



UNIVERSITI PUTRA MALAYSIA

**CAT WELFARE NEEDS: CURRENT KNOWLEDGE AND PRACTICE
AMONG MALAYSIAN CAT OWNERS**

LEE JIA WEI

**Ip
FPV 2023 54**

**CAT WELFARE NEEDS: CURRENT KNOWLEDGE AND PRACTICE
AMONG MALAYSIAN CAT OWNERS**

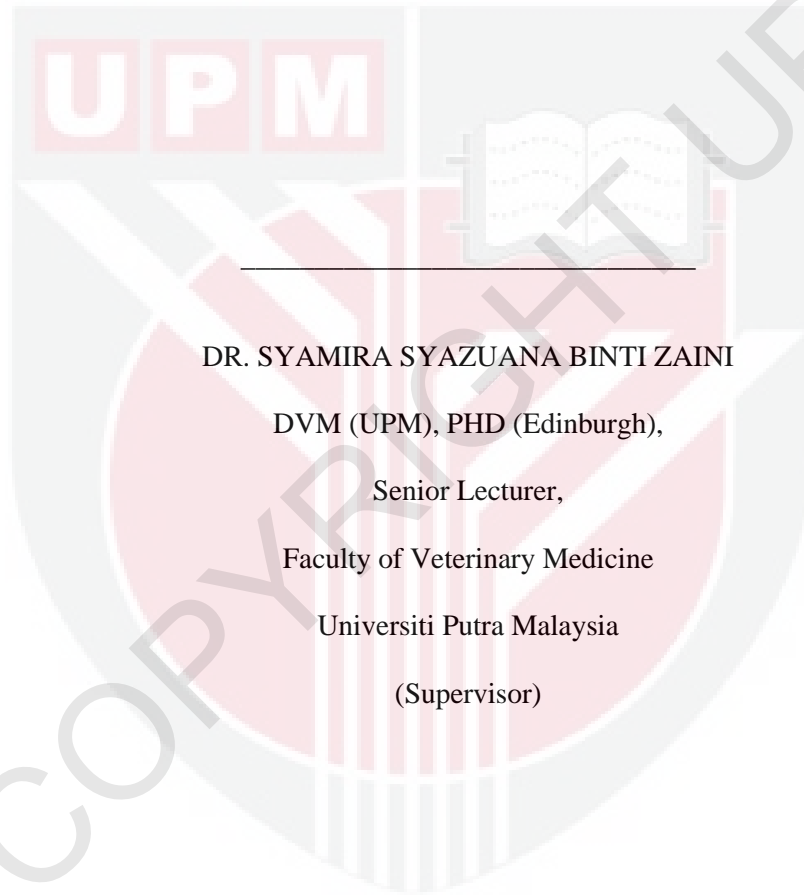
LEE JIA WEI

The background features a large, semi-transparent watermark of the Universiti Putra Malaysia (UPM) logo. The logo is a shield-shaped emblem with a red and white color scheme. At the top left, the letters 'UPM' are displayed in a bold, white font within a red rectangular box. Below this, there is a stylized white graphic of a book or an open book. The shield is divided into several sections by white lines, and the overall design is symmetrical. The text of the project paper is centered over this watermark.

A project paper submitted to the
Faculty of Veterinary Medicine, Universiti Putra Malaysia
In partial fulfilment of the requirement for the
DEGREE OF DOCTOR OF VETERINARY MEDICINE
Universiti Putra Malaysia,
43400 Serdang, Selangor Darul Ehsan.

December 2023

It is hereby certified that we have read this project paper entitled “Cat Welfare Needs: Current Knowledge and Practice among Malaysian Cat Owners”, by Lee Jia Wei and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfilment of the requirement for the course VPD 4999 -Final Year Project.



DR. SYAMIRA SYAZUANA BINTI ZAINI

DVM (UPM), PHD (Edinburgh),

Senior Lecturer,

Faculty of Veterinary Medicine

Universiti Putra Malaysia

(Supervisor)

@COPYRIGHT UPM

ASSOC. PROF. DR. OOI PECK TOUNG

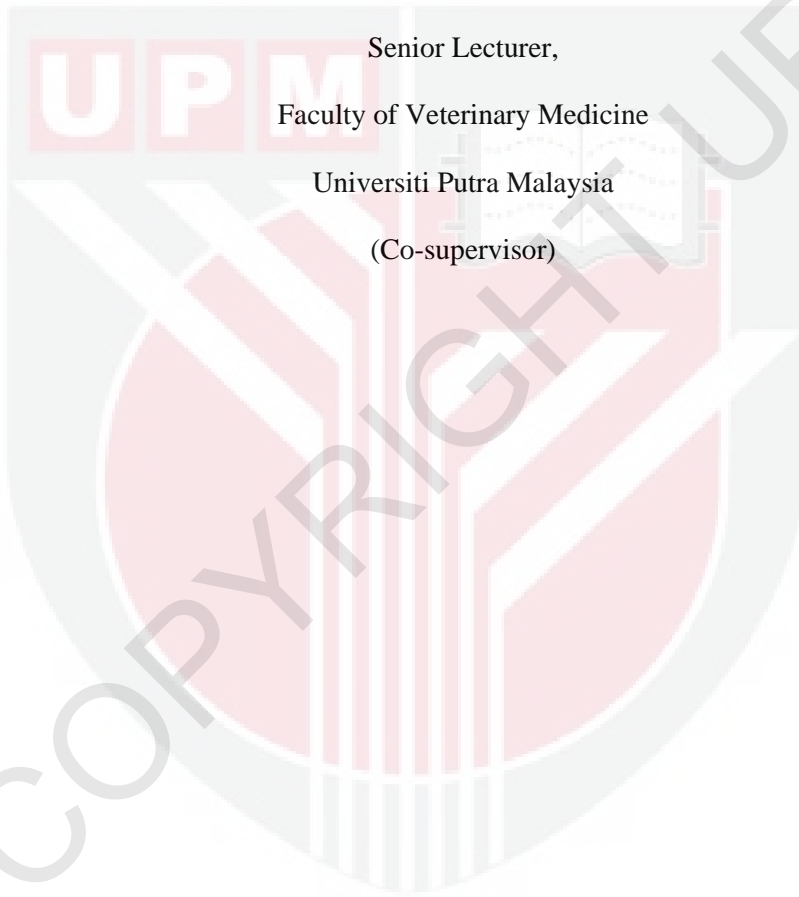
DVM (UPM), PHD (Glasgow),

Senior Lecturer,

Faculty of Veterinary Medicine

Universiti Putra Malaysia

(Co-supervisor)



@COPYRIGHT-UPM

DEDICATION

This project paper is dedicated to my lovely family, whose unwavering support and encouragement made all things possible throughout this project,

My mother, Heng Lee Keng

My father, Lee Shik Khim

My partner, Chan Wai Kian

My friends,

Lecturers,

&

And to all the countless individuals who have directly and indirectly been involved in the completion of this project.

Thank you for your continuous support and care.

ACKNOWLEDGEMENT

First of all, I would like to express my deepest gratitude to my project supervisor, Dr Syamira Syazuana Binti Zaini for her time and patience in guiding me throughout the duration of this project. The experiences in learning and gaining knowledge from this project would not have been possible without my supervisor. I am fortunate to have her as my supervisor in providing thoughtful comments and guidance throughout my final year project and thesis writing.

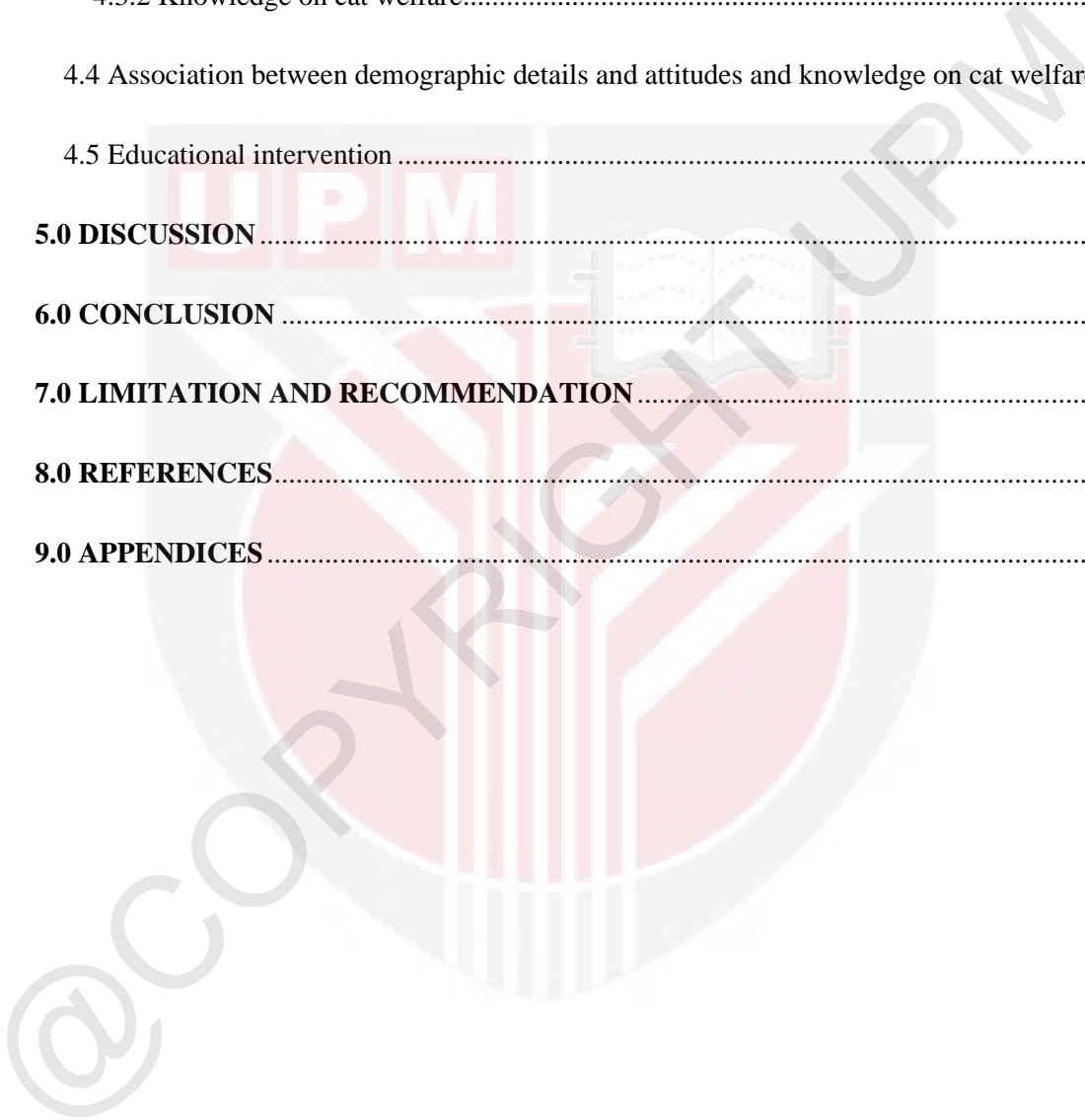
Besides, my sincere gratitude goes to my co-supervisor, Assoc. Prof Dr Ooi Peck Toung for his support, guidance and opinion in the improvement of this project.

