Public Health of Indonesia
E-ISSN: 2477-1570 | P-ISSN: 2528-1542

Original Research

Prevalence of Scabies and Its Associated Risk Factors Among Cat Owners in West Nusa Tenggara, Indonesia: A Cross-Sectional Study

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DOI: https://doi.org/10.36685/phi.v11i2.867

Background: Mange, a skin disease caused by the *Sarcoptes scabiei* mite, poses a serious threat to the health and well-being of both cats and their owners. Clinical manifestations of mange include intense pruritus, erythema, and skin rashes, which may lead to considerable discomfort and psychological distress. In urban environments with high pet density, such as Mataram City, West Nusa Tenggara, Indonesia, the risk of mange transmission increases significantly, especially through close contact with infested animals.
Objective: This study aimed to identify factors associated with the incidence of mange among cat owners in Mataram City.
Methods: A cross-sectional analytical study was conducted from September 2023 to February 2024 across six sub-districts of Mataram City (Ampenan, Cakranegara, Mataram, Sandubaya, Selaparang, and Sekarbela) in West Nusa Tenggara Province, Indonesia. A total of 269 cat owners were selected using a simple random sampling technique. The independent variables included demographic characteristics (age, gender), behavioral and environmental factors (handwashing practices, home hygiene, history of sharing personal items, pet grooming habits, number of pet cats, history of cat mange, and family history of scabies). Data were analyzed using descriptive statistics, Chi-square tests, and binary logistic regression with a significance level of $p < 0.05$ and 95% confidence interval (CI), utilizing IBM SPSS version 26.
Results: Statistical analysis revealed no significant association between gender and mange infection among cat owners ($p = 0.921$). However, significant associations were found between mange infection and other variables, including age, handwashing practices, home environmental hygiene, sharing of personal items, pet grooming history, history of cat mange, number of pet cats, and family history of scabies (all with $p < 0.001$).
Conclusion: The incidence of mange infection among cat owners was significantly associated with various socio-behavioral and environmental factors. These findings underscore the importance of integrated public health strategies to improve awareness, facilitate early diagnosis and treatment, and promote effective preventive measures against mange transmission.

Article History:
Received 25 July 2024
Revised 10 October 2024
Accepted 21 November 2024

Keywords: prevalence; cat owner; *Sarcoptes scabiei*; scabies

Background

When talking about public health, the focus is often on human health and well-being. However, it is also important to consider animal health, as animal health has a direct impact on human health. One of the most significant ways animal health impacts human health is through zoonotic diseases. Zoonotic diseases are diseases that are transmitted from

animals to humans, either through direct contact or through contaminated objects (Yamaguchi et al., 2024). When animals were infected with disease, they can pass it on to humans who come into contact with them. By prioritizing animal health, we can reduce the risk of zoonotic diseases spreading to humans (Grahofer et al., 2018). This includes regular animal health checks, vaccinations, and good sanitation and hygiene practices. Ensuring good animal health not only protects pets, but also reduces the risk of disease transmission to humans (Alasaad et al., 2014).

Infectious diseases are one of the health problems that can impact public health, both individually and collectively. Infectious diseases can pose a serious threat to health, including scabies due to its ability to spread rapidly. Scabies, also known as *Sarcoptic mange*, is a skin disease caused by the parasitic mite *Sarcoptes scabiei*. The disease is common in cats and can be transmitted to humans who come into contact with infected animals (Rahman et al., 2024a). Cats infected with scabies will experience symptoms such as severe itching, red and swollen skin, sometimes accompanied by a rash or blisters. The cat may also appear nervous and lose appetite. If left untreated, the infection can spread and cause hair loss, blisters and secondary infections (Kumar et al., 2023).

In addition to its impact on cat health, cat scabies is also a potential threat to public health, especially in environments with close interaction between animals and humans. The spread of scabies from cats to humans occurs through direct contact with infected animals. In humans, this infestation can lead to a condition known as zoonotic scabies which can affect vulnerable groups such as children, the elderly, as well as immunocompromised individuals, making the disease a public health issue of concern. In neighborhoods with high pet populations, cat scabies can spread rapidly and has the potential to become a localized epidemic. In addition, close interaction between humans and pets at home can increase the risk of spreading this infection (Lluch-Galcerá et al., 2023).

