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Incidence and Characteristics of Dermatophytosis Lesions in Cats (*Felis catus*) at Go Pet Care Animal Clinic (2020-2022)

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ABSTRACT

Dermatological condition caused by dermatophyte fungi, affects the superficial keratinized structures of the skin. The primary etiological agents include the genera Microsporum, Trichophyton, and Epidermophyton. This study examines the incidence and characteristics of dermatophytosis lesions in domestic cats (Felis catus) at Go Pet Care Animal Clinic from 2020 to 2022. The research utilized secondary data from the clinic's medical records, which is a significant reference institution in Kabupaten Bandung Barat, to assess the prevalence and features of dermatophytosis within this population. The findings revealed a prevalence of 7.5% in 2020, 11.3% in 2021, and 3.7% in 2022. The incidence was highest in cats under 1 year of age, with a notable frequency in Persian breed cats and males. Common lesions identified included localized alopecia primarily in the ear region, alopecia in the back region, and crust formation also in the back area. This study provides critical insights into the epidemiology and clinical presentation of dermatophytosis in domestic cats, offering guidance for improved diagnosis and management of the condition.

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INTRODUCTION

Domestic cats (*Felis catus*) are among the most widely kept pets globally, with their domestication tracing back approximately 10,000 years to the Near East (Kindersley, 2013). They encompass a diverse range of breeds, classified primarily into short-haired and long-haired categories based on fur characteristics (Kindersley, 2013). The COVID-19 pandemic, spanning from 2019 to 2021, introduced significant lifestyle disruptions and heightened stress levels among individuals. During this period, cats have served as a source of emotional support and companionship, contributing to stress relief (Febriani *et al*., 2021). Nevertheless, close human-animal interactions also pose potential health risks, including the transmission of zoonotic diseases such as dermatophytosis.

Dermatophytosis is a fungal infection that affects the skin's superficial keratinized structures, such as the epidermis, nails, hair, and horns (Indarjulianto *et al*., 2017). The primary dermatophyte genera causing this condition are Microsporum, Trichophyton, and Epidermophyton. *Microsporum canis* is a particularly prominent pathogen in both cats and dogs.

In Indonesia, dermatophytosis is highly prevalent, with a reported prevalence rate of 56.7% in cats as of 2017 (Zaki *et al*., 2021). This high prevalence is attributed to the tropical climate of Indonesia, characterized by high humidity and temperature, which fosters dermatophyte proliferation (Husna *et al*., 2020). While dermatophytosis affects various animals, including

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livestock and poultry, it is particularly prevalent in cats, with *M. canis* being more frequently reported in cats compared to dogs.

Several factors contribute to the susceptibility of dermatophytosis, including age, breed, and environmental conditions. Kittens under four months of age are especially vulnerable due to their immature immune systems (Husna *et al*., 2020). Long-haired breeds are more prone to dermatophytosis than short-haired breeds, as their dense fur provides a more conducive environment for fungal growth (Indarjulianto *et al*., 2017). Additionally, the high humidity typical of Indonesia's equatorial climate facilitates dermatophyte and pathogen proliferation (Adzima *et al*., 2013).

Clinical manifestations of dermatophytosis include scales, hair loss, papules, erythema, hyperpigmentation, and alterations in nail appearance or growth. Lesions are often asymmetrical, commonly affecting the head, feet, and tail, and typically present as ring-shaped areas with inflammatory borders (Al-Janabi, 2014). This study aims to evaluate the incidence and characterize the dermatophytosis lesions in domestic cats at Go Pet Care Animal Clinic from 2020 to 2022, thereby providing valuable insights into the epidemiology and clinical presentation of this prevalent condition.

MATERIALS AND METHODS

This descriptive study adopts a retrospective design to analyze the incidence and characteristics of dermatophytosis lesions in domestic cats (*Felis catus*) at Go Pet Care Animal Clinic from 2020 to 2022. The research relies on secondary data, specifically medical records, which serve as the primary data source for the investigation. Medical records were selected based on predetermined inclusion criteria: records of cats diagnosed with dermatophytosis within the study period (2020-2022) that included complete information on essential variables such as age, breed, and clinical findings. Records failing to meet these criteria or lacking complete data were excluded from the study. The extracted data were entered into Microsoft Excel for descriptive statistical analysis. This analysis encompassed summarizing the prevalence of dermatophytosis, categorizing the characteristics of lesions, and examining variations related to age, breed, and gender. Descriptive statistics were utilized to present the findings, offering a detailed overview of the epidemiology and clinical presentation of dermatophytosis within the study population.