My heartfelt thanks to my lecturers who have helped me throughout this project, Dr Michelle Fong Wai Cheng and Prof. Katherine A. Houpt; partner, Chan Wai Kian; friends, Nu'man Nor Shahrin, Liew Cui Sing, Lew Li Rong and Aneetta Puvaneswaran Chettiar; fellow DVM 2024 students, my family for the advice, assistance, support and encouragement throughout this study. Thank you to everyone who helped me directly or indirectly upon the completion of this Final Year Project.

TABLE OF CONTENT

	Page
TITLE	i
CERTIFICATION	ii
DEDICATION	iv
ACKNOWLEDGEMENT	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABSTRAK	x
ABSTRACT	xii
1.0 INTRODUCTION	14
2.0 LITERATURE REVIEW	15
3.0 MATERIALS AND METHODS	18
3.1 Ethical approval, consent and data management	18
3.2 Participant recruitment	18
3.3 Questionnaire development	18
3.4 Pilot questionnaire	21
3.5 Statistical analysis	22
4.0 RESULTS	23
4.1 Demographic details: Characteristics of cat owner and cat care	23

4.2 General information about cat management	25
4.3.1 Attitude towards cat welfare	31
4.3.2 Knowledge on cat welfare.....	32
4.4 Association between demographic details and attitudes and knowledge on cat welfare ...	33
4.5 Educational intervention	34
5.0 DISCUSSION	35
6.0 CONCLUSION	39
7.0 LIMITATION AND RECOMMENDATION	39
8.0 REFERENCES	41
9.0 APPENDICES	45



LIST OF TABLES

		Page
Table 3.1	Overall questions or statements in the questionnaire.	20
Table 4.1	Demographic details of respondents.	24
Table 4.2	Overall question on general information about cat management.	26
Table 4.3a	Median, mean and standard deviation (SD) of Malaysian cat owners' responses on attitude towards cat welfare.	32
Table 4.4	Kruskal Wallis test to test the association between demographic details and attitude and knowledge on cat welfare.	35

LIST OF FIGURES

	Page
Figure 4.1	Type of basic environmental resources. 29
Figure 4.2	The relationship between number of cats to the number of litter boxes. 30
Figure 4.3a	Proportion of Malaysian cat owners on the responses on attitudes. 32
Figure 4.3b	Proportion of Malaysian cat owners on the responses on knowledge. 33
Figure 4.5	Percentage of respondents on the type of preferred educational intervention in future. 36

ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada keperluan kursus VPD 4999 - Projek Tahun Akhir.

**KEPERLUAN KEBAJIKAN KUCING: PENGETAHUAN DAN AMALAN SEMASA
DALAM KALANGAN PEMILIK KUCING DI MALAYSIA**

Oleh

Lee Jia Wei

2023

Penyelia: Dr. Syamira Syazuana Zaini

Penyelia bersama: Prof Madya Dr. Ooi Peck Toung

Kucing merupakan salah satu pilihan haiwan kesayangan di kalangan rakyat Malaysia; walaubagaimanapun, keperluan kesejahteraan kucing sering kali tidak mendapat perhatian yang mencukupi. Kajian ini bertujuan untuk menyelidik penyediaan sumber keperluan asas kucing di Malaysia dan tahap pengetahuan rakyat Malaysia tentang keperluan kesejahteraan kucing. Soal selidik dalam talian (*Google Form*) telah dibangunkan (i) untuk menilai ketersediaan sumber keperluan asas bagi kucing di Malaysia dan (ii) untuk menyiasat tahap pengetahuan dan sikap pemilik kucing mengenai keperluan kesejahteraan kucing. Soal selidik dalam talian ini diedarkan kepada semua pemilik kucing di Malaysia yang berumur antara 18 hingga 50 tahun. Sejumlah 405 responden di Malaysia telah menjawab soalan kaji selidik ini. Keputusan mendapati kebanyakan responden bagi kaji selidik ini adalah wanita (N= 331, 81.7%) yang berumur antara 18 hingga 24 tahun (N= 169, 41.7%). Hasil kajian menunjukkan bahawa lebih daripada separuh responden

menyedari keperluan asas kucing (N= 247, 61%) dan kurang daripada separuh menyedari Prinsip Kebebasan Haiwan (N= 164, 40.5%, "sangat setuju"). Mereka juga menyatakan bahawa kucing mereka mempunyai tahap kebajikan yang baik (N= 168, 41.5%). Walaupun kebanyakan responden menyatakan kucing mereka menerima sumber keperluan asas, seperti kotak nyahtinja (N= 348, 85.5%), hanya 25.7% (N= 104) responden yang menyediakan kotak nyahtinja yang mencukupi untuk kucing mereka. Umur, jantina, pekerjaan, dan lokasi dicatat sebagai faktor demografi penting yang mempengaruhi sikap dan pengetahuan tentang keperluan kesejahteraan kucing. Secara keseluruhannya, hasil dari kajian ini menunjukkan bahawa pendidikan dan kesedaran tentang keperluan kesejahteraan kucing perlu ditekankan di kalangan masyarakat Malaysia, dan hal ini boleh disebarkan melalui kaedah seperti media sosial, internet, dan pameran haiwan peliharaan.

Kata kunci: *Kebajikan kucing, sumber keperluan asas, Malaysia, persepsi, pengetahuan*

ABSTRACT

An abstract of the project paper presented to the Faculty of Veterinary Medicine in partial fulfilment of the course VPD 4999- Final Year Project.

**CAT WELFARE NEEDS: CURRENT KNOWLEDGE AND PRACTICE AMONG
MALAYSIAN CAT OWNERS****By****Lee Jia Wei****2023****Supervisor: Dr. Syamira Syazuana Zaini****Co-supervisor: Assoc. Prof. Dr. Ooi Peck Toung**

Cats are one of the favoured choices for pets among Malaysians; nevertheless, their cat welfare needs often receive insufficient attention. This study aims to investigate the provision of basic environmental resources to Malaysian cats and the knowledge of Malaysians about cat welfare needs. An online questionnaire (Google Form) was developed (i) to evaluate the availability of environmental resources for cats in Malaysia and (ii) to determine the knowledge and attitude of cat owners regarding cat welfare needs. This online survey was distributed to all cat owners in Malaysia aged between 18 and 50 years old. A total of 405 Malaysian respondents completed the questionnaire. Majority of the respondents were female (N= 331, 81.7%) and aged between 18 to 24 (N= 169, 41.7%). Findings showed that more than half of respondents were aware of the basic needs of cats (N= 247, 61%) and fewer than half were aware of the Five Principles of Animal Freedom (N= 164, 40.5%, “strongly agree”) respectively. They also claimed that their cats have

good welfare (N= 168, 41.5%). While most of the respondents stated that their cats received basic environmental resources, such as a litter box (N= 348, 85.5%), only 25.7% (N= 104) of respondents provided enough litter boxes for their cats. Age, gender, occupation and state were recorded as important demographic factors that influenced the attitude and knowledge of cat welfare needs. In general, results from this study suggest that education and awareness of cat welfare needs should be emphasised among the Malaysian public, and this can be disseminated via respondents' preferred modes such as social media, internet, and pet exhibitions.

Keywords: *cat welfare, environmental resources, Malaysia, cat owner, knowledge*

1.0 INTRODUCTION

Cats are the most popular companion animals worldwide, and this includes Malaysia (Debbra et al., 2019). A study conducted in one of the states in Malaysia stated that at least 71% owned cats as their pet animals (Debbra et al., 2019). Given the substantial population of pet cats in the nation, this underscores the paramount importance of upholding their well-being, in other words, their welfare needs. Despite the existence of some guidelines, such as those from esteemed organizations like the American Association Feline Practitioner (AAFP) and International Study of Feline Medicine (ISFM), the challenge persists: ensuring the comprehensive fulfilment of cat welfare needs continues to be unattainable (Zaini et al., 2023). Several studies have suggested that many cat owners lack the rudimentary knowledge necessary for optimal cat care, such as how to provide basic health care, or how to provide an ideal environment for this species (Grigg and Kogan, 2019; Stella and Croney, 2016). Understanding why and what we can do to improve cat welfare is required to help sustain the cats' welfare. Up to this date, information about the welfare of basic enrichments of cats among Malaysians is limited.

This study aims to investigate the availability of environmental resources for cats in Malaysia and to determine the knowledge and attitude of cat owners regarding cat welfare needs. The research posits two primary hypotheses aimed at comprehensively understanding the current state of cat welfare in the Malaysian context. The first hypothesis postulates that Malaysian cat owners lack a comprehensive understanding of their cats' welfare needs, particularly in terms of providing essential environmental resources. The second hypothesis asserts that the welfare of cats in Malaysia is not optimally addressed by their owners.

2.0 LITERATURE REVIEW

Definition of animal welfare

Welfare needs is defined as “*the physical and mental state of an animal in relation to the conditions in which it lives and dies*” (World Organisation for Animal Health, 2019). For example, the animal welfare needs consist of; (i) the need for a suitable environment, (ii) the need for a suitable diet, (iii) the need to be able to exhibit normal behaviour patterns, (iv) the need to be housed with, or apart from, other animals and (v) the need to be protected from pain, suffering, injury and disease (Ryan et al., 2019). Thus, addressing animal welfare needs is crucial as this could reduce the potential development of behavioural development (Ellis, 2009) such as aggression (Amat et al., 2016) and inappropriate urination (Foreman-Worsley, & Farnworth, 2019).

Feline environmental needs

To promote a healthy feline environment, that involves a multifaceted approach, encompassing not only their physical health but also their emotional well-being, environmental enrichment, and the dynamics of their interactions with their human caregivers, the American Association of Feline Practitioners (AAFP) and International Society of Feline Medicine (ISFM) have developed guidelines organised around five core concepts, referred to as 'pillars,' (Ellis et al., 2013). The five pillars of a healthy feline environment include providing a safe place (Pillar 1), providing multiple and separated key environmental resources (Pillar 2) (e.g. including toileting areas, food and water bowls, play areas, resting or sleeping areas, scratching areas and hiding

areas), providing the opportunity for play and predatory behaviour (Pillar 3), providing positive, consistent and predictable human-cat social interaction (Pillar 4) and providing an environment that respects the importance of the cat's sense of smell (Pillar 5) (Ellis et al., 2013).

