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**KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL
WELFARE AMONG MALAYSIAN REPTILE OWNERS**

By

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ABSTRACT

Animal welfare aims to protect animals and ensure they can live according to their natural needs, considering their physical and mental well-being. Despite the growing popularity of reptiles as pets and for breeding, and increasing concerns about their welfare, research on reptile welfare remains limited, particularly in Malaysia. This study investigates the knowledge, attitudes, and practices (KAP) of Malaysian reptile owners concerning reptile welfare, filling gaps in local research. A validated cross-sectional survey was conducted online, with 100 reptile owners participating. The collected data were analysed descriptively, and associations were assessed using the Chi-square test and Pearson's correlation analysis with IBM SPSS Statistics version 29. The results revealed that the majority of respondents demonstrated good knowledge ($n = 82, 82\%$), good attitudes ($n = 54, 54\%$) and poor practices ($n = 66, 66\%$) towards animal welfare. Significant associations were found between access to veterinary services with a good knowledge level ($p = 0.004$), while education level ($p = 0.001$) and snake ownership ($p = 0.041$) were associated with good attitude levels. There was a significant correlation between knowledge and practice ($r = 0.226, p = 0.024$), while attitude and practice also had significant correlation ($r = 0.367, p = 0.000$). Thus, the study underscores the need for targeted educational interventions, collaborative training programs, and enhanced enforcement of animal welfare laws. These efforts aim to bridge the gap between knowledge, attitudes, and practical application, fostering improved welfare standards for reptiles in Malaysia.

Keywords: Animal Welfare, Care, Reptile, Understanding, View

ABSTRAK

Kebajikan haiwan bertujuan untuk melindungi haiwan dan memastikan mereka boleh hidup mengikut keperluan semula jadi, dengan mengambil kira kesejahteraan fizikal dan mental mereka. Walaupun semakin popularnya haiwan reptilia sebagai haiwan peliharaan dan untuk pembiakan, serta kebimbangan yang semakin meningkat tentang kebajikan mereka, penyelidikan mengenai kebajikan reptilia masih terhad, terutamanya di Malaysia. Kajian ini menyiasat pengetahuan, sikap dan amalan (KAP) pemilik reptilia Malaysia mengenai kebajikan haiwan reptilia, mengisi jurang dalam penyelidikan tempatan. Tinjauan keratan rentas telah dijalankan dalam talian, dengan 100 pemilik haiwan reptilia mengambil bahagian dalam kajian itu. Data yang dikumpul dianalisis secara deskriptif, dan persatuan dinilai menggunakan ujian *Chi-square* dan analisis korelasi *Pearson* dengan IBM SPSS Statistics versi 29. Keputusan menunjukkan bahawa majoriti responden menunjukkan pengetahuan yang baik ($n = 82, 82\%$), sikap yang baik ($n = 54, 54\%$) dan amalan buruk ($n = 66, 66\%$) terhadap kebajikan haiwan. Perkaitan yang signifikan didapati antara akses kepada perkhidmatan veterinar dengan tahap pengetahuan yang baik ($p = 0.004$) manakala tahap pendidikan ($p = 0.001$) dan pemilikan ular ($p = 0.041$) dikaitkan dengan tahap sikap yang baik. Terdapat korelasi yang signifikan antara pengetahuan dan amalan ($r = 0.226, p = 0.024$), manakala sikap dan amalan juga menunjukkan korelasi yang signifikan ($r = 0.367, p = 0.000$). Oleh itu, kajian itu menekankan keperluan pendidikan yang disasarkan, program latihan kolaboratif, dan penguatkuasaan undang-undang kebajikan haiwan yang dipertingkatkan. Usaha ini bertujuan untuk merapatkan jurang antara pengetahuan, sikap dan aplikasi praktikal, memupuk kebajikan yang lebih baik untuk haiwan reptilia di Malaysia.

Kata kunci: Kebajikan Haiwan, Penjagaan, Reptilia, Pemahaman, Pandangan

CERTIFICATION

This is to certify that we have read this research paper entitled '**Knowledge, Attitude and Practice Towards Animal Welfare Among Malaysian Reptile Owners**' by **Aishah Nadine Crowley**, and in our opinion, it is satisfactory in terms of scope, quality, and presentation as partial fulfilment of the requirements for the course DVT 55204 – Research Project.