RESULTS AND DISCUSSION

The investigation conducted at Go Pet Care Animal Clinic from 2020 to 2022 revealed a total of 3,081 cat patients, with a distribution of 399 in 2020, 1,713 in 2021, and 969 in 2022. Out of these, 261 cats were diagnosed with dermatophytosis, of which 19 met the study's inclusion and exclusion criteria. The prevalence rates of dermatophytosis were 7.5% in 2020, 11.3% in 2021, and 3.7% in 2022. Table 1 and Figure 1 illustrate the distribution of dermatophytosis cases across these years, with the highest incidence recorded in 2021 (195 cases), followed by 36 cases in 2022, and 30 cases in 2020.

Table 1. Distribution of Cat Patients from 2020-2022

Research Variable	Years of 2020-2022	
	Number	Percentage (%)
Age		
< 6 month	16	84
7 month-2 years	2	11
> 2 years	1	5
Total	**19**	**100**
Breed		
Long hair	16	84
Short hair	3	16
Total	19	100
Gender		
Male	12	63
Female	7	37
Total	**19**	**100**

The data indicate a peak in dermatophytosis prevalence in 2021, which subsequently declined in 2022. The higher prevalence in 2021 may be attributed to increased veterinary visits compared to the restrictions imposed in 2020 due to the Large-Scale Social Restrictions (LSSR) for COVID-19. The LSSR led to reduced public activity and limited veterinary clinic visits, likely resulting in fewer reported cases of dermatophytosis in 2020. Additionally, the higher number of cases in 2021 could be linked to increased public mobility post-restriction, resulting in more frequent reporting and diagnosis of dermatophytosis.

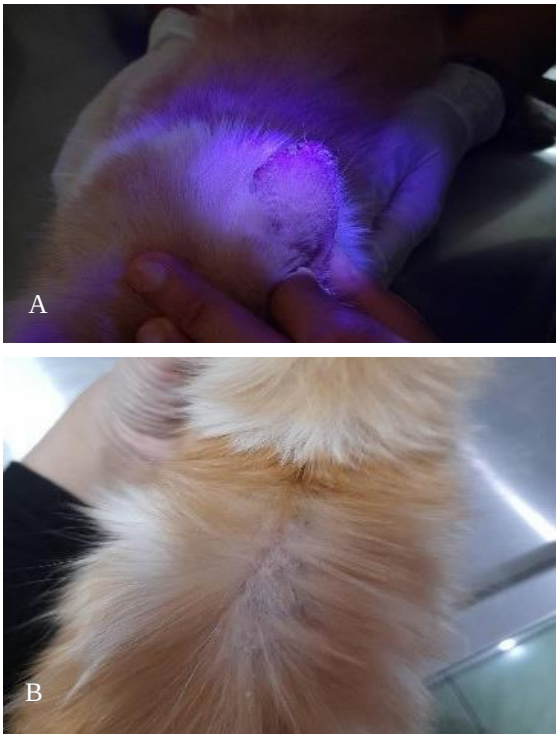

Figure 1. (A) Utilization of a Wood's lamp for dermatophytosis diagnosis at Go Pet Care Animal Clinic; (B) Crust lesions observed on the back of a

cat diagnosed with dermatophytosis at Go Pet Care Animal Clinic.

Dermatophytosis cases were predominantly observed during the dry season, with 12 cases (63%) occurring in this period, compared to 7 cases (37%) in the rainy season (Table 2). This finding contrasts with Murmu *et al.,* (2015), who reported a higher incidence of dermatophytosis during the rainy season. The discrepancy may be attributed to increased indoor activities during the dry season, which could heighten the risk of fungal infection. The examination of dermatophytosis was performed using a Wood's lamp (Figure 1A) and fungal identification via microscopy, with signs including alopecia, crusts (Figure 1B), erythema, papules, pustules, scales, epidermal collars, and hyperpigmentation.

Table 2. Percentage of Cats Infected with Dermatophytosis by Season

Season	Period 2020-2022	
	Number	Percentage (%)
Dry season	12	63
Rainy season	7	37
Total	**19**	**100**

The climate data from the Badan Meteorologi Klimatologi dan Geofisika (BMKG) indicated average temperatures of 27°C in 2022, 27.09°C in 2021, and 27.2°C in 2020, consistent with Nweke and Eke (2018), who found optimal growth conditions for dermatophyte molds at temperatures between 25-28°C. The average humidity levels were 82% in 2020, 77.5% in 2021, and 79% in 2022. This aligns with Sharma *et al.* (2012), who noted that *Microsporum canis* thrives at relative humidity levels above 50%, with optimal spore production occurring at 75% or higher.