Attitudes towards feline environmental needs

Understanding the attitudes of cat owners towards feline environmental needs is crucial for advancing the welfare of domestic cats. A comparable investigation by Grigg and Kogan in 2019 indicated that numerous cats in private residences may be getting limited environmental enrichment, especially concerning interactive activities such as playing with a friendly human or exploring varied environments in contrast to static forms of enrichment such as cat toys like stuffed mice. Another study by Lawson et al. in 2020 detailed significant shortcomings in the care provided to pet cats in Australian households, which are likely contributing to various health and welfare issues. Other studies also highlighted the influence of cultural, socio-economic, and urbanization factors on these attitudes. For instance, socio-demographic factors, e.g., owner's occupation or gender, are significantly associated with the owner's opinions and practices of care provided to their pet cats, e.g., type and amount of food or exercise provided to pet cats (Naughton et al., 2022).

Educational intervention on feline welfare needs

In the realm of feline welfare, educational interventions play a pivotal role in equipping cat owners with the knowledge and skills necessary to meet their pets' needs. Example of educational interventions included are social media (Aji, 2019) and education (Grigg and

Kogan, 2019; Rioja-Lang et al., 2019). A study was performed by Hawkins in 2020 to study the effectiveness of a new 'serious game' named Pet Welfare for children aged 7-12 which aimed to foster positive interaction between animals and children. The findings demonstrated a positive impact on knowledge about animal welfare needs (Hawkins et al., 2020). Another study by stated that animal protection groups utilize their websites to educate the public on matters related to animal welfare (Szpargala, 2021). For example, the Polish animal rights group known as Otwarte Klatki (Open Cages) employs platforms such as Facebook and Twitter to document instances of animal abuse and provide information primarily focused on the welfare of animals. Prior studies also shown that direct contact with animals is essential for cultivation of compassion, moral concern, species-specific knowledge of animal care, understanding of appropriate about pet care and needs and promoting human-animal bonds (Melson, 2003; Kurdek, 2008; Serpell, 2004). However, involving animals in education raises welfare concerns and there is still limited research on the impact of their involvement in animal welfare education (Fine & Huss, 2017).

3.0 MATERIALS AND METHODS

3.1 Ethical approval, consent and data management

The study was approved by the Ethics Committee for Research involving Human Subjects of University Putra Malaysia (JKEUPM) on 10th July 2023: JKEUPM approved reference number JKEUPM-2023-463 (APPENDIX II and III). All the answers were kept confidential and were not shared with third parties.

3.2 Participant recruitment

A total of 405 Malaysian cat owners participated in the study. The online questionnaire was disseminated via various social media platforms (e.g., Facebook, WhatsApp, Instagram and Twitter).

3.3 Questionnaire development

The questionnaire was adapted from a study conducted in Italy (Tateo et al., 2023). The questionnaire consists of five sections which were (i) demographic details (e.g. gender, age, state or federal territories, educational level and occupation), (ii) general information about cat management (e.g. the number of cats owned, type of management of cats, type of resources provided for their pet cats, number of litter boxes provided etc.), (iii) attitude, (iv) knowledge and (v) educational intervention (Table 3.1).

Table 3.1 Overall questions or statements in the questionnaire.

Sections	Question/Statements
(i) Demographic details	Gender Age (year) Federal territories / States Education level Occupation
(ii) General information about cat management	How many cat(s) do you own? What is the gender of your cat(s)? How old is your cat(s)? What is the breed of your cat(s)? Does your cat have any health problems? If yes, what health problem? How do you manage your cat(s)? What type of resource(s) that you provide for your cat (s)? How many litter box(es) do you provide to your cat (s)? What is (are) the type of litter box(es)? Where is(are) the litter box(es) located? Balcony, bathroom, kitchen, basement, living room, bedroom, entrance, stairs, garden What type of cat litter substrate do you use?

How often do you scoop the litter?

How often do you wash the box and replace the litter?

Does your cat eliminate outside the litter box?

If your cat eliminates outside the litter box, what does your cat eliminate?

Where does your cat eliminate (urine/faeces) ?

Posture when your cat eliminates outside the litter box?

Type of housing

Is there a dog in the family?

What is the number of dogs in the family?

Are there any animals other than cats and dogs?

The surface of your housing, in metre square, divided by the number of cat(s) owned

(iii) Attitude towards cat welfare

My cat has good welfare.

I prefer to confine my cat in the house.

I have ample time to manage my cat.

Having a cat is expensive

I am stressed with cat house soiling (e.g., urinating out of the litter box, urine marking and others).

(iv) Knowledge on cat welfare

I am aware of the basic needs of cats.

I am aware of the Five Principles of Animal Freedom.

	Cats can easily contract urination problems if there is no clean litter box.
	Cats need a clean litter box.
Educational intervention	How do you typically obtain information about cat care and welfare?
	Which type of educational intervention would you prefer to have in future?

For the third and fourth section, there are a total of nine items developed to assess the attitude and knowledge of Malaysian cat owners towards cat welfare. Respondents were asked to state their agreement level using Likert scale of 1-5 (with 1 indicating ‘strongly disagree’ and 5 ‘strongly agree’). The last section aims to gather data from respondents on their current approach in gathering information on cat welfare and to investigate the preferable modes for future educational interventions (APPENDIX I).

The questionnaire was prepared in dual language (i.e. English and Bahasa Malaysia). The questionnaire was created using Google Form, an online tool (Google Workspace) used to develop, distribute and collect data from respondents in Malaysia.

3.4 Pilot questionnaire

The survey was pilot tested by a number of specialists namely animal welfare and behaviour experts, academician and veterinarians which aimed to check the ambiguity and/or potentially missing or inappropriate response options, with revisions made based on the results of the pilot testing.

3.5 Statistical analysis

Descriptive analysis was conducted for each question using Microsoft Excel to calculate response percentages. IBM SPSS Statistics Version 27 was used for statistical analysis. Data were tabulated in Microsoft Excel, and statistical analyses were performed using IBM® SPSS® software. Descriptive statistics, including percentages, means, medians, and standard deviations, were utilised to summarise the data. Inferential analysis, such as the Kruskal Wallis test, was employed to investigate relationships between demographic details, knowledge and attitude, with statistical significance set at $P < 0.05$.

4.0 RESULTS

4.1 Demographic details: Characteristics of cat owner and cat care

A total of 405 respondents completed the questionnaire (details as in Table 4.1) with a most respondents were female (81.7 %, n= 331), 41.7% (n= 169) aged between 18 to 24 years old, and 34.3% (n= 139) reside in Selangor. The majority of those who responded to this questionnaire held a Bachelor's Degree (65.9%, n=267) and the majority who responded were students (34.6%, n=140).

Table 4.1 Demographic details of respondents

Demographics	% Malaysian Cat Owners (n)	
*Gender	Female	81.7% (331)
	Male	18.3% (74)
*Age (year)	18-24	41.7% (169)
	25-32	29.1% (118)
	33-40	16.8% (68)
	41-50	10.4% (42)
	>50	2.0% (8)
*Federal territories / States	Selangor	34.3% (139)
	Federal territory of Kuala Lumpur	14.3% (58)
	Johor	11.1% (45)
	Penang	9.1% (37)
	Pahang	6.7% (27)
	Perak	6.7% (27)
	Kedah	3.5% (14)
	Sarawak	3.0% (12)
	Sabah	2.5% (10)

	Kelantan	2.2% (9)
	Negeri Sembilan	2.2% (9)
	Terengganu	2.0% (8)
	Malacca	1.5% (6)
	Federal Territory of Putrajaya	0.5% (2)
	Perlis	0.5% (2)
	Federal Territory of Labuan	0% (0)
<hr/>		
Education level		
	Bachelor Degree	65.9% (267)
	Diploma / Matriculation / STPM	18.8% (76)
	Master Degree	6.4% (26)
	Secondary School	6.2% (25)
	PhD	1.7% (7)
	Other	1.0% (4)
<hr/>		
*Occupation		
	Student	34.6% (140)
	Government servant	33.8% (137)
	Private company staff	12.3% (50)
	Self-employed	10.6% (43)
	Unemployed	4.7% (19)
	Prefer not to say	3.0% (12)
	Other	0.9% (4)

The table shows the percentage (number of participants) in each demographic's questions. Note: n=number of participants, *P<0.05

4.2 General information about cat management

Table 4.2 provides an overview of general information about cat management among Malaysian cat owners. The data, presented as percentages with corresponding participant numbers, covers various aspects of cat ownership. It reveals that a significant portion of respondents own cats in small groups (2-3 cats) (32.6%, n=132) or large groups (4+ cats) (35.8%, n=145) with a majority having neutered females. The age distribution of cats shows a substantial number falling within the 2-5 years range. Most respondents own mixed-breed cats, and a considerable percentage is aware of their cats' basic needs.

Table 4.2 Overall question on general information about cat management

General information about cat management	% of Malaysian Cat Owners (n)
How many cat(s) do you own?	
Cat living alone (1)	31.6% (128)
Small group (2-3)	32.6% (132)
Large group (4+)	35.8% (145)
Other	0.0% (0)
What is the gender of your cat(s)?	
Female	19.0% (133)
Neutered Female	33.3% (233)
Male	16.6% (116)
Neutered Male	31.1% (218)
Other	0.0% (0)
How old is your cat(s)?	
<2 years	35.3% (196)
2-5 years	42.6% (237)
>5 years	22.1% (123)
What is the breed of your cat(s)?	
Pedigree	20% (99)
Mixed breed	79% (392)
Not sure	1% (5)

Does your cat have any health problems?		
	Yes	24.2% (98)
	No	67.2% (272)
	I do not know	5.9% (24)
	Other	2.7% (11)
If yes, what health problem?		
	Kidney and urinary problems	28.3% (41)
	Skin disease	23.4% (34)
	Respiratory system	13.8 (20)
	Other	34.5% (50)
How do you manage your cat(s)?		
	In cage	3.4% (14)
	Outdoor	9.6% (40)
	Indoor	56.4% (234)
	Semi roamer	30.6% (127)
	Other	0.0% (0)
What type of resource(s) that you provide for your cat (s)?		
	Water bowl	98.8% (402)
	Feed bowl	98.3% (400)
	Litter box	85.5% (348)
	Comfortable resting place	82.3% (335)
	Hiding place	59.2% (241)
	Toy	78.9% (321)
	Scratching post	66.1% (269)
	Other	3.2% (13)
How many litter box(es) do you provide to your cat (s)?		
	0	8.9% (36)
	1	34.8% (141)
	2	27.4% (111)
	3	9.6% (39)
	4	6.4% (26)
What is (are) the type of litter box(es)?		
	Open	55.1% (223)
	Covered	12.8% (52)
	Open and covered	24.7% (100)
	Not related	6.7% (27)
	Other	0.7% (3)
Where is(are) the litter box(es) located? Balcony, bathroom,		
	Yes	74.6% (302)

kitchen, basement, living room, bedroom, entrance, stairs, garden	No to all locations listed	24.0% (97)
	Not related	0.0% (0)
	Other	1.5% (6)
<hr/>		
What type of cat litter substrate do you use?	Clumping	64.2% (260)
	Non-clumping	4.2% (17)
	Biodegradable	19.0% (77)
	Silica gel	2.5% (10)
	Not related	7.7% (31)
	Other	2.5% (7)
<hr/>		
How often do you scoop the litter?	More than twice a day	18.8% (76)
	Twice a day	30.4% (123)
	Once a day	31.6% (128)
	Twice a week	4.9% (20)
	Thrice a week	3.5% (14)
	Not related	7.9% (32)
	Other	3.0% (12)
<hr/>		
How often do you wash the box and replace the litter?	Less than two or three times a week	17.5% (71)
	Once a week	29.9% (121)
	Every ten to twenty days	18.8% (76)
	Once a month	21.0% (85)
	Not related	7.9% (32)
	Other	4.9% (20)
<hr/>		
Does your cat eliminate outside the litter box?	Yes	32.8% (133)
	No	65.4% (265)
	Other	1.7% (7)
<hr/>		
If your cat eliminates outside the litter box, what does your cat eliminate?	Only urine	14.6% (59)
	Only faeces	6.7% (27)
	Urine and faeces	25.2% (102)
	Not related	52.3% (212)
	Other	1.2% (5)
<hr/>		
Where does your cat eliminate (urine/ faeces)?	Same spot	40.7% (165)
	Different spot	25.2% (102)
	Not related	33.8% (137)