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LIST OF ABBREVIATIONS

AMR - Antimicrobial Resistance

API - Animal Protection Institute

FAO - Food and Agricultural Organization of the United Nations

KAP - Knowledge, Attitude, and Practices

MBD - Metabolic Bone Disease

OVCTH - Ontario Veterinary College Teaching Hospital

PHD - Doctor of Philosophy

RM - Ringgit Malaysia (currency)

SPSS - Statistical Package for Social Sciences

UNEP - United Nations Environment Programme

UV - Ultraviolet

WHO - World Health Organization

WOAH - World Organisation for Animal Health

LIST OF SYMBOLS

% = Percentage

n = The number of respondents

< = Less than

> = More than

r = Pearson Correlation Coefficient

p = Probability Value



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CHAPTER 1

INTRODUCTION

1.1 Research Background

According to a recently published report by Goetschel (2024), the concern for animal welfare and health has started to gain more public attention due to rising zoonotic diseases and antimicrobial resistance (AMR). This, in turn, prompts global organisations—Food and Agricultural Organization of the United Nations (FAO), the UN Environment Programme (UNEP), the World Health Organization (WHO), and the World Organisation for Animal Health (WOAH)—to develop a "One Health–Joint Plan of Action" spanning from 2022 to 2026. However, animal welfare is given less priority in this plan, resulting in a demand for greater emphasis on animal welfare in global initiatives by animal welfare advocates and academicians (Goetschel, 2024).

This growing concern for animal welfare extends to reptile owners. Since reptiles are classified as having an amniotic development and ectothermic metabolism, proper husbandry procedures are critical to safeguarding the health of both reptiles and their human companions (Williams & Jackson, 2016). There are four orders of living reptiles: the Testudines, Squamata, Crocodylia, and the Rhynchocephalia, which stand for turtles, snakes and lizards, crocodilians, and tuatara, respectively (Doneley, 2017).

In general, reptiles are typically kept for various reasons, such as companionship by pet owners and breeding by reptile breeders. According to Kreger (1993), reptiles are often bred for conservation and research, ranging from molecular to population studies, with zoos and academic institutions keeping and breeding reptiles for these purposes. In another aspect, traditional breeding goals are proposed as focusing solely on profit. However, Wellmann et al. (2023) demonstrate that traditional methods fail when consumer preferences or non-profit motives are prioritized, as they overlook other important factors such as consumer demands, public interest, emotional needs, and both altruistic and performance-driven desires. In contrast, pet owners or those with a keen interest in reptiles might acquire these creatures to indulge their desire for observation and interaction (Kieswetter, 2017).

Moving forward, many of the factors propelling the rise in reptile ownership are due to their distinctive characteristics, hypoallergenic qualities, small size, and ease of care, making them an excellent option for city-dwelling pet enthusiasts (Wall, 2023). In addition, this growth is also linked to several reasons, such as increased human populations, higher levels of education, and exposure to social media (Corcoran, 2021).

However, the growing demand and ease of access to purchasing reptiles also give rise to problems like impulse purchases and unethical breeding practices, ultimately leading to increased cases of reptile welfare neglect, as reported by White & Barber (2017). Based on the aforementioned points, it is crucial to acknowledge that every living being, including reptiles, deserves to have their well-being prioritized to ensure they lead comfortable lives. Locally, not much is known about the status of animal welfare among reptile owners. Therefore, this study aims

to investigate the level of knowledge, attitude, and practices (KAP) among reptile owners, allowing a preliminary assessment of the state of reptile welfare within Malaysia.

1.2 Research Problem Statement

Currently, there is a notable lack of survey research assessing the level of knowledge, attitude, and practices (KAP) among Malaysian reptile owners regarding animal welfare. While studies are conducted globally on the status of welfare among reptiles, this research remains limited, with most focusing on welfare evaluation methods rather than the actual status of reptile well-being. Furthermore, assessments focusing on reptile owners' knowledge, attitudes, and animal care practices are absent. This absence, therefore, creates a major obstacle in determining the current level of KAP of reptile owners, both globally and locally. This highlights the need for the study to develop and validate a questionnaire and to obtain important baseline data on the widespread understanding, perception, ignorance, and adherence to animal welfare practices for reptiles. A KAP survey also allows informed assumptions on the current welfare status of reptiles in Malaysia, considering the lack of proper assessment methods on animal welfare. Thus, this study conducts a preliminary KAP survey among Malaysian reptile owners regarding animal welfare to raise awareness of the issues and requirements needed to improve the execution and maintenance of animal welfare among Malaysian reptile owners.

