed a case study approach (Yayici, 2018). The subjects of this study were children with the K initials and a diagnosis of scabies. The case study was conducted in Cikupa Public Health Center, Subdistruct of Cikupa, Tangerang Regency, Province of Banten. The management of case study was conducted in Cikupa Public Health Center, Subdistruct of Cikupa, Tangerang Regency, Province of Banten. A visiting activity of the patient with the initial of K was carried out several times through family visits to the patient's house. Interventions and the results were given and obtained through family visits to the patient's house.

RESULTS AND DISCUSSIONS

Scabies is a skin disease caused by *Sarcoptes scabiei hominis* which are known as mites (small lice) (World Health Organization (WHO), 2020). Microscopically, *Sacroptes scabiei* will make a small tunnel as a place to live and lay eggs in the lower layers of the skin. Commonly, itching at night

affects a group of people, hitting thin, moist and warm skin folds and can spread throughout the body is a sign of scabies. Scabies is also called scurvy, mistresses, or *buduk*, and is also known as the itch, Norwegian itch, seven year itch due to severe itching that lasts chronically (Febri Endra Budi Setyawan, 2019; Sungkar, 2016).

Scabies can be found at any age, but it is more common in children rather than in adults. Children are more susceptible to the infection with scabies due to the immune system is more vulnerable than adults, lack of hygiene, and prefer to play with other children in close contact. In addition, scabies is also easy to infect elderly people due to decreased immunity and changes in skin physiology in elderly people (Abarca, 2021; Sungkar, 2016).

In this case, a scabies was more often found in the child. It is known that a 5-year-old female patient went with her mother to the Cikupa Public Health Center on Friday, August 26, 2022 with complaints of itching between the fingers since 2 weeks ago. Itching is felt continuously and burdensome at night so that patient often scratch and one week later there were yellow purulent wounds, odorless but painful, especially between the fingers of the thumb of the right and left hands. Initially, there was one nodule in the palm of the hand and then spread to the sidelines of the fingers. A patient has friends and often plays with friends around her house who have similar complaints, known friend of the patient is an Islamic boarding school child. The patient and her parents sleep together on one mattress and sometimes the patient sleeps with her two siblings in the living room. The patient takes a bath 2 times a day in the morning and in the evening. She takes a bath in the afternoon around 18.00, usually after playing, she did not immediately take a shower but watch television in the family room first. She often uses towels together with other family members. Patient during this time rarely affects by pain, such as cough, runny nose, or fever.

Figure 1. Palm of patient K

Figure 2. Hands of patient K

One month earlier, the patient's mother also complained of itching in the fingers spread to the upper and lower arms and the fold of the armpit, itching was felt continuously throughout the day. She often feels itchy and sweating when exposed to heat while doing selling activity. Then, she used a medicine that is a kind of *salicyl* powder then the complaints was getting better. Itching in the patient's mother did not lead to suppuration of the wound.

At this time, the first and second siblings of the patient also have the same complaints that have already been about a week. The first sibling complained of itching between the fingers of the right and left hand and around the groin. At first, spots appeared on the back of the right hand and then spread between the fingers. Itching was felt continuously and burdensome at night. The second one complained of itching between the fingers, groin, legs, and elbow . The itching was felt more and more burdensome at night. The patient's mother said there were no wounds or pus on the skin of the patient's brothers.

Scabies is an endemic disease and found in many tropical and subtropical countries, such as Africa, Central and South America, northern and Central Australia, and Southeast Asia. On research by *Karimkhani et al,* obtained numbers of Disability-adjusted life-years (DALYs) globally as much as 71.11 per 100.000 population. Meanwhile, in Southeast Asia, the DALYs figure is 134.57 per 100.000 population. Indonesia is the country with the highest DALYs rate of 153.86 per 100,000 population. This exceeds the DALYs rate globally and Southeast asia (Chante et al., 2017). At the Cikupa Public Health Center, 40 patients were diagnosed with new scabies during January-August 2022 and the most at the age of 5-11 years.

The first meeting was held on Friday, August 26, 2022 at the Cikupa Health Center. Physical examination was carried out in the form of vital signs (blood pressure, pulse, respiratory rate, and body temperature), anthropometry (weight and height), generalist status, and dermatological status examination (including predilection for lesion sites) of patient K. diagnosed of scabies disease. The management involved education about scabies disease to the patient K's mother, starting from the definition, risk factors, causes, signs and symptoms, transmission patterns, how to prevent, and treatment of scabies(how to use and administer drugs), provision of initial management in the form of Permethrin cream 5%, Amoxicilin 3x1 tab and CTM 1x1 tab, and ask inform concentrate to the mother of patient K about a plan of home visits and intervene on the patient and the patient's family (Sukmawati, 2018).