Although scabies is a global problem, its prevalence can vary significantly based on factors such as living conditions, hygiene practices and access to health services. In West Nusa Tenggara (WNT) Province, the prevalence of scabies should be of concern to public health officials. The results of a study conducted at the Skin and Sex Polyclinic of the WNT Hospital from January 2020 to June 2023 revealed that 97.8% (out of 288 samples) of patients were infected with scabies (Hendrawan et al., 2023). The WNT region faces challenges related to poverty, limited health infrastructure, and inadequate sanitation facilities in some areas. These factors may contribute to the spread of scabies, as overcrowded living conditions and poor hygiene increase the risk of infestation (Nadiya et al., 2020).

Scabies infection in cats can be transmitted through direct contact with other infected cats or through contaminated objects. Cats in densely populated areas such as Mataram City have a higher risk of becoming infected if they have close contact with other cats infected with scabies (Andika et al., 2023). In Mataram City, no research has been conducted regarding the incidence of scabies in pet owners, especially cat owners. Scabies is a highly contagious skin disease. It can spread rapidly from one animal to another and even to humans. The outbreak was believed to be caused by poor hygiene among cat owners and lack of proper care for infected animals (Hindu Dharmawan et al., 2023).

In severe cases, mange can lead to secondary bacterial infections, which can cause further complications. In addition, the emotional toll of a scabies outbreak can be enormous, especially for cat breeders and pet owners who have invested a lot of time and money into their animals (Husna et al., 2023). The objectives of this study were to: 1. Determine the prevalence of scabies among cat owners. 2. Identify factors of scabies infection, such as age, gender, and pet condition, associated with increased risk of scabies infection. 3. Investigate potential risk factors associated with cat ownership that may contribute to the transmission and progression of scabies. We thus aim to provide valuable insights into the incidence of scabies in cat-owning communities and inform the development of targeted interventions to reduce its spread.

Methods

Study Design

This study used a cross-sectional approach to evaluate the prevalence of scabies and associated risk factors in cat owners in WNT, Indonesia. This approach allows simultaneous data collection at a specific time to obtain a picture of the prevalence as well as the relationship between risk factors and the incidence of scabies. Data were collected through structured interviews and physical observation of the cats. Cats were examined to identify symptoms of scabies, such as fur loss, and sores. Inclusion criteria are conditions or characteristics that subjects (both cats and humans) must have in order to participate in this study. Inclusion criteria for research based on pets, namely: Pet cats residing in the study area. Cats showing clinical signs of scabies, such as fur loss and skin wounds. Cats that had been diagnosed or suspected of having scabies based on veterinary examination. Cats in direct contact with humans living in the study area (pet cats that frequently interact with humans). Cat owners were categorized as follows: Owners with cats suspected or diagnosed with scabies. Individuals who experienced skin complaints, such as itching, rashes, or symptoms resembling zoonotic scabies after contact with cats. Respondents who are willing to provide information through questionnaires, as well as provide written consent to participate in the study.

Exclusion criteria are conditions or characteristics that make the subject ineligible to participate in the study. Exclusion criteria aim to avoid data that are irrelevant or can negatively affect the results of the study. Exclusion criteria

for research based on pets, namely: Cats that do not show clinical symptoms of scabies or have been proven free of scabies based on veterinary examination. Cats that were undergoing treatment for scabies and were already in the healing phase, so they were not contagious. Cats that have no contact with humans, such as feral cats that live in nature without interaction with humans. In terms of cat owners as follows: Individuals who have had no direct contact with cats and have not kept or feral cats in the last 6 months. Individuals with other skin conditions that could cause itching or rashes, such as allergies, eczema, or other skin infections, without any contact with infected cats. Respondents who refused to participate in the study or did not provide written informed consent. Individuals who have mental limitations that prevent them from effectively participating in the study.