1.3 Research Questions

- A) What is the level of knowledge among Malaysian reptile owners on animal welfare?
- B) What is the level of attitude of Malaysian reptile owners toward animal welfare?

- C) What is the current level of practice among Malaysian reptile owners towards maintaining animal welfare?
- D) What are the factors associated with the level of KAP among the socio-demographic variables?

1.4 Research Hypothesis

- A) Malaysian reptile owners have a poor level of knowledge on animal welfare.
- B) Malaysian reptile owners have a poor level of attitude towards animal welfare.
- C) Malaysian reptile owners have poor practices towards maintaining animal welfare.
- D) The socio-demographic factors are associated with the level of KAP.

1.5 Research Objectives

- A) To determine the level of knowledge on animal welfare among Malaysian reptile owners.
- B) To determine the level of attitude towards animal welfare among Malaysian reptile owners.
- C) To determine the current practices to maintain animal welfare among Malaysian reptile owners.
- D) To determine the factors associated with the level of KAP among the socio-demographic variables.

CHAPTER 2

LITERATURE REVIEW

2.1 Purpose of KAP Studies And Its Importance

KAP studies serve to explore the interconnected aspects of knowledge, attitudes, and practices that influence understanding, perceptions, or behaviors toward specific topics, actions, or populations, such as animal welfare. KAP surveys, first developed in the 1950s for family planning and population research, are widely used due to their cost-effectiveness and accessibility (Andrade et al., 2020). These studies typically use structured or semi-structured questionnaires, administered either by interviewers or self-reported by participants, to collect both qualitative and quantitative data (Andrade et al., 2020).

Knowledge encompasses an individual's understanding of a topic, while attitudes, shaped by experience, education, and personality, include beliefs, emotions, and motivations that guide behavior (Wambui et al., 2018). These attitudes, together with personality traits, significantly impact the long-standing practices (Wambui et al., 2018).

Given the evident lack of survey research assessing the knowledge, attitudes, and practices (KAP) of Malaysian reptile owners regarding animal welfare, conducting KAP studies offers a valuable opportunity to comprehensively understand how these interconnected factors influence animal care and well-being. This holistic approach allows for the identification of gaps in handling practices and education, helping to design targeted training initiatives and improve care standards (Alemayehu et al., 2022). Ultimately, KAP studies contribute to enhancing animal welfare by

addressing the personal determinants of handling practices and fostering better understanding and implementation of effective care strategies (Alemayehu et al., 2022).

2.2 Importance of Maintaining Animal Welfare

In animal welfare science, welfare is typically divided into three interconnecting elements: emotional well-being, physical well-being, and the ability to lead natural lives (Browning & Veit, 2021). Focusing on the element of having the ability to live natural lives, it is also known as the 'teleological' idea. The teleological notion is based on the belief that animals possess a 'telos', or character derived from their developed powers and capabilities, which are thought necessary for their thriving (Browning & Veit, 2021). This reflects the notion that the ability of an animal to express its natural behaviour is not only essential but positively impacts its quality of life, marking it as a necessity for their welfare. This understanding and acknowledgement are thus embodied in the Five Freedoms (Browning & Veit, 2021) that are:

1) Freedom from Hunger and Thirst

By providing adequate amounts of quality food and water.

2) Freedom from Discomfort

By ensuring an environment that provides the feeling of safety and reduces discomfort.

3) Freedom from Pain, Injury or Disease

Through early detection or quick diagnosis and treatment

4) Freedom to Express Normal Behaviour

By providing adequate living space, appropriate resources, enrichment and companionship of the animal's own kind to invoke normal behaviour.

5) Freedom from Fear and Distress

By implementation of respectful and safe handling, attitude and treatment towards the animal that does not elicit fear and distress.

Applying the principles of the Five Freedoms to practical situations, the capacity to roam, interact with the environment and receive enrichment and express autonomy freely can be related to pleasure and satisfaction. Conversely, restrictions on these freedoms can result in frustration and distress. Thus, the ability to exert free will is considered advantageous or essential for animal welfare.