The clinical manifestations of scabies can be similar with some other skin diseases, such as eczema, impetigo, fungal infections, allergic reactions and contact dermatitis, which creates difficulties in terms of diagnostics. The incubation period for scabies lasts about 4-6 weeks, and may be shorter if the initial infestation is severe. So, the affected person becomes a source of infection before treatment. As a result, all family members and others who share the same living place must also be managed. However, in case of re-infection, the reaction manifests faster, with characteristic skin lesions and itching that appear within 24-48 hours. Depending on how long the infection is and the type of inflammatory response, clinical manifestations may vary. Previously, people who showed multiple skin lesions were considered to be heavily infected with a high level of parasites. This, however, has not yet been confirmed (Korycińska et al., 2015).

There are four cardinal signs that can be found in scabies, the diagnosis can be made when two of the four cardinal signs are found. The cardinal signs include nocturnal pruritus, scabies attacks in groups of people, appearing whitish to grayish tunnels, and the gold standard is the discovery of mites on the skin through microscopic examination (Rayappan, 2014).

The skin lesions show a typical irregular tunnel measuring from a few millimeters to a few centimeter. A study by Johnson and Mellanby involved 886 men with 9.998 mites found showed that 63,1% of lesions were found on the skin of the wrists and forearms, excluding the hands, 10,9% on the elbows, 9,2% on the feet and ankles, 8,4% on the genital area, and 4,0% on the buttocks. A further study involving 119 women and 1.494 mites showed lesions mostly located on the arms and wrists,

accounting for 74,3%; 7,5% were found on the hands, 5,9% on the elbows, 8,8% on the feet and ankles, and 1,1% on the buttocks (Korycińska et al., 2015).

On nodular scabies, skin lesions appear as round, smooth nodules with a diameter of 5-8 mm, with a red and brownish color. They are often found in very thin areas of the skin, such as the genitals or inguinal folds, but the lesions do not affect the hands or feet. On the vesicular scabies, it is a rather rare type of scabies and usually occurs in the elderly people. It can imitate bullous pemphigoid clinically as well as histologically. Diagnosis is difficult when epidermal scrapings unsuccessfully show parasites or their feces (Korycińska et al., 2015).

In the most cases, *scabies crustosa* is diagnosed in people with immunological disorders, including patients treated topically or systemically with corticosteroids, HIV-positive people with infections *Human T-lymphotropic virus 1* (HTLV-1), systemic lupus erythematosus, rheumatoid arthritis, as well as people with mental or physical disabilities. Scabies can also affect people whose immune system is weakened (Korycińska et al., 2015). One complication that can be caused by scabies disease is a disturbance during sleep. Severe itching disrupts sleep so that the next day, the patient feels sleepy, dizzy, and has other complaints due to lack of sleep. Scabies lesions also decrease self-confidence in most sufferers. Female sufferers feel ashamed of their condition and 30% withdraw from social activities because they are not confident (Sungkar, 2016).

If this case is not given proper and good management, it can lead to cases of secondary infection complications by bacteria. It must be considered, especially in tropical climates and rarely rains. If a bacterial infection is suspected, then topical or systemic antibacterial administration must be given as soon as possible. This is caused by pyoderma due to bacterial infection that can be widespread, invasive, and even fatal. Lymphangitis, lymphadenitis, cellulitis and even sepsis can occur (Sungkar, 2016). Therefore, management through a family medicine approach is very important.

The second visit was done on Tuesday, August 30, 2022 at the patient's house. Management involved following up the results of the initial management, observing the house condition, and the environment around the patient K's house. Anamnesis on data and family structure (genogram data), family function, and family environment of patient K, do dietary recall and ask about daily activities and habits, educate parents of patient K to dry the mattress under the hot sun, wash clothes with hot water and soap, diligently clean the house.

The scabies prognosis could be very good if with the correct diagnosis, but in patients with *immunocompromised* or who live in orphanages or dormitories, the incidence of re-infestation is high, especially in patients who return to their original environment that has not been eradicated scabies (Sungkar, 2016). Disease prevention is divided into primary, secondary, and tertiary prevention. Primary prevention is the prevention of diseases carried out before the pathogenesis period, including health promotion, and special protection. Secondary and tertiary preventions are carried out during the pathogenesis period when germs have already entered the human body. Secondary prevention is the initial stage of curing the disease and the prevention of its subsequent impact, which includes early diagnosis and prompt treatment and disability limitation, namely the prevention of complications or disabilities due to scabies and early treatment according to standards. Tertiary prevention is rehabilitation and preventing recurrence or the emergence of other complications due to the main disease (Siddig & Hay, 2022; Sungkar, 2016).