	Other	0.2% (1)
Posture when your cat eliminates outside the litter box?	Squatting	37.3% (151)
	Standing with the tail raised	9.9% (40)
	Have not observed	17.5% (71)
	Not related	34.8% (141)
	Other	0.5% (2)
Type of housing	Apartment	24.9% (101)
	Terrace	54.3% (220)
	Bungalow	11.9% (48)
	Other	8.9% (36)
Is there a dog in the family?	Yes	16.0% (63)
	No	84.0% (342)
What is the number of dogs in the family?	0	83.7% (339)
	1	9.1% (37)
	2	3.7% (15)
	3	0.5% (2)
	>3	3.0% (12)
Are there any animals other than cats and dogs?	Yes	24.2% (98)
	No	75.8% (307)
The surface of your housing, in metre square, divided by the number of cat(s) owned	<25	12.8% (52)
	25-49	23.0% (93)
	50-99	15.8% (64)
	≥100	23.0% (93)
	Not sure	25.4% (103)
	Other	0.0% (0)

The table shows the percentage (number of participants) for each general information about cat management's questions.

Note: n=number of participants

In terms of health, a quarter of cats have reported health problems, with kidney and urinary issues being the most prevalent (28.3%, n=41). Majority of respondents manage their cats indoors (56.4% n=234), providing essential resources such as water and feed bowls, litter boxes,

and toys (Table 4.2). Notably, a significant percentage uses clumping cat litter. The frequency of litter box maintenance varies, with the majority scooping once a day and replacing litter weekly. A notable proportion of cats eliminate outside the litter box, primarily with both urine and faeces. Additionally, the table captures information on housing types, the presence of dogs in the family, and the overall living space per cat (Table 4.2).

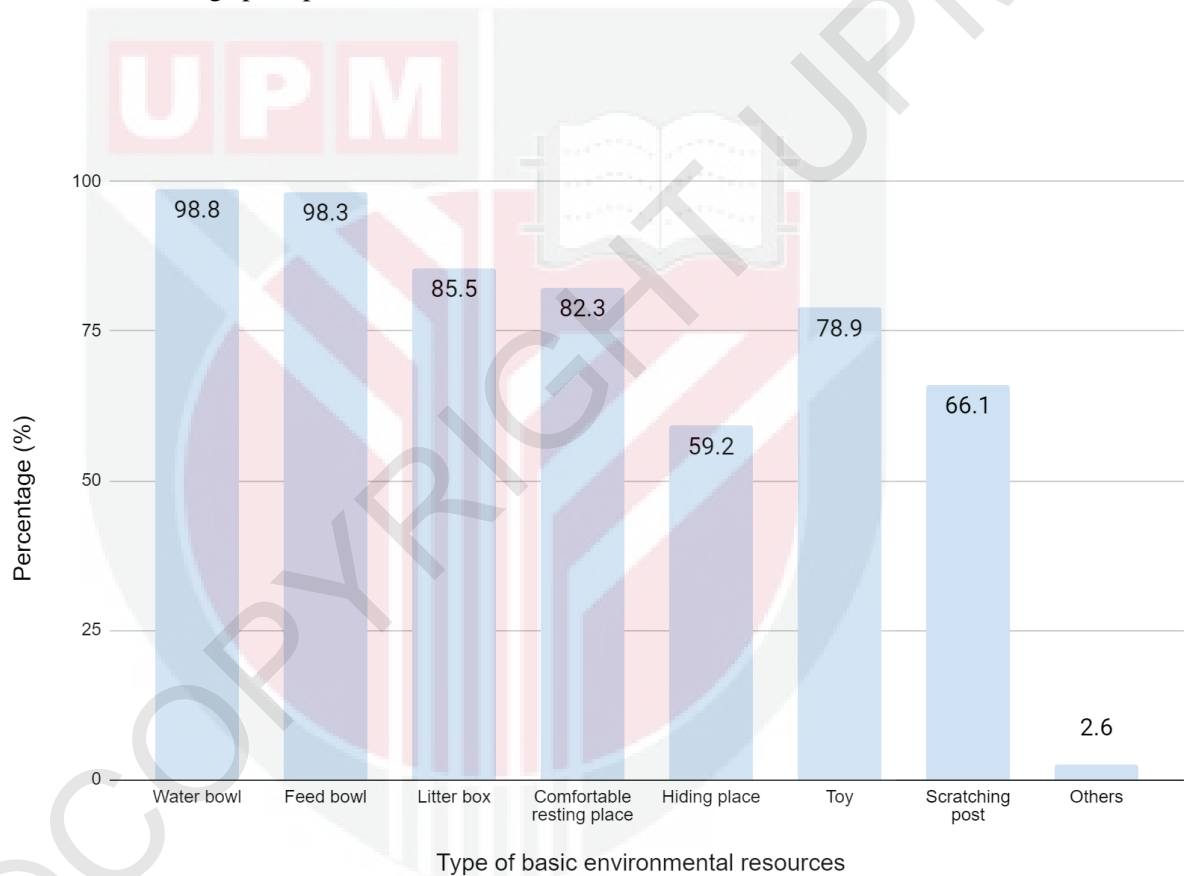


Figure 4.1 Type of basic environmental resources.

Figure 4.1 above showed the type of basic environmental resources provided by the cat owners. Majority of the respondents (98.8%, n=402) claimed that they provided a water bowl, followed by a feed bowl (98.3%, n=400), a litter box (85.5%, n=348), a comfortable resting place

(82.3%, n=335), toys (78.9%, n=321), a scratching post (66.1%, n=269) and a hiding place (59.2%, n=241) to their cats.

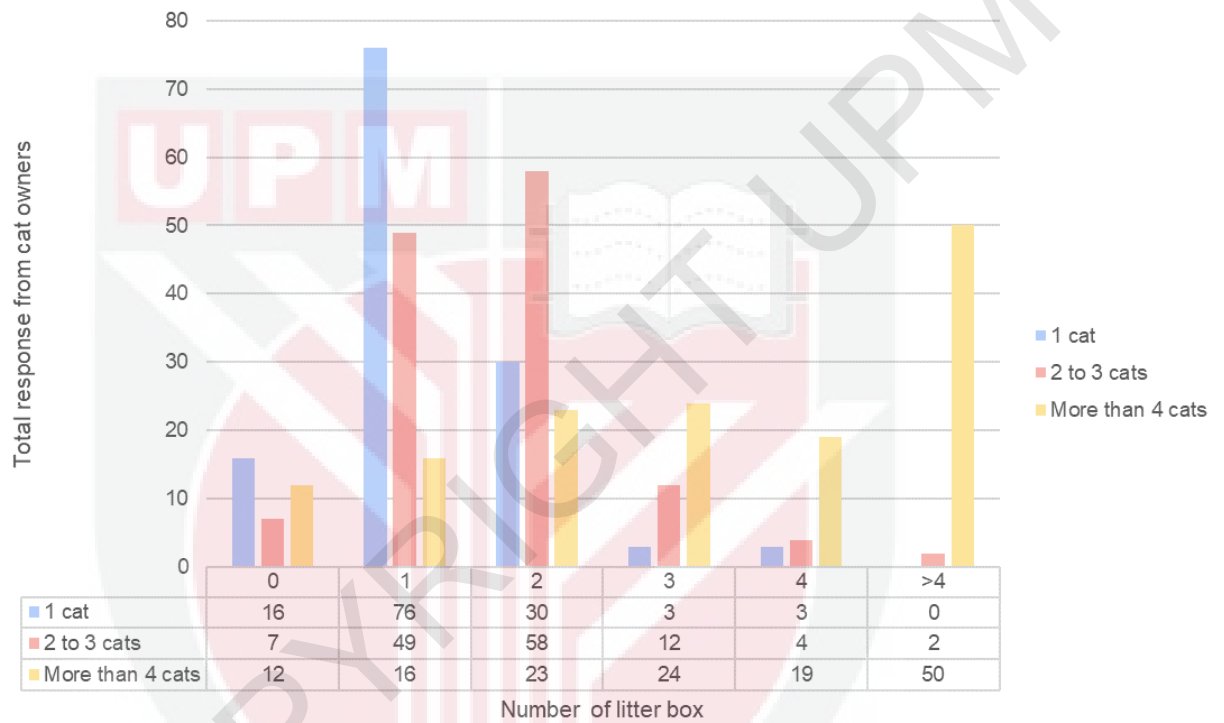


Figure 4.2 The relationship between number of cats to the number of litter boxes.

Further investigation about a specific resource (e.g. litter box) provided to cats were explored (Figure 4.2). Overall, only 30.4% (n=123) of the cat owners provided enough number of litter boxes for their cats.

4.3 Attitude and knowledge of cat welfare among Malaysian cat owners

4.3.1 Attitude towards cat welfare

In general, attitudes of Malaysian cat owners towards cats can be considered positive (Table 4.3a). While most respondents considered that they prefer to confine their cats in the house, they were agreed to strongly agreed that “*Having a cat is expensive*” [(median= 4, “agree”, 27.2%), (median= 4, “strongly agree”, 28.1%)] and neutral for the statement “*I am stressed with cat house soiling*” (median= 3, neutral”, 27.7%) (Table 4.3a and Figure 4.3a).

Table 4.3a shows the median, mean and standard deviation of Malaysian cat owners’ responses on attitude towards cat welfare. More details on the percentage of each Likert-scale score for each five statements are shown in Figure 4.3a.

Table 4.3a Median, mean and standard deviation (SD) of Malaysian cat owners’ responses on attitude towards cat welfare.