Setting

Study was conducted in Mataram City, WNT Province, Indonesia. The study was conducted from September 2023 to February 2024. Five sub-districts were selected, namely Ampenan, Cakranegara, Mataram, Sandubaya, Selaparang, and Sekarbela.

Sample/Participants

After identification of the population, the selection of respondents was done randomly to avoid bias and ensure that every individual in the population group had an equal opportunity to be involved in the study. The sample size was 269 cat owners taken by simple random sampling from a total population of 984 respondents. Sample calculation using Sample Size Version 2.0 software. Representative cat owners were selected using a random sampling technique with inclusion and exclusion criteria.

Instrument

The instrument used in this research was a structured questionnaire containing the variables to be studied. Measurements were taken based on the answers to the questions contained in the questionnaire which concerned the indicators of the variables under study. The questionnaire consists of several main sections, namely the section containing the start date of the questionnaire data collection. In addition, the researcher conducted screening to ensure that the questionnaires given and answered by respondents met the established criteria. Sociodemographic variables included were age, gender, previous history of scabies infection, hand washing routine, history of sharing items, and family history of scabies infection. Age groups were defined as adolescents if the respondent was 18 years old or younger, and adults if the respondent was 19 years old or older. Factors related to environmental conditions included the cleanliness of the home environment. Participants also provided information on their interactions with cats, including pet cat grooming history, pet cat scabies infection history, and number of pet cats. These data were analyzed to determine the correlation between factors associated with the incidence of scabies infection in cat owners.

The reliability test of the variables used Cronbach's alpha analysis on all variables presented in Table 1. This is necessary to measure the internal consistency and reliability of all questions on the variables. Pallant (2020) suggests an acceptable reliability value of 70% or more (Pallant, 2020). Based on the test results in Table 1, all items have a Cronbach alpha of 0.711 or 71%, so the questions on the tested variables can be carried out for the survey. While the validity test of the instrument uses Pearson's correlation with a significant level of 0.05 and a 95% Convidence Interval. The results show the r-count value of each variable as follows: Scabies Infection (0.775), Gender (0.197), Age (0.444), Family History of Scabies (0.563), Handwashing History (0.642), Home Environmental Hygiene (0.540), Sharing Items History (0.519), Grooming History (0.629), Cat Scabies History (0.492), and Number of Pet Cats (0.576). While the r-table value is 0.113, it can be concluded that the instrument was declared valid for use in the study.

Table 1. Reliability Test Analysis with Cronbach Alpha for Variables

Study Objectives	**Reliability Statistics**		
	Cronbach's Alpha	**N**	**N of Items**
Factors Influencing Scabies Infection	0.711	269	10

Data collection

Data were collected through personal interviews with cat owners. Participants were asked to provide information on demographic characteristics, cat ownership history, and history of scabies symptoms or diagnosis. Data collection tools were developed by reviewing literature on scabies prevalence studies and the social context of the population. Data were collected using a semi-structured questionnaire developed in Indonesian. During the interview, the researcher conveyed the meaning of the questions to the study participants. The questionnaire was used to collect data on scabies infection factors. Research members conducted face-to-face interviews under the supervision of the principal investigator to reduce potential bias.

Data analysis

After collecting the data, the authors carefully reviewed each response to ensure accuracy, completeness, and internal consistency. Missing or inconsistent data were discarded. Next, relevant information was entered into the computer, and statistical analysis was performed using IBM SPSS version 26. Descriptive statistics were used to obtain frequencies and percentages. Bivariate and multivariate tests were performed using Chi-square and Binary Logistic Regression to explore the relationship between each variable. Results were presented in terms of the Adjusted Odds Ratio (AOR) with a significant level of $p<0.05$ and a Confidence Interval (CI) of 95%, were used to test the relationship between variables.

Ethical consideration

The study protocol for this research was approved by the Medical and Health Research Ethics Committee (MHREC), Politeknik Medica Farma Husada Mataram, Indonesia with Number: 127/Pol-MFHMTR/MHREC/376.05/2023. Any information provided by the respondents was guaranteed confidentiality by the researcher, and data collection was adjusted to the research needs reported by the researcher. The research code and subject were kept confidential from the public. After a thorough explanation of the research protocol, adult participants and parents or legal guardians of minors gave consent by signing the Informed Concent before data collection. Any information provided by respondents was guaranteed confidentiality in accordance with the requirements of the ethics committee.