When the third visit was made on Monday, September 5, 2022 at the patient's house. In this visit, the implementation was carried out by providing intervention in the form of Scabimite cream (Permethrin 5%) for patient K's family, motivating and educating them to perform treatment until recovered and simultaneously in the household, asking the *inform concentrate* on his parent to do house cleaning like helping clean the mattress and washing clothes (Dagne et al., 2019). This is in accordance with research stating that scabies has a close relationship with personal hygiene and the living environment so it often occurs in people who live together in densely populated settlements, for example in densely populated villages or in boarding schools with high population density.

Scabies outbreaks are often found in densely populated environments with close and prolonged skin contact, such as in day care, orphanages, places of care for the elderly, prisons, refugees, and boarding schools and even in hospitals (Sungkar, 2016).

Then, the fourth visit was carried out on Tuesday, September 13, 2022 at the patient's house. Management was done by helping patient K's family to clean the home environment, drying the mattress, washing and drying clothes, providing interventions in the form of Scabimite cream (Permethrin 5%), motivating, and educating them to carry out treatment until recovery, and simultaneously in the household (Anggraini et al., 2015; Rayappan, 2014).

Meanwhile, the last visit was carried out on Monday, September 19, 2022 at the patient's house. In this visit, an evaluation of the initial treatment was carried out and pus wounds obtained in patient K has dried up and itchy complaints no longer exist. Besides, there were no lesions in other limbs and provide re-education about scabies and remind about the importance of maintaining personal hygiene (El-Moamly, 2021; Ständer & Ständer, 2021; Wochebo et al., 2019).

The existence of management with this family medicine approach can help in the recovery process of scabies in children. In addition, the provision of Health Promotion and appropriate interventions can help the healing recovery process. Disease prevention is divided into primary, secondary, and tertiary prevention. Primary prevention is the prevention of diseases carried out before the pathogenesis period, including health promotion, and special protection. Secondary and tertiary preventions are carried out during the pathogenesis period when germs have already entered the human body. Secondary prevention is the initial stage of curing the disease and the prevention of its subsequent impact, which includes early diagnosis and prompt treatment and disability limitation, namely the prevention of complications or disabilities due to scabies and early treatment according to standards. Tertiary prevention is rehabilitation and preventing recurrence or the emergence of other complications due to the main disease (Sungkar, 2016).

Health promotion is the most important element of primary prevention. There are five priority areas in health promotion. First, to develop health-minded public policies. Second, create an environment conducive for health. Third, strengthen health-minded activities in the community. Fourth, develop the individual abilities. Last, reorientation of the (Sungkar, 2016) health services.

Health promotion involves health education which includes the opportunity to learn through communication channels and increase knowledge of health. Education is not only to the delivery of health information, but seeks to increase motivation, skills and self-confidence in order to take an action improving health. Health promotion is also needed to prevent outbreaks of scabies. Need to provide counseling for the general public, especially high-risk subjects to increase knowledge about the causes, signs and symptoms, transmission, treatment, and prevention of scabies (Sungkar, 2016).

CONCLUSION

The family of patient K understand about scabies. They have done a thorough and simultaneous treatment of household members. Complaints of itching and scabs have healed and no new lesions appear again and patient's family has maintained good personal hygiene.

References

Abarca, R. M. (2021). Klaster Ilmu Kedokteran Keluarga. *Nuevos Sistemas de Comunicación e Información*.

American Academy of Family Physician (AAFP). (2019). *Family Medicine*.

Anggraini, M. T., Novitasari, A., & Setiawan, M. R. (2015). Buku Ajar Kedokteran Keluarga. *Universitas Muhammadiyah Semarang*.

Badan Penelitian dan Pengembangan Kesehatan (Litbangkes). (2018). *Kajian Aspek Epidemiolgi Skabies pada Manusia*.

Banerji, A. (2015). Scabies. *Paediatrics & Child Health*, *20*(7), 395–398. https://doi.org/10.1093/pch/20.7.395

Centers for Disease Control and Prevention (CDC). (2020). *Scabies*.