Attitude towards cat welfare	Median score	Mean \pm SD	P-value
My cat has good welfare.	4.00	4.22 \pm 0.789	P < 0.05
I prefer to confine my cat in the house.	4.00	3.76 \pm 1.315	P < 0.05
I have ample time to manage my cat.	4.00	3.66 \pm 0.905	P < 0.05
Having a cat is expensive.	4.00	3.64 \pm 1.136	P < 0.05
I am stressed with cat house soiling (e.g., urinating out of the litter box, urine marking and others).	3.00	2.61 \pm 1.322	P < 0.05

5 answer options: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree

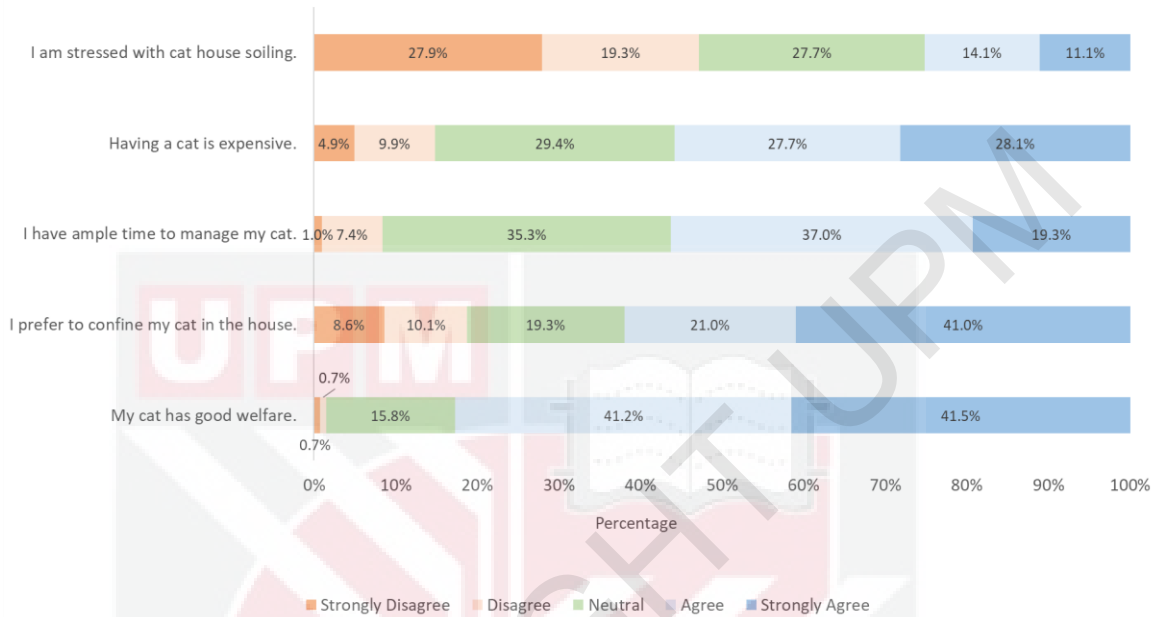


Figure 4.3a Proportion of Malaysian cat owners on the responses on attitudes towards cat welfare.

4.3.2 Knowledge on cat welfare

Overall, Malaysian cat owners can be considered to have ample knowledge towards cat welfare. For example, knowledge with regards to the impact of a dirty litter box (median= 5, “strongly agree”, 74.6%) and the welfare needs of cats (median= 5, “strongly agree”, 61.0%) (Figure 4.3b).

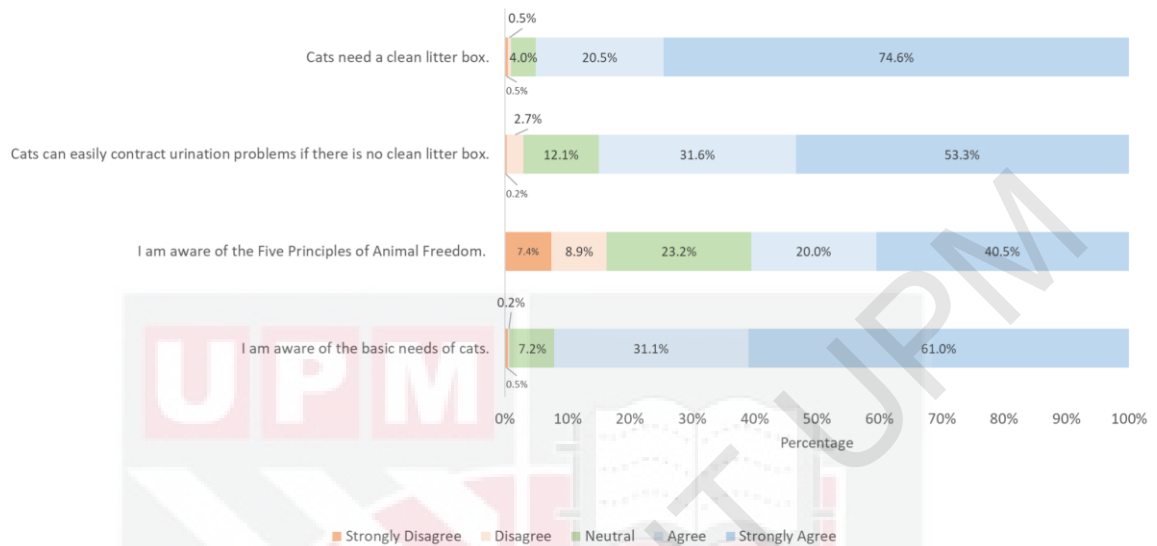


Figure 4.3b Proportion of Malaysian cat owners on the responses on knowledge on cat welfare.

4.4 Association between demographic details and attitudes and knowledge on cat welfare

The Kruskal-Wallis Test revealed significant associations between certain demographic variables and individuals' attitude and knowledge regarding cat welfare, as illustrated in Table 4.4. Specifically, age, states of residence, and occupation emerged as three key demographic factors exhibiting notable significance in influencing participants' attitudes towards cat welfare. As for the knowledge of cat welfare, only age, gender and states showed significant association ($P < 0.05$). Notably, gender demonstrated a significant impact solely on knowledge, while education, in contrast, did not exhibit any statistically significant influence on either attitude or knowledge related to cat welfare.

Table 4.4 Kruskal Wallis test to test the association between demographic details and attitude and knowledge on cat welfare.

	Kruskal Wallis Test		
	Value	df	Sig.
Attitude towards cat welfare			
Age*	11.885	3	0.008
Gender	0.913	1	0.339
Education	2.746	5	0.739
States *	30.285	14	0.007
Occupation*	16.727	8	0.033
Knowledge on cat welfare			
Age *	14.554	3	0.002
Gender *	4.143	1	0.042
Education	5.462	5	0.362
States *	27.655	14	0.016
Occupation	14.397	8	0.072

Note that * indicates significant association ($P < 0.05$).

4.5 Educational intervention

Figure 4.5 presents the percentage of respondents indicating their preferred type of educational intervention on cat welfare for the future. Most respondents ($n=342$, 84.7%) expressed a preference for social media as a mean to stay informed. This was followed by the internet ($n=280$, 69.5%), pet exhibitions ($N=207$, 51.2%), traditional education channels ($n=205$, 50.5%), advertisements ($n=134$, 33.3%), newspapers ($n=50$, 12.3%), magazines ($n=49$, 12.1%), and other sources ($n=4$, 1.2%).

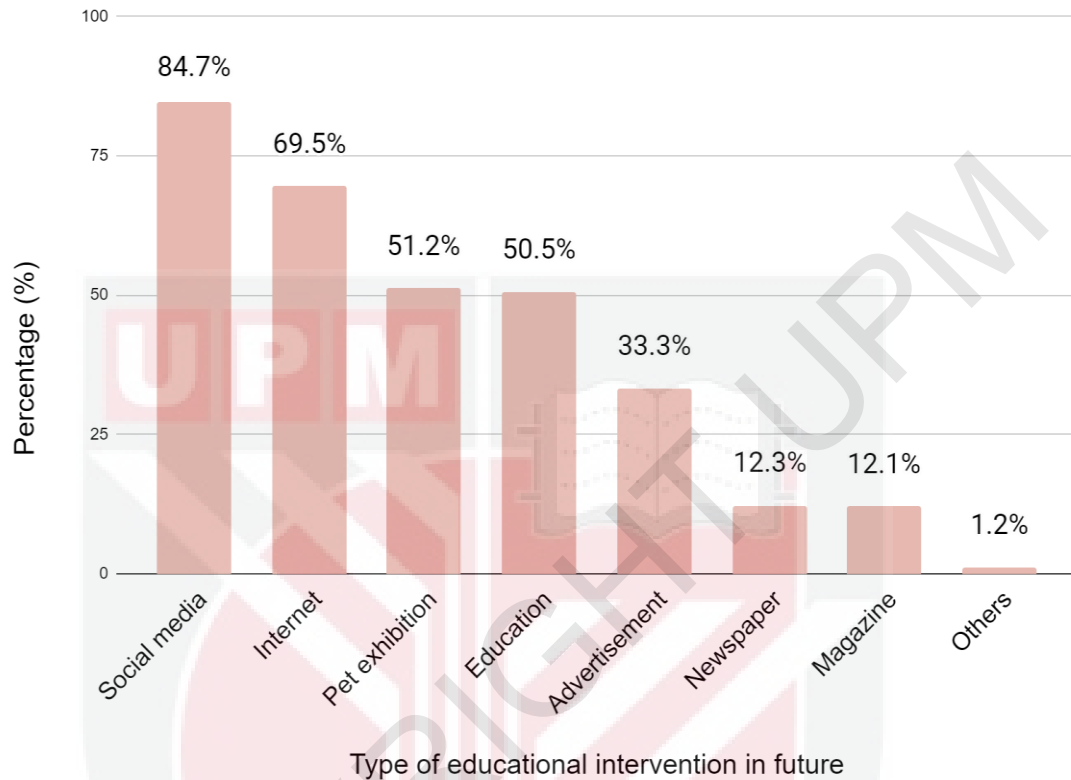


Figure 4.5 Percentage of respondents on the type of preferred educational intervention in future.

5.0 DISCUSSION

The study characterises the attitude and knowledge of Malaysian cat owners towards cat welfare, in 2023. To our knowledge, this is the first study to examine the attitude, knowledge and current practice of cat owners about cat welfare needs in Malaysia.

The provision of multiple and separated key environmental resources: food, water, toileting areas, scratching areas, play areas and resting or sleeping areas are recommended as in the AAFF and ISFM Feline Environmental Needs Guidelines (Ellis et. al., 2013) in order to

achieve a healthy feline environment. For example, these environmental resources allow them to carry out their natural behaviours like scratching, chewing, and using the litter box to prevent health and behaviour issues (Herron and Buffington, 2010). In the current study, while most respondents claimed that they provided most of the key environmental resources to their cats, some of the environmental resources such as litter boxes were not provided adequately. Similar findings were also presented in a study conducted by Chiang Mai University, Thailand, to investigate the prevalence and risk factors of feline lower urinary tract disease (FLUTD) in Chiang Mai and it revealed that cats with inadequate access to litter boxes are more prone to FLUTD infection (Piyarungsri et al., 2020).