Results

Caring for a cat can be a bonding experience, it also comes with risks, one of which is the transmission of mange. The study sample consisted of cat owners of various ages, ranging from young adults to the elderly. The participants were recruited from various demographic backgrounds to ensure a representative sample. The age of each participant was recorded, along with a history of mange attacks.

Table 2. Characteristics of respondents (n=269)

Variables		Frequency	%
Scabies Infection	Yes	152	56.5
	No	117	43.5
Gender	Male	124	46.1
	Female	145	53.9
Age	Adolescent	134	49.8
	Adult	135	50.2
Family History of Scabies	Yes	167	62.1
	None	102	37.9
Handwashing History	Irregular	160	59.5
	Regular	109	40.5
Home Environmental Hygiene	Less Clean	141	52.4
	Clean	128	47.6
Sharing Items History	Often	169	62.8
	Rarely	100	37.2
Grooming History	1 Time/Month	122	45.4
	1 Time/Week	147	54.6
Cat Scabies History	Ever	126	46.8
	Never	143	53.2
Number of Pet Cats	=/> 4 Tails	139	51.7
	1-3 Tails	130	48.3

Table 1 reveals that 56.5% of cat owners were infected with scabies. According to gender, females had a frequency of 53.9% compared to males (46.1%). In terms of age, adults had a greater frequency (50.2%) than adolescents (49.8%). Based on family history of scabies, respondents who had a family history of being infected with scabies were greater (62.1%) than those who did not have a history of scabies (37.9%). Respondents who had a history of irregular hand washing had a greater percentage (59.5%) than those who regularly (40.5%). Respondents with less clean home environment conditions had a greater percentage (52.4%) than respondents with clean home environment conditions (47.6%).

Respondents who had a history of frequently sharing items with others had a greater percentage (62.8%) than respondents who rarely shared items (37.2%). In addition, respondents who groomed their pet cats once a week had a higher percentage (54.6%) than those who groomed once a month (45.4%). Respondents who did not have a history of cat scabies had a higher frequency (53.2%) than those who had a history of cat scabies (46.8%). Respondents who had a number of cats = 4 tails had a greater percentage (51.7%) than respondents with a number of cats 1-3 tails with a percentage of 48.3% (Table 1).

Table 3. Determining the Incidence of Scabies Infection in Cat Owners in WNT Province (n=269)

Variables		Scabies Infection		x^2	*p-value*
		Yes n (%)	No n (%)		
Gender	Male	66 (53.2)	58 (46.8)	1.007	0.316
	Female	86 (59.3)	59 (40.7)		
Age	Adolescent	95 (70.9)	39 (29.1)	22.497	0.000*
	Adult	57 (42.2)	78 (57.8)		
Family History of Scabies	Yes	122 (73.1)	45 (26.9)	49.074	0.000*
	None	30 (29.4)	72 (70.6)		
Handwashing History	Irregular	122 (76.3)	38 (23.8)	62.634	0.000*
	Regular	30 (27.5)	79 (72.5)		
Home Environmental Hygiene	Less Clean	105 (74.5)	36 (25.5)	38.902	0.000*
	Clean	47 (36.7)	81 (63.3)		
Sharing Items History	Often	118 (69.8)	51 (30.2)	32.804	0.000*
	Rarely	34 (34.0)	66 (66.0)		
Grooming History	1 Time/Month	99 (81.1)	23 (18.9)	55.160	0.000*
	1 Time/Week	53 (36.1)	94 (63.9)		
Cat Scabies History	Ever	95 (75.4)	31 (24.6)	34.418	0.000*
	Never	57 (39.9)	86 (60.1)		
Number of Pet Cats	=/> 4 Tails	106 (76.3)	33 (23.7)	45.665	0.000*
	1-3 Tails	46 (35.4)	84 (64.6)		

*Chi-square analysis; *p-value < 0.05*

Based on Table 2, Chi-square analysis revealed that the gender variable did not have a significant relationship with scabies infection with a p-value >0.05. On the other hand, there was a significant association between age, family history of scabies, handwashing history, home environmental hygiene, sharing items history, grooming history, cat scabies history, and number of pet cats with scabies infection in WNT province with p-value <0.05.