Age analysis revealed that the majority of dermatophytosis cases were in cats under 6 months old (84%), with fewer cases in older age groups. This susceptibility in young cats can be attributed to their underdeveloped immune systems (Cafarchia *et al.,* 2004) and lower levels of linoleic acid or sebum, which can inhibit fungal growth (Lewis *et al*., 1991).

Long-haired breeds, particularly Persian cats, were significantly more affected, with 52% of cases in this breed. The long fur of Persian cats likely retains fungal spores, increasing their susceptibility to dermatophytosis (Bajwa, 2020). Additionally, their long fur may impair effective grooming, exacerbating infection risk (Sattasathuchana *et al*., 2020).

Gender distribution showed that 63% of the cases were in males and 37% in females. This finding diverges from some studies indicating a higher prevalence in female cats (Indarjulianto *et al*., 2017) or male cats (Cafarchia *et al.,* 2004). The observed gender imbalance may be due to a disproportionate sample size.

Lesions predominantly (Table 3 and Figure 2) included localized alopecia in the ear region (6 cases), alopecia on the back (5 cases), and crusts on the back (6 cases). Other lesions included localized alopecia in various regions and erythema in the ear and neck. These findings are consistent with Paryuni *et al*. (2020) and Outerbridge (2006), who identified similar clinical signs in dermatophytosis. Crust formation was particularly noted on the back, neck, and extremities, aligning with Neuber (2008).

Table 3. Characteristics of Dermatophytosis Lesions in Cats

Lesion	Head					Extremities			Body		
	E	EY	F	N	OE	UE	LE	T	A	B	LT
Alopecia	6	0	0	1	3	1	0	1	0	5	2
Crust	0	0	0	0	1	1	1	0	0	6	0
Errythema	1	0	0	0	1	0	0	0	0	0	0

Description: E: Ear; UE: Upper Extremities; EY: Eye, LE: Lower Extremities, F: Forehead, T: Thorax, N: Nose, A: Abdomen, OE: Other Areas, B: Back, TL: Tail

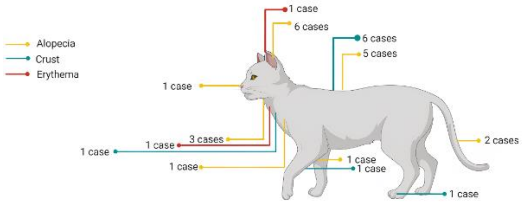

Figure 2. Schematic Representation of Dermatophytosis Lesion Characteristics in Cats at Go Pet Care Clinic.

Alopecia, primarily found in 15 of 19 cats, and erythema, observed in 2 cats, result from inflammatory reactions in the infected skin (Lakshmipathy and Kannabiran, 2010). The fungal invasion and attachment to keratin lead to inflammation and subsequent hair loss (Paryuni *et al.,* 2020). Overall, the study provides valuable insights into the epidemiology and clinical presentation of dermatophytosis in domestic cats, highlighting the influence of environmental factors, age, and breed on the prevalence and characteristics of the condition.

CONCLUSION

The study found varying rates of dermatophytosis in domestic cats at Go Pet Care Animal Clinic 7.5% in 2020, 11.3% in 2021, and 3.7% in 2022, with the highest in 2021 due to increased diagnostics. The condition was most common in cats under 1 year, particularly in Persian breeds and males. Clinical signs included localized alopecia, mainly on the ears and back, and crust formation. These results highlight the need for targeted prevention and management, especially for young, long-haired, and male cats.

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AUTHORS' CONTRIBUTIONS

SK and IMWD were responsible for designing the research. SAF conducted the research,

performed the analysis, and drafted the manuscript. SK and IMWD reviewed the draft manuscript, provided critical revisions, and approved the final version for submission.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest regarding the publication of this manuscript.

FUNDING INFORMATION

This research was conducted without any external funding.

ETHICAL APPROVAL

The study was formally approved by the Research Ethics Committee of the Faculty of Medicine, Universitas Padjadjaran, under reference number 1197/UN6.KEP/EC/2023. This approval confirms that the research adhered to established ethical standards regarding animal welfare and data management.

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