To precisely address the specific requirements of indoor feline companions, the adequacy of available litter boxes emerges as a pivotal factor influencing their overall well-being. The current study revealed that less than half of the surveyed participants (30.4%) supplied a satisfactory number of litter boxes for their cats. It is imperative to note that maintaining an appropriate ratio of litter boxes to cats, as recommended by Barcelos et al. (2018), wherein the number of litter boxes at home equals the number of cats plus one, serves as a proactive measure against house soiling issues (Neilson, 2004). According to the definitions set forth by the American Association of Feline Practitioners (AAFP) and the International Society of Feline Medicine (ISFM), house soiling encompasses the deposition of urine or faeces in locations deemed unacceptable by the owner, a behaviour that can lead to severe consequences such as abandonment, relinquishment to shelters, or even euthanasia (Carney et al., 2014; Heath, 2007).

Moreover, various nuances surrounding the litter box environment significantly influence a cat's elimination behaviour (Beaver, 1989, Halip et al., 1998, Bamberger and Houpt, 2006).

Factors such as the size of the litter boxes provided, their strategic placement within the living space, the choice of litter material, and the frequency of cleaning, as elucidated by Horwitz (2019), all contribute to shaping a conducive feline toileting experience. Addressing these multifaceted aspects becomes instrumental in fostering positive elimination habits, thereby mitigating the risk of behavioural issues and their potential consequences.

Overall, cat owners in Malaysia reported a positive response to the attitude of cat welfare. For the statement *'Having a cat is expensive'*, the majority of the respondents agreed (55.8%). This could be because a majority of the respondents are students and do not have income yet. According to a report on the unexpected costs of pet ownership in college, published by the Society for Advancing Business Editing and Writing (SABEW) in December 2019, the article highlights the financial challenges associated with having a pet while in college. The report discusses various aspects of the financial burden, shedding light on the responsibilities and expenses that may come as a surprise to pet owners on college campuses (Elkins, 2019). As for the next statement *'I have ample time to manage my cat'*, the majority of them (56.3%) agreed but a significant portion 35.3% stated neutral with it. This could be the result of a majority of respondents being students who have more time to care for their cats compared to the second largest respondents group who are already working adults. However, when asked to what degree they agreed with the statement *'I am stressed with cat house soiling'*, 27.7% of respondents (n=112) stated "neutral" on the statement, whereas 47.2% disagreed with it and 25.2% agreed with it. Although the majority of the respondents disagreed that they are stressed with cat house soiling, a portion of them still agreed and were neutral about it. This could result from not providing enough litter boxes, particularly for this study, thus leading to the increased incidence of cat house soiling (Carney et al., 2014). Based on the findings, we could suggest that cat house

soiling due to an insufficient number of litter boxes, lack of ample time to manage their cats and high cost could result in a high possibility of pet cat abandonment.

The overall responses towards the knowledge of cat welfare are positive. Similar result was shown in a study conducted by Mikuš et al. in 2020. For the first statement, '*I am aware of the basic needs of cats*', majority of the respondents agreed (92.1%). This result aligned with the finding that more than half of the respondents provided environmental resources for their cats. For the next statement, '*I am aware of the Five Principles of Animal Freedom*', the majority of respondents also agreed to it (60.5%), however interventions need to be done to further increase the awareness among the public. Most of the cat owners agreed to the third statement which is '*Cats can easily contract urination problems if there is no clean litter box*'. Not having a clean litter box can cause litter box aversion (Tateo et al., 2023), which may predispose the cats to several diseases such as Feline Idiopathic Cystitis (FIC) (Kim et al., 2018) or other causes of FLUTD (Piyarungsri et al., 2020). As for the fourth statement, '*Cats need a clean litter box*', the majority of them agreed (95.1%). According to Ellis et. al. (2017), cats prefer a clean litter box to a dirty litter box. In addition, frequent litter box cleaning is the most common recommendation for reducing inappropriate toileting (Neilson, 2004).

Although the overall responses regarding knowledge and attitude are largely positive, the study underscores the existence of potential areas for enhancement in addressing the welfare needs of cats. To bolster public awareness effectively, it is advisable to disseminate information through channels preferred by respondents, notably social media (preferred by 84.7% of participants), Internet (69.5%), pet exhibitions (51.2%), and educational initiatives (50.5%)

6.0 CONCLUSION

In summary, most Malaysian cat owners perceived the importance of cat welfare needs, but there are still some key resources that are not achievable (e.g. inadequate provision of litter boxes). Cost and time constraints can be considered as potential factors for inadequacy of the provision of cat care management. However, further studies are needed in exploring other possible factors to the issue.

7.0 LIMITATION AND RECOMMENDATION

There are several potential limitations to this study's conclusions. It was not possible to calculate the exact response rate of Malaysian cat owners because participation in the questionnaire was voluntary. In addition, the questionnaires were distributed through a variety of social media platforms (e.g. Facebook, Instagram, WhatsApp and Twitter).

This study faced a limitation regarding the demographic composition of participants, as a substantial majority of respondents were female. This skew towards female participation is not uncommon and has been noted in previous studies (de Abreu Oliveira et al., 2023). While this gender disparity might reflect an actual trend in the target population's interest or engagement with the subject matter, it could potentially introduce a bias that may affect the generalizability of the findings. Future improvement can be done by aiming for a more balanced representation of genders in the future, for example by sending emails or approaching individuals.

Another notable limitation of the study is the concentration of respondents within a specific age group (18 to 24) and educational attainment (Bachelor's Degree). Youth who are aged between 13 to 34 make up a huge percentage of 80.3% social media users in Malaysia (Mahadi, 2013). The author also explained that the highest users of social media in Malaysia are youth aged 18-24 (34.5%), followed by those in 25-34 (29.5%) and 13-17 (16.3%) (Mahadi, 2013). This evidence aligned with the skewed result of our study with age groups of 18 to 24 and 25 to 32 being the two largest groups. This narrow demographic profile may restrict the generalizability of the findings to a broader population. The preferences and opinions of individuals in different age groups or with varied educational backgrounds might differ significantly. Consequently, the study's results may not accurately reflect the diversity of perspectives within the larger Malaysian population. To enhance the validity of future studies, it is recommended to include a more diverse sample, employing alternative recruitment methods such as advertisements, newspapers, magazines, in addition to social media platforms.

Furthermore, the study's reliance on participants predominantly from Selangor (34.3%) introduces a geographical bias that may limit the generalizability of the results to a national context. The distinct cultural, economic, and social characteristics of Selangor might influence respondents' attitudes and behaviours differently compared to individuals from other regions in Malaysia. Consequently, applying the study's conclusions to the entire Malaysian population requires caution. To address this limitation in future research, a more balanced distribution can be achieved by sending an equal number of emails to individuals residing in each state of Malaysia.

8.0 REFERENCES

- Aji, A. P. (2019). The role of social media in shaping the animal protection movement in Indonesia. *Jurnal Studi Komunikasi*, 3(3), 389-401.
- Amat, M., Camps, T., & Manteca, X. (2016). Stress in owned cats: behavioural changes and welfare implications. *Journal of Feline Medicine and Surgery*, 18(8), 577-586.
- Bamberger, M., & Houpt, K. A. (2006). Signalment factors, comorbidity, and trends in behavior diagnoses in cats: 736 cases (1991–2001). *Journal of the American Veterinary Medical Association*, 229 (10), 1602-1606.
- Barcelos, A. M., McPeake, K., Affenzeller, N., & Mills, D. S. (2018). Common Risk Factors for Urinary House Soiling (Periuria) in Cats and Its Differentiation: The sensitivity and specificity of common diagnostic signs. *Frontiers in Veterinary Science*, 5, 108. doi: 10.3389/fvets.2018.00108
- Beaver, B. V. (1989). Housesoiling by cats: a retrospective study of 120 cases. *The Journal of the American Animal Hospital Association (USA)*.
- Carney, H. C., Sadek, T. P., Curtis, T. M., Halls, V., Heath, S., Hutchison, P., Mundschenk, K., & Westropp, J. L. (2014). AAFP and ISFM Guidelines for Diagnosing and Solving House-Soiling Behavior in Cats. *Journal of Feline Medicine and Surgery*. 16 (7): 579-598. doi:10.1177/1098612X14539092
- de Abreu Oliveira, I., Viana-Junior, A. B., & Schetini de Azevedo, C. (2023). Indoor and outdoor management for cats: inferences about the welfare and cat-caretaker relationship. *Journal of Veterinary Behavior*, 60, 70-78. doi: 10.1016/j.jveb.2022.12.010
- Debbra, M., Mastura, Y., Shariffah, N., Muhammad, N. K., & Azjeemah, B. (2019). Assessing the status of pet ownership in the community of Putrajaya. *Malays. J. Vet. Res*, 10, 61-71.

- Elkins, E. (2019, December 1). The Unexpected Cost of Owning a Pet in College. Society for Advancing Business Editing and Writing (SABEW). <https://sabew.org/2019/12/the-unexpected-cost-of-owning-a-pet-in-college/>
- Ellis, J. J., McGowan, R. T. S., & Martin, F. (2017). Does previous use affect litter box appeal in multi-cat households? *Behavioural Processes*, *141*(3), 284-290. <https://doi.org/10.1016/j.beproc.2017.02.008>
- Ellis, S. L. H., Rodan I., Carney H. C., Carney, H. C., Heath, S., Rochlitz, I., Shearburn, L. D., Sundahl, E., & Westropp, J. L. (2013). AAFP and ISFM Feline Environmental Needs Guidelines. *Journal of Feline Medicine and Surgery*, *15* (3), 219-230. doi:10.1177/1098612X13477537
- Ellis, S. L. (2009). Environmental enrichment: practical strategies for improving feline welfare. *Journal of feline medicine and surgery*, *11*(11), 901-912.
- Fine, A. H. & Huss, R. J. (2017). Legal and Policy Issues for Classrooms with Animals. In (Gee, N., Fine, A. & McCardle, P.) *How Animals Help Students Learn*, (pp. 49-60). Routledge.
- Foreman-Worsley, R., & Farnworth, M. J. (2019). A systematic review of social and environmental factors and their implications for indoor cat welfare. *Applied Animal Behaviour Science*, *220*, 104841.
- Grigg, E. K., & Kogan, L. R. (2019). Owners' attitudes, knowledge, and care practices: Exploring the implications for domestic cat behavior and welfare in the home. *Animals*, *9* (11), 978.
- Halip, J. W., Vaillancourt, J. P., & Luescher, U. A. (1998). A descriptive study of 189 cats engaging in inappropriate elimination behaviors. *Feline practice*, Santa Barbara, Calif.: 1990 (USA).
- Heath, S. E. (2007). Behaviour problems and welfare. In *The welfare of cats* (pp. 91-118). Dordrecht: Springer Netherlands.