Table 4. Factors Influencing the Incidence of Scabies among Cat Owners in WNT Province (n=269)

Variables	B	AOR	95% CI	p-value
Gender	0.035	1.036	0.512-2.095	0.921
Age	0.863	2.371	1.155-4.867	0.019*
Family History of Scabies	1.368	3.929	1.802-8.568	0.001*
Handwashing History	1.257	3.514	1.639-7.533	0.001*
Home Environmental Hygiene	1.160	3.191	1.558-6.537	0.002*
Sharing Items History	0.826	2.284	1.084-4.813	0.030*
Grooming History	1.024	2.783	1.318-5.875	0.007*
Cat Scabies History	1.269	3.558	1.731-7.311	0.001*
Number of Pet Cats	0.959	2.610	1.278-5.334	0.008*

*Binary logistic regression; *p-value < 0.05*

The results of logistic regression analysis in Table 4 revealed that there was no significant association between gender and scabies infection with a p-value >0.05. There was a significant association between age and scabies infection with a significant level of 0.019 (p-value <0.05). Adolescents have a risk of 2.371 times to be infected scabies than adults. In addition, there is a significant relationship between family history of infection with scabies infection with a significant level of 0.001 (p-value <0.05). Respondents who had a family history of scabies had a 3.929 higher risk of being infected

scabies than respondents who did not have a family history of scabies. There is a significant relationship between respondents who have a history of washing with scabies infection with a significant level of 0.001 (p-value <0.05). Respondents who do not regularly wash their hands have a 3.514 higher risk of being infected scabies than respondents who regularly wash their hands.

Table 4 reveals that there was a significant relationship between home environmental conditions and scabies infection with a significant level of 0.002 (p-value <0.05). House conditions that are less clean or dirty have a 3.191 higher risk for patients to be infected scabies than clean house conditions. There is a significant relationship between respondents' history of sharing items with scabies infection with a significant level of 0.030 (p-value <0.05). Respondents who often share items with others have a 2.284 times higher risk of being infected scabies than respondents who rarely share items. There was a significant association between respondents who groomed their pet cats and scabies infection with a significant level of 0.007 (p-value <0.05). Respondents who groomed their pet cat 1 time/month had a 2.783 times higher risk of being infected scabies than those who groomed their pet cat 1 time/week.

There was significant association between respondents who had a history of scabies in pet cats with scabies infection with a significant level of 0.001 (p-value <0.05). Respondents who had a cat with a previous history of scabies had a 3.558 higher risk of being infected scabies than respondents who did not have a cat with a previous history of scabies. In addition, there was a significant relationship between the number of pet cats in the house and scabies infection with a significant level of 0.008 (p-value <0.05). Respondents who had =/> 4 tails at home had a 2.610 higher risk of being infected scabies than respondents with 1-3 tails at home.

Discussion

Relationship between Scabies Infection with Gender

Several studies have explored the relationship between gender and the incidence of mange in cat owners. One such study conducted by Dagne et al. (2019) aimed to investigate the risk factors associated with scabies infestation in a population of cat owners. An institution-based cross-sectional study was used to determine the prevalence of scabies and associated factors among school children in Dabat district with a sample of 494 students. The study found that gender had no significant association with the incidence of scabies. In fact, the study revealed that both men and women were equally susceptible to scabies, regardless of their level of interaction with cats (Dagne et al., 2019). Another study conducted by Cox et al. (2021) which was conducted as a literature review and published in the British Journal of Dermatology specifically focused on the transmission of mange from cats to their owners. The study found that the main risk factor for scabies transmission was not gender, but rather the intensity of contact with infected cats. Regardless of gender, individuals who had regular close contact with their cats, such as grooming or sleeping in the same bed, were more likely to contract scabies (Cox et al., 2021).