Chante, K., Colombara, D. V, Drucker, A. M., Norton, S. A., Hay, R., Engelman, D., Steer, A., Whitfeld, M., Naghavi, M., & Dellavalle, R. P. (2017). *The global burden of scabies: a cross-sectional analysis from the Global Burden of Disease Study 2015*. https://doi.org/10.1016/S1473-3099(17)30483-8

Dagne, H., Dessie, A., Destaw, B., Yallew, W. W., & Gizaw, Z. (2019). Prevalence and associated factors of scabies among schoolchildren in Dabat district, northwest Ethiopia, 2018. *Environmental Health and Preventive Medicine*, *24*(1). https://doi.org/10.1186/s12199-019-0824-6

El-Moamly, A. A. (2021). Scabies as a part of the World Health Organization roadmap for neglected tropical diseases 2021–2030: what we know and what we need to do for global control. In *Tropical Medicine and Health* (Vol. 49, Issue 1). https://doi.org/10.1186/s41182-021-00348-6

Febri Endra Budi Setyawan. (2019). Pendekatan Pelayanan Kesehatan Dokter Keluarga (Pendekatan Holistik Komprehensif). In *Pendekatan Pelayanan Kesehatan Dokter Keluarga (Pendekatan Holistik Komprehensif)*.

Korycińska, J., Dzika, E., Lepczyńska, M., & Kubiak, K. (2015). Scabies: Clinical manifestations and diagnosis. *Polish Annals of Medicine*, *22*(1), 63–66. https://doi.org/10.1016/j.poamed.2015.04.002

Matthews, A., Le, B., Amaral, S., Arkell, P., Monteiro, M., Clarke, N., Barros, T., de Jesus Mendonça, J., Gusmão, S. M. E., dos Reis Seixas, L. M., da Piedade, J. H. A., Engelman, D., Steer, A. C., Fancourt, N. S. S., Yan, J., Kaldor, J., Francis, J. R., & Nery, S. V. (2021). Prevalence of scabies and impetigo in school-age children in Timor-Leste. *Parasites and Vectors*, *14*(1). https://doi.org/10.1186/s13071-021-04645-1

Mayrona, C. T., Subchan, P., Widodo, A., & Lingkungan, S. (2018). Pengaruh Sanitasi Lingkungan Terhadap Prevalensi Terjadinya Penyakit Scabies Di Pondok Pesantren Matholiul Huda Al Kautsar Kabupaten Pati. *Jurnal Kedokteran Diponegoro*, *7*(1), 100–112.

Rayappan, D. N. (2014). Case report : Scabies Skin Infection in an Eleven Years Old Girl. *American Journal of Dermatology and Venereology*, *3*(6), 95–99. https://doi.org/10.5923/j.ajdv.20140306.01

Siddig, E. E., & Hay, R. (2022). Laboratory-based diagnosis of scabies: A review of the current status. In *Transactions of the Royal Society of Tropical Medicine and Hygiene* (Vol. 116, Issue 1). https://doi.org/10.1093/trstmh/trab049

Ständer, S., & Ständer, S. (2021). Itch in Scabies—What Do We Know? In *Frontiers in Medicine* (Vol. 8). https://doi.org/10.3389/fmed.2021.628392

Sukmawati, E. (2018). wahyunita yulia sari, indah sulistyoningrum. Farmakologi Kebidanan. *Trans Info Media (TIM)*.

Sukmawati E, wahyunita yulia sari, & indah sulistyoningrum. (2018). *Farmakologi Kebidanan*. Trans Info Media (TIM). https://scholar.google.com/scholar?oi=bibs&cluster=11760770443894442881&btnI=1&hl=id

Sungkar, S. (2016). Skabies : Etiologi, Patogenesis, Pengobatan, Pemberantasan, dan Pencegahan. In *FKUI* (First Edit, Vol. 1). Fakultas Kedokteran Universitas Indonesia. https://doi.org/10.1007/s00105-009-1708-2

Thompson, R., Westbury, S., & Slape, D. (2021). Paediatrics: How to manage scabies. In *Drugs in Context* (Vol. 10). https://doi.org/10.7573/DIC.2020-12-3

Trasia, R. F. (2021). Scabies in Indonesia: Epidemiology and Prevention. *Insights in Public Health Journal*, *1*(2), 30. https://doi.org/10.20884/1.iphj.2020.1.2.3071

Vasanwala, F. F., Ong, C. Y., Aw, C. W. D., & How, C. H. (2019). Management of scabies. *Singapore Medical Journal*, *60*(6). https://doi.org/10.11622/smedj.2019058

Wochebo, W., Haji, Y., & Asnake, S. (2019). Scabies outbreak investigation and risk factors in Kechabira district, Southern Ethiopia: Unmatched case control study. *BMC Research Notes*, *12*(1). https://doi.org/10.1186/s13104-019-4317-x

World Health Organization (WHO). (2020). *Scabies*.

Yayici, E. (2018). Design Thinking: Methodology Book. In □□□□□□.