- Herron, M. E., & Tony Buffington, C. A. (2010). Environmental Enrichment for Indoor Cats. *Compendium (Yardley, PA)*, 32(12), E4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3922041/>
- Horwitz, D., F. (2019). Common feline problem behaviors: Urine spraying. *Journal of Feline Medicine and Surgery*, 21(3):209-219. doi:10.1177/1098612X19831203
- Kim, Y., Kim, H., Pfeiffer, D., & Brodbelt, D. (2018). Epidemiological study of feline idiopathic cystitis in Seoul, South Korea. *Journal of feline medicine and surgery*, 20(10), 913-921.
- Kurdek, L. A. (2008). Pet dogs as attachment figures. *Journal of Social and Personal Relationships*, 25(2), 247-266.
- Mahadi, N. (2013, June 16, 2013). 13.3 million Malaysians are facebook users. The Borneo Post.
- Melson, G. F. (2003). Child development and the human-companion animal bond. *American Behavioral Scientist*, 47(1), 31-39.
- Mikuš, T., Ostović, M., Sabolek, I., Matković, K., Pavičić, Ž., Mikuš, O., & Mesić, Ž. (2020). Opinions towards companion animals and their welfare: a survey of Croatian veterinary students. *Animals*, 10(2), 199.
- Naughton, V., Grzelak, T., Mulhern, M. S., Moffett, C. R., & Naughton, P. J. (2022). Association between Socio-Demographic Factors and Owners' Beliefs and Attitudes to Pet Cats Fundamental Dietary and Physical Exercise Needs, in City of Belfast. *Animals*, 12 (19), 2645.
- Neilson J. (2004). Thinking outside the box: feline elimination. *Journal of Feline Medicine and Surgery*, 6(1):5–11. doi:10.1016/j.jfms.2003.09.008
- PiPiyarungsri, K., Tangtrongsup, S., Thitaram, N., Lekklar, P., & Kittinuntasilp, A. (2020). Prevalence and risk factors of feline lower urinary tract disease in Chiang Mai, Thailand. *Scientific Reports*, 10 (1), 196.

- Ramos, D., Reche-Junior, A., Mills, D.S., Fragoso, P. L., Daniel, A. GT., Freitas, M. F., Cortopassi, S. G. & Patricio, G. (2019). A closer look at the health of cats showing urinary house-soiling (periuria): a case-control study. *Journal of Feline Medicine and Surgery*, 21(8), 772-779. doi:10.1177/1098612X18801034
- Rioja-Lang, F., Bacon, H., Connor, M., & Dwyer, C. M. (2019). Determining priority welfare issues for cats in the United Kingdom using expert consensus. *Veterinary Record Open*, 6(1), e000365.
- Serpell, J.A. (2004). Factors influencing human attitudes to animals and their welfare. *Animal Welfare*, 13, 145-151.
- Stella, J. L., & Croney, C. C. (2016). Environmental Aspects of Domestic Cat Care and Management: Implications for Cat Welfare. *The Scientific World Journal*, 2016. <https://doi.org/10.1155/2016/6296315>
- Szparagala, K. (2021, August 30). *Animal Welfare and Social Media – Is the Internet an Ally of Animals? Conflict, Justice, Decolonization.* <https://cjdproject.web.nycu.edu.tw/2021/08/30/animal-welfare-and-social-media-is-the-internet-an-ally-of-animals/>
- Tateo, A., Ricci-Bonot, C., Felici, M., Zappaterra, M., Nanni Costa, L., Houpt, K., & Padalino, B. Litter Management Practices and House-Soiling in Italian Cats. *Animals* 2023, 13, 2382. <https://doi.org/10.3390/ani13142382>
- World Organisation for Animal Health. (2019). OIE Terrestrial Animal Health Code. OIE Europe. https://rr-europe.woah.org/wp-content/uploads/2020/08/oie-terrestrial-code-1_2019_en.pdf
- Zaini, S., Phillips, C., MacKay, J., & Langford, F. (2023). Perceptions of barriers to providing good cat care in Malaysian clinical practices. *Animal Welfare*, 32, E70. doi:10.1017/awf.2023.91

9.0 APPENDICES

APPENDIX I

Questionnaire

Section 1: Demographic details Bahagian 1: Butiran demografi	
Gender/ Jantina	<ul style="list-style-type: none"> ● Male / Lelaki ● Female / Perempuan ● Other / lain-lain
Age (year)/ Umur (Tahun)	<ul style="list-style-type: none"> ● Below 18 / Bawah 18 ● 18-20 ● 21- 30 ● 31- 40 ● 41-50 ● More than 50 / Lebih daripada 50 ● Other / lain-lain
Federal territories/ State/ Wilayah persekutuan/ Negeri	<ul style="list-style-type: none"> ● Johor ● Kedah ● Kelantan ● Terengganu ● Malacca ● Negeri Sembilan ● Pahang ● Perak ● Penang / Pulau Pinang ● Perlis ● Selangor ● Federal territory of Kuala Lumpur ● Federal Territory of Putrajaya ● Federal territory of Labuan ● Sabah ● Sarawak ● Other/ lain-lain

Education level/ Taraf pendidikan	<ul style="list-style-type: none"> ● None/ Illiterate/ Tidak berkeajaan ● Primary School/ Sekolah Rendah ● Secondary School/ Sekolah menengah ● Diploma / Matriculation / STPM ● Diploma / Matrikulasi / STPM ● Bachelor Degree/ Ijazah Sarjana Muda ● Master Degree / Ijazah Sarjana ● PhD ● Other/ Lain-lain
Occupation/ Pekerjaan	<ul style="list-style-type: none"> ● Student/ Pelajar ● Government/ Penjawat awam ● Private company staff/ Penjawat swasta ● Self-employed/ Bekerja sendiri ● Unemployed/ Tidak bekerja ● Prefer not to say/ Tidak berkaitan ● Other/ lain-lain

<p>Section 2: General information about cat management Bahagian 2: Pengetahuan tentang kebajikan kucing</p>	
<p>How many cats do you own? Berapa ekor kucing yang anda milik?</p>	<ul style="list-style-type: none"> ● Cat living alone (1) / Kucing hidup bersendirian (1) ● Small group (2-3) / Kumpulan kecil (2-3) ● Large group (4+) / Kumpulan besar (4+)

<p>What is the gender of your cat?</p> <p>Apakah jantina kucing anda?</p>	<ul style="list-style-type: none"> ● Female / Betina ● Neutered Female / Kucing betina yang dikembiri ● Male / Jantan ● Neutered Male / Kucing jantan yang dikembiri
<p>What is the breed of your cat?</p> <p>Apakah baka kucing anda?</p>	<ul style="list-style-type: none"> ● European / Eropah ● Maine Coon / Maine Coon ● Mixed-breed / Baka campuran ● Persian / Persia ● Siberian / Siberia ● Other / Lain-lain
<p>How old is your cat?</p> <p>Berapa umur kucing anda?</p>	<ul style="list-style-type: none"> ● <2 years / <2 tahun ● 2-5 years / 2-5 tahun ● >5 years / >5 tahun
<p>Does your cat have any health problems?</p> <p>Adakah kucing anda mempunyai sebarang masalah kesihatan?</p>	<ul style="list-style-type: none"> ● Yes / Ya ● No / Tidak ● I do not know / Saya tidak tahu
<p>If yes, what health problem?</p> <p>Jika ya, apakah masalah kesihatan?</p>	<ul style="list-style-type: none"> ● Healthy / Sihat ● Urinary tract disease / Penyakit saluran kencing ● Others / Lain-lain
<p>How do you manage your cat?</p> <p>Bagaimana anda menguruskan kucing anda?</p>	<ul style="list-style-type: none"> ● In cage/ Dalam sangkar ● Outdoor/ Luar rumah ● Indoor/ Dalam rumah ● Semi roamer/ Separa luar dan dalam rumah ● Other / Lain-lain

<p>What type of resource(s) that you provide for your cat?</p> <p>Apakah jenis sumber yang anda sediakan untuk kucing anda?</p>	<ul style="list-style-type: none"> ● Water bowl / bekas air ● Feed bowl / bekas makanan ● Litter box / Tempat(kotak) nyahtinja ● Comfortable resting place/ Tempat rehat yang selesa ● Hiding place / Tempat bersembunyi ● Toy / Alat permainan ● Scratching post / Tiang untuk menggaru ● Other / Lain-lain
<p>How many litter boxes do you provide to your cat?</p> <p>Berapa banyak tempat (kotak) nyahtinja yang anda sediakan kepada kucing anda?</p>	<ul style="list-style-type: none"> ● 0 ● 1 ● 2 ● 3 ● 4 ● More than 4 / Lebih daripada 4
<p>What is the type of litter box(es)?</p> <p>Apakah jenis tempat (kotak) nyahtinja?</p>	<ul style="list-style-type: none"> ● Open / terbuka ● Covered / tertutup ● Open and covered / terbuka dan tertutup ● Other / Lain-lain
<p>Where is(are) the litter box(es) located?</p> <p>Balcony, bathroom, kitchen, basement, living room, bedroom, entrance, stairs, garden</p> <p>Di manakah terletak tempat (kotak) nyahtinja?</p> <p>Balkoni, bilik mandi, dapur, ruang bawah tanah, ruang tamu, bilik tidur, pintu masuk, tangga, taman/ laman</p>	<ul style="list-style-type: none"> ● Yes / Ya ● No to all locations listed / Tidak kepada semua lokasi yang disenaraikan
<p>What type/brand of cat litter substrate do you use?</p> <p>Apakah jenis/jenama nyahtinja kucing yang anda gunakan?</p>	<ul style="list-style-type: none"> ● Clumping / Bergumpal ● Non-clumping / Tidak bergumpal ● Biodegradable / Biodegradasi ● Silica gel / Gel silika ● Other / Lain-lain

<p>How often do you scoop the litter?</p> <p>Berapa kerap anda mencedok substrat nyahtinja?</p>	<ul style="list-style-type: none"> ● More than twice a day / Lebih daripada dua kali sehari ● Twice a day / Dua kali sehari ● Once a day / Sehari sekali ● Twice a week / Dua kali seminggu ● Thrice a week / Tiga kali seminggu ● Other / Lain-lain
<p>How often do you wash the box and replace the litter?</p> <p>Berapa kerap anda mencuci tempat (kotak) nyahtinja dan menggantikan substrat nyahtinja?</p>	<ul style="list-style-type: none"> ● Less than two or three times a week / Kurang daripada dua atau tiga kali seminggu ● Once a week / Sekali seminggu ● Every ten or twenty days / Setiap sepuluh atau dua puluh hari ● Once a month / Sekali sebulan ● Other / Lain-lain
<p>Does your cat eliminate outside the litter box?</p> <p>Adakah kucing anda membuang (air kencing/berak) di luar tempat (kotak) nyahtinja?</p>	<ul style="list-style-type: none"> ● Yes / Ya ● No / Tidak
<p>If your cat eliminates outside the litter box, what does your cat eliminate?</p> <p>Jika kucing anda membuang di luar tempat (kotak) nyahtinja, apakah yang kucing anda buangkan?</p>	<ul style="list-style-type: none"> ● Only urine / Hanya air kencing ● Only feces / Najis sahaja ● Urine and feces / Air kencing dan najis ● Other / Lain-lain ●
<p>Where does your cat eliminate? (urine/faeces)</p> <p>Di manakah kucing anda membuang (air kencing/berak)?</p>	<ul style="list-style-type: none"> ● Same spot / Tempat yang sama ● Different spot / Tempat yang berlainan ● Other / Lain-lain