It is important to know that mange is not only determined by gender, but also by a variety of other factors. These factors include the number of infested cats in the household, the overall cleanliness of the living environment, and the presence of other risk factors such as a compromised immune system or pre-existing skin conditions. These mites burrow tunnels within the skin, causing an immunological reaction that results in intense itching and irritation. While scabies can affect anyone regardless of age, gender or economic status, individuals with a weakened immune system or who have chronic skin diseases tend to be more prone to infection and further complications. The immune system plays an important role in fighting scabies infection. In individuals with a strong immune system, the body's immune response to mite invasion is usually effective enough to limit the severity of symptoms and prevent further spread (Yun et al., 2020).

In addition, the presence of pre-existing skin conditions, such as atopic dermatitis, psoriasis or eczema, may exacerbate the body's response to scabies infection. These chronic skin disorders are usually associated with skin barrier dysfunction and changes in the local immune response, which can facilitate scabies mite invasion and complicate the healing process. Studies have also shown that people with a history of skin problems were more susceptible to scabies reinfection due to the increased sensitivity of their skin (Yun et al., 2020). To prevent the transmission of mange, regardless of breed, it is very important for cat owners to take precautions. Keeping the cat's living quarters clean and washing their bedding regularly can also help reduce the risk of infestation. In addition, practicing good personal hygiene, such as washing hands thoroughly after handling the cat or cleaning the cat's litter box (Tresnasari et al., 2019).

Relationship between Scabies Infection with Age

Statistical analysis showed a significant association between age and the incidence of mange among cat owners. Adolescents aged 18 years or younger showed the highest prevalence of mange, followed by adults aged 19 years or older. Younger individuals often have more intimate interactions with their pets, thus increasing mite transmission. In addition, younger cat owners are less vigilant in maintaining proper hygiene practices, making them more susceptible to mange infestation (Kumar et al., 2023). In contrast, older people tend to adopt clean behaviors, including regular care of their pets and meticulous personal hygiene routines. Another factor explains that adolescents with low incomes have less access to adequate health care and sanitation facilities, exacerbating the risk of infection. In contrast, adults have better access to health services and resources, enabling them to effectively manage and prevent scabies (Grahofer et al., 2018).

Relationship between Scabies Infection and Family History of Scabies

Family history plays an important role in shaping an individual's susceptibility to various health conditions, including infectious diseases. In the case of scabies, there is evidence to suggest that a genetic predisposition to scabies infestation may increase the likelihood of developing the condition, especially in households with a history of scabies (Mounsey et al., 2016). Individuals with a family history of scabies may have a heightened immune response to scabies mites, making them more susceptible to infection after exposure. This increased susceptibility may be attributed to genetic factors that affect skin barrier function and the immune response to mite infestation (Husna et al., 2023).

Relationship between Scabies Infection with Handwashing History

Studies have shown a clear association between handwashing practices and the incidence of scabies in individuals caring for infected animals. Research by Ugbomoiko et al. (2018) showed that cat owners who reported inconsistent hand washing after handling their pets had significantly higher rates of scabies infection compared to those who practiced regular hand hygiene (Ugbomoiko et al., 2018). Maintaining good hand hygiene is essential not only to prevent scabies, but also to reduce the transmission of other infectious diseases. The Centers for Disease Control and Prevention (CDC) emphasizes the importance of washing hands with soap and water for at least 20 seconds, especially after coming into contact with animals or contaminated objects in the environment (Anderson & Strowd, 2017).

Studies show that good hand hygiene practices can prevent the transmission of scabies. Although scabies mites penetrate the skin to multiply, regular hand washing after contact with pets or contaminated objects can inhibit the spread of mites. Consistent handwashing habits are essential in preventing high transmission risks. Lack of awareness about the importance of hand hygiene in the prevention of scabies often contributes to the spread of the disease in high-risk environments. In addition to household hygiene, personal hygiene practices play an important role in preventing scabies infection. Cat owners should practice good hygiene, such as washing their hands after handling their pets and avoiding direct contact with infected animals. Regular bathing and laundry can also help reduce the risk of mite transmission (May et al., 2019).

Relationship between Scabies Infection and Home Environmental Hygiene

Studies have shown that environmental hygiene is critical in preventing scabies transmission. According to research by Rahman et al. (2024), poor household hygiene can contribute to the persistence and spread of scabies mites, leading to higher infection rates among individuals in close contact with infected animals. In addition, the study revealed the importance of routine cleaning and disinfection practices in households with pets to reduce the risk of zoonotic diseases, including scabies. Studies show that good environmental hygiene can significantly reduce the prevalence of scabies. A dirty or infrequently cleaned environment allows mites to stay longer on surfaces, increasing the likelihood of transmission to others. In this context, educating the public on the importance of maintaining a clean environment can help reduce the spread of scabies. (Rahman et al., 2024b).

Maintaining cleanliness in the household environment is essential to prevent the spread of scabies mites. Proper sanitation practices play an important role in preventing scabies infestations and reducing transmission rates. Mites thrive in unclean environments, such as dirty bedding, carpets and furniture. Regular cleaning practices such as vacuuming carpets, washing bedding and disinfecting surfaces can help eradicate mites and their eggs, reducing the risk of infestation in cats and humans. In addition, maintaining a clutter-free environment reduces mite hiding places, making it easier to detect and treat infestations promptly (Alberfkani & Mero, 2020).

Relationship between Scabies Infection with Sharing Items History

Sharing items such as bedding, clothing, or grooming tools with an infected cat can increase the risk of contracting mange for the owner. Therefore, it is important for cat owners to be aware of the potential risks associated with sharing items with their pets. Scabies is transmitted through close skin-to-skin contact with an infected person or through the use of contaminated items. In the case of cat owners, close contact with an infected cat or sharing items used by the cat can lead to the transmission of scabies mites to humans. Once transmitted, the mites will burrow into the skin, causing intense itching and irritation. Scratching the affected area can lead to secondary bacterial infections, which will aggravate the condition (Cox et al., 2021).

Relationship between Scabies Infection with Pet Grooming History

Grooming is a common activity for cat owners, which involves brushing, combing and sometimes bathing their pets to maintain a healthy coat and skin. However, when cats are infested with mange mites, these parasites can be transferred to their owners' skin during grooming. Close physical contact and shared living quarters create ideal conditions for mite transmission (Purwanto & Hastuti, 2020). The results of this study showed a significant association between cat grooming history and the prevalence of scabies infection in cat owners. Regular grooming activities, such as brushing and bathing, contribute to the elimination of mites and reduction of infestation risk. Conversely, inadequate grooming may facilitate mite transmission and increase scabies outbreaks among pets and even cat owners (Husna et al., 2021).

Grooming history plays an important role in understanding the risk of mange transmission among cat owners. In addition, those who groom without proper protective measures, such as wearing gloves or washing their hands thoroughly afterward, have a higher risk of mite transmission (Triana & Razi, 2020). In addition, factors such as the duration and intensity of grooming sessions can affect the risk of mange transmission. Prolonged and intense grooming sessions, where there is prolonged skin-to-skin contact between the cat and its owner, can significantly increase the risk of mite transfer (Raffi et al., 2019). Preventive measures are essential to minimize the risk of mange transmission among cat owners. Simple practices such as wearing gloves during grooming sessions, bathing pets regularly with medicated shampoos, and maintaining personal hygiene can significantly reduce the chances of transmission (Emeka et al., 2021).

Relationship between Scabies Infection with Cat Scabies History

This study explored the relationship between the history of mange in cats and the likelihood of their owners contracting mange. The study found a significant correlation between cats with a history of mange and the incidence of mange in their owners. This suggests that there is a potential risk of transmission of scabies from infected cats to humans. Appropriate treatment and prevention strategies for mange in cats and their owners are essential to reduce the spread of infection. Regular monitoring and prompt intervention can help reduce the risk of scabies transmission within the household (Romani et al., 2015). Transmission scabies from animals to humans, known as zoonotic scabies, is a well-documented phenomenon. well-documented phenomenon. When a cat is infected with scabies, the mites have the potential to transfer to humans through close contact, thus causing a human scabies infestation. The risk of transmission is higher higher in households that have cats with scabies, especially if proper precautions and care are not taken for both animals and humans (Roswendi & Zakiyah, 2022).