<p>Posture when your cat eliminates outside the litter box?</p> <p>Postur semasa kucing anda membuang (air kencing/ berak) di luar tempat (kotak) nyahtinja?</p>	<ul style="list-style-type: none"> ● Squatting / Mencangkung ● Standing with the tail raised / Berdiri dengan ekor terangkat ● Have not observed / Tidak pernah memerhati ● Other / Lain-lain
<p>2.1: General information on owner's housing area 2.1: Maklumat am mengenai kawasan perumahan pemilik</p>	
<p>Type of the housing</p> <p>Jenis perumahan</p>	<ul style="list-style-type: none"> ● Apartment / Apartment ● Terrace/ Teres ● Bungalow/ Banglo ● Other / Lain-lain
<p>Is there a dog in the family?</p> <p>Adakah terdapat anjing dalam keluarga?</p>	<ul style="list-style-type: none"> ● Yes/ Ya ● No/ Tidak
<p>What is the number of dogs in the family?</p> <p>Berapakah bilangan anjing dalam keluarga?</p>	<ul style="list-style-type: none"> ● 0 ● 1 ● 2 ● 3 ● >3
<p>Are there animals other than cats and dogs?</p> <p>Adakah haiwan selain kucing dan anjing?</p>	<ul style="list-style-type: none"> ● Yes / Ya ● No / Tidak
<p>The surface of your housing, in m², divided by the number of cats owned.</p> <p>Luas perumahan anda dalam m² dibahagikan dengan bilangan kucing yang dimiliki</p>	<ul style="list-style-type: none"> ● <25 ● 25-49 ● 50-99 ● ≥100 ● Other/ lain-lain

<p>Section 3: Attitude towards cat welfare Bahagian 3: Persepsi terhadap kebajikan kucing</p>	
<p>I am able to provide all my cat needs.</p> <p>Saya mampu menyediakan semua keperluan kucing saya.</p>	<p>5 points Likert scale: strongly disagree, disagree, neutral, agree,</p>

<p>My cat has good welfare.</p> <p>Kucing saya mempunyai kebajikan yang baik</p>	<p>strongly agree / 5 point skala Likert: sangat tidak setuju, neutral, setuju, sangat setuju</p>
<p>I prefer to confine my cat in the house.</p> <p>Saya lebih suka mengurung kucing saya di dalam rumah.</p>	
<p>I have ample time to manage my cat.</p> <p>Saya mempunyai masa yang mencukupi untuk menguruskan kucing saya.</p>	
<p>Having a cat is expensive.</p> <p>Memiliki kucing adalah hal yang mewah</p>	
<p>I am stressed with cat house soiling (e.g., urinating out of the litter box, urine marking and others).</p> <p>Saya stress dengan kotoran yang disebabkan oleh kucing (cth., buang air kecil luar kotak nyahtinja, tanda air kencing dan lain-lain).</p>	

<p>Section 4: Knowledge on cat welfare Bahagian 4: Pengetahuan tentang kebajikan kucing</p>	
<p>I am aware of the basic needs of cats.</p> <p>Saya sedar keperluan asas kucing.</p>	<p>5 points Likert scale: strongly disagree, disagree, neutral, agree, strongly agree / 5 point skala Likert: sangat tidak setuju, neutral, setuju, sangat setuju</p>
<p>I am aware of the Five Principles of Animal Freedom</p> <p>Saya sedar akan Prinsip Kebajikan Asas (<i>Five Freedom</i>).</p>	
<p>Cats can easily contract urination problems if there is no clean litter box.</p> <p>Kucing mudah mengalami masalah kencing jika tiada kotak nyahtinja yang bersih.</p>	

<p>Cats need a clean litter box.</p> <p>Kucing memerlukan kotak nyahtinja yang bersih.</p>	
--	--

<p>Section 5: Educational intervention Bahagian 5: Intervensi pendidikan</p>	
<p>How do you typically obtain information about cat care and welfare?</p> <p>Bagaimanakah anda biasanya mendapatkan maklumat tentang penjagaan dan kebajikan kucing?</p>	<ul style="list-style-type: none"> ● Social media (Instagram, TikTok, Twitter etc.) / Media sosial (Instagram, TikTok, Twitter etc.) ● Newspaper / Surat khabar ● Magazine / Majalah ● Pet exhibition / Pameran haiwan peliharaan ● Internet / Internet ● Advertisement / Iklan ● Education / Pendidikan ● Friend/ rakan ● Other/ lain-lain
<p>Which type of educational intervention would you prefer to have in future?</p> <p>Apakah jenis intervensi pendidikan yang anda lebih suka pada masa hadapan?</p>	<ul style="list-style-type: none"> ● Social media (Instagram, TikTok, Twitter etc.) / Media sosial (Instagram, TikTok, Twitter etc.) ● Newspaper / Surat khabar ● Magazine / Majalah ● Pet exhibition / Pameran haiwan peliharaan ● Internet / Internet ● Advertisement / Iklan

	<ul style="list-style-type: none"> ● Education/ Pendidikan ● Other/ lain-lain
<p>Do you have any further comment or suggestion for future educational intervention?</p> <p>Adakah anda mempunyai sebarang komen atau cadangan lanjut untuk intervensi pendidikan masa depan?</p>	
<p>Please leave your email address for future educational intervention.</p> <p>Sila tinggalkan alamat e-mel anda untuk intervensi pendidikan di masa hadapan.</p>	

APPENDIX II



PEJABAT TIMBALAN NAIB CANCELOR (PENYELIDIKAN DAN INOVASI)

OFFICE OF THE DEPUTY VICE CHANCELLOR (RESEARCH AND INNOVATION)

Rujukan kami : UPM.TNCPI.800-2/1/7

Tarikh : 10 July 2023

Dr. Syamira Syazuana Binti Zaini,
Department Of Veterinary Clinical Studies,
Faculty Of Veterinary Medicine,
Universiti Putra Malaysia,
Serdang, Selangor.

Dear Madam/Sir,

RESEARCH PROJECT: SURVEYING MALAYSIAN CAT OWNERS ON FELINE WELFARE NEEDS.

REFERENCE NO: JKEUPM-2023-463

PRINCIPAL INVESTIGATOR : DR. SYAMIRA SYAZUANA BINTI ZAINI

**CO-INVESTIGATOR : ASSOC. PROF. DR. OOI PECK TOUNG,
LEE JIA WEI (STUDENT)**

The Ethics Committee for Research involving Human Subjects of University Putra Malaysia (JKEUPM) has studied the proposal for the above project and found that there were no objectionable ethical issues involved in the proposed study.

Please find the list of documents received and reviewed with reference to the study and committee members who reviewed the documents (as attached).

Notwithstanding above, we will not be responsible for any misconduct on the part of researcher in the course of carrying out the research.

Ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.

Thank you.

“WITH KNOWLEDGE WE SERVE”

Sincerely yours,

PROF. DR. ZAMBERI SEKAWI

Chair

Ethics Committee for Research involving Human Subjects

Universiti Putra Malaysia

APPENDIX III

**ETHICS COMMITTEE FOR RESEARCH INVOLVING HUMAN SUBJECTS
(JKEUPM)
UNIVERSITI PUTRA MALAYSIA**

Research title	: Surveying Malaysian Cat Owners On Feline Welfare Needs.
Study Site	: Malaysia
JKEUPM Ref No.	: JKEUPM-2023-463
Principal Investigator	: Dr. Syamira Syazuana Binti Zaini
Co-investigator	: Assoc. Prof. Dr. Ooi Peck Toung, Lee Jia Wei (Student)

Documents received and reviewed with reference to the above study:

1. Ethics Application Form, Version 1 dated 15/05/2023
2. Respondent's Information Sheet / Consent (English), Version 2 dated 22/06/2023
3. Proposal (English), Version 2 dated 26/06/2023
4. Questionnaire / Interviews (English), Version 1 dated 15/05/2023
5. Curriculum Vitae of:
 - a. Dr. Syamira Syazuana Binti Zaini
 - b. Assoc. Prof. Dr. Ooi Peck Toung

The University Research Ethics Committee, Universiti Putra Malaysia (JKEUPM) operates in accordance to the ICH-GCP Guidelines.

Decision by JKEUPM:

- Approved
- Permission MUST BE OBTAINED from the respective hospitals/ institutions before conducting the research**
- Disapproved

Please note that the approval is **VALID UNTIL 10 JULY 2024**

Researchers should comply with the following:

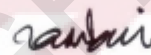
- I. Complete a Study Final Report upon study completion (Form 3.2).
- II. Ethical approval is required in the case of amendments/ changes to the study documents/ study sites/ study team.
- III. Applicable for Clinical Trial Studies and Clinical interventional Studies only: Progress Report has to be submitted to JKEUPM at every 6 months from the date of approval (Form 3.1). Report occurrences of all Serious Adverse Events (SAEs), Suspected Unexpected Serious Adverse Reaction (SUSARs) and Protocol Deviation/ Violation at all JKEUPM approved sites to JKEUPM. All serious adverse events (SAEs) detected or being notified should be reported immediately to the sponsor except for those SAEs that the protocol or other document (e.g.,

Investigator's Brochure) identifies as not needing immediate reporting. The immediate reports should be followed promptly by detailed, written reports. The required forms can be obtained from the Ethics Committee for Research Involving Human Subjects (JKEUPM) website (<http://www.tncpi.upm.edu.my/faildokumen>).

Date of Approval: 10 July 2023

Members of the JKEUPM who reviewed the documents:

- i. Primary Reviewer: Dr. Mohd Akmal Mohd Noor
- ii. Informed Consent Reviewer: Assoc. Prof. Dr. Rosliza Abd Manaf



PROF. DR. ZAMBERI SEKAWI

Chair

Ethics Committee for Research involving Human Subjects
Universiti Putra Malaysia

JKEUPM is recognised by The Strategic Initiative for Developing Capacity in Ethical Review (SIDCER) in collaboration with the Forum for Ethical Review Committees in Asia and the Western Pacific Region (FERCAP) for its compliance with the Declaration of Helsinki, International Conference on Harmonization (ICH) Guidelines, Good Clinical Practice (GCP) Standards, Council for International Organizations of Medical Sciences (CIOMS) Guidelines, World Health Organization (WHO) Standards and Operational Guidance for Ethics Review of Health-Related Research and Surveying and Evaluating Ethical Review Practices, EC/IRB Standard Operating Procedures (SOPs), and Local Regulations and Standards in Ethical Review.