Other studies have shown that there is a correlation between a history of mange in cats and the transmission of mange in humans. Cats that have been previously diagnosed with scabies carry larger numbers of mites on their skin, increasing the risk of human infection. In addition, cats with recurrent mange attacks can become reservoirs of mites, making it difficult to eradicate the parasites from the environment (Xu et al., 2023). When a cat with mange comes into contact with a human, the mites can also infest human skin, leading to a similar infestation. The risk of transmission is higher if the cat has a history of mange, as mites may be more prevalent in the environment. One study revealed that the association between a cat's history of mange and scabies infection in cat owners is significant. Cats with a history of mange tend to carry more mites, increasing the risk of transmission to humans (Tresnasari et al., 2019).

Relationship between Scabies Infection with Number of Pet Cats

As the popularity of owning a cat as a pet increases, so does the concern of transmitting diseases from cats to their owners. Studies have shown that individuals who own multiple cats do have a higher risk of contracting mange compared to those who own one cat or no cats at all. This increased risk may be due to several factors, including the increased likelihood of mite infestation in multi-cat households, close physical contact between cats and their owners, and the

potential for mite transmission between cats within the same household (Trasia, 2021). One of the factors the researchers studied was whether there was a correlation between the number of pet cats in a household and the likelihood of mange infection in cat owners. The rationale behind this investigation lies in the increased risk of mite exposure in households with multiple cats. As more cats are added to a household, the likelihood of one or more cats becoming infected with mites increases, potentially increasing the risk of transmission to humans (Trasia, 2021).

Research shows that the number of pet cats in a household can affect the risk of transmitting scabies to humans. A study found that households with more cats were more likely to have cases of scabies in both cats and humans. Close proximity and increased contact between multiple cats and their owners create an environment conducive to mite transmission (Dagne et al., 2019). In addition, individuals with weakened immune systems, such as the elderly, children, or those with certain medical conditions, may be at higher risk of contracting scabies from their pet cats. The zoonotic potential of scabies highlights the importance of proper hygiene practices, regular veterinary care for pets, and prompt treatment of any suspected cases to prevent further transmission (Yun et al., 2020). Furthermore, the risk of mange transmission is not only influenced by the number of pet cats, but also by health and hygiene practices within the household as a whole. Cats that are not regularly treated for parasites, such as mites, are more likely to harbor infestations that can be transmitted to humans. In addition, poor hygiene practices, such as infrequent hand washing or not cleaning bedding and living areas, can further facilitate the spread of mites between cats and their owners (Tresnasari et al., 2019).

Conclusion

The incidence of scabies infection is closely related to social condition factors such as age, hand washing, home environmental hygiene, history of sharing items, history of pet grooming, history of cat scabies, number of pet cats and family history of scabies. The findings of this study have important implications for the health and well-being of cat owners in WNT Province. The high prevalence of mange among this population (56.5%), highlights the need for targeted public health interventions to raise awareness, improve access to diagnostic and treatment services, and promote preventive measures. Educating cat owners about the risks of scabies and the importance of good hygiene, regular pet care, and prompt treatment of infestations is essential. In addition, providing affordable and accessible healthcare services, including screening and treatment for scabies, can help reduce the burden of this skin condition in cat-owning communities.

Declaration Conflicting Interest
The authors have no conflicts of interest to declare.

Funding
This study was not funded by any institution.

Acknowledgement
The researchers would like to thank the government of West Nusa Tenggara Province for granting research permits so that this study can be carried out and run well. We would also like to thank Politeknik Medica Farma Husada Mataram and fellow lecturers who have contributed morally and materially during this study. We would like to thank all the respondents who participated in this study.

Author Contribution
AA was responsible for writing and design, analysis and interpretation of results. MH was responsible for manuscript submission, interpretation of results and data collection. BBBS was responsible for research license, revision and approval of the final manuscript. The authors have read and approved the final manuscript.

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