2.3 Animal Welfare Act in Malaysia

The purpose of animal welfare is to preserve and protect the rights of animals to ensure that they are allowed the opportunity to live a life as close to their natural needs as possible, taking into consideration both their physical and mental state (WOAH, 2024). Thus, the Animal Welfare Act 2015 was created—a law established in Malaysia that surrounded the regulations and guiding principles considered good animal welfare.

The Animal Welfare Act 2015 defines animals as living things other than humans. Despite no specific law that acknowledges animals having emotional ability, the Animal Welfare Act 2015 establishes the Five Freedoms—as previously elaborated by Browning & Veit—which acknowledge that animals are capable of suffering through the experience of fear and pain (API, 2020).

No specification is written in existing animal welfare laws regarding the rights of individual animals, but instead, the laws are written in a manner that places legal responsibilities on animal

keepers to uphold the welfare of all animals under the law. Section 24 of the Animal Welfare Act 2015 states the Five Freedoms in law as the responsibility of animal owners or licence holders, and those who are found guilty of breaking the law can be punished by a fine with imprisonment or imprisonment on their own (API, 2020). In conclusion, reptile keepers are therefore bound by animal welfare obligations (Stucki, 2020) under The Animal Welfare Act 2015 to safeguard animals for their own sake.

2.4 Types of Commonly Privately Owned Reptiles

According to a study by Valdez (2021), global pet popularity trends from 2004 to 2020 were analysed using Google Trends and matched to an online survey of reptile sellers. The most popular reptiles kept as pets within the past five years were compared internationally among nations. The results revealed ball pythons, reticulated pythons, red-eared sliders, leopard geckos, green iguanas, bearded dragons, corn snakes, crested geckos, boa constrictors, chameleons, and king snakes as the top ten most sought-after reptiles (Valdez, 2021). Considering the reptiles listed, many of the proposed study's respondents may already own one or more of the above.

2.5 Types of Reptile Owners

The diverse world of reptile ownership includes 1) those who keep reptiles as companions and 2) dedicated breeders who focus on propagating specific species. This assertion can be supported by the predominant clientele of pet reptile owners and breeders observed bringing their reptiles to private veterinary clinics for various purposes. Within these observations, metabolic bone disease (MBD) stands out as a prevalent health concern among reptiles that have been kept as pets, often stemming from feeding practices that mirror the pet owners' understanding of reptile

welfare. For instance, as highlighted in a study released in 2001, a notable portion of pet iguanas treated at the Ontario Veterinary College Teaching Hospital (OVCTH) were found to have been diagnosed with metabolic bone disease (MBD), ranging from 60% to 100% (McWilliams & Leeson, 2001). This underscores the link between MBD and factors such as deficiency in calcium or vitamin D3 intake, an imbalance in the calcium-to-phosphorus ratio in the diet, and insufficient exposure to UV light necessary for synthesising vitamin D3 (McWilliams & Leeson, 2001).

2.6 Animal Welfare for Reptiles

After considering the basic principles and importance of animal welfare, attention now shifts to the welfare of reptiles. Despite the absence of explicit mention in the Animal Welfare Act 2015, reptiles are encompassed by its guiding principles. Ensuring the best possible health for reptiles involves meeting essential requirements in their care, encompassing aspects like diet, cleanliness, exposure to UV light, temperature regulation, and the setup of their habitat (Laidlaw, 2019).

Regarding reptiles, nutrition is a vital element as an inadequate diet can result in various health issues. To meet the nutritional demands of various species, it's crucial to factor in food quantity, quality, variation, reptile species and activity level. Conversely, overfeeding and a lack of physical activity can result in obesity (Laidlaw, 2019).

Next, the keepers should always consider hygiene when sourcing for live feed, as they serve as a source of parasites and bacteria, thereby heightening the risk of infections (Laidlaw, 2019). Moving on, the photoperiod, heat and exposure to UV radiation are necessary to regulate the metabolism of reptiles. It should reflect behaviours in response to the daily light-dark cycle,

which is divided into four groups: diurnal (active in the day), nocturnal (active at night), crepuscular (active during twilight), and cathemeral (activity during both the day and night) (Gompf & Anacleto, 2019).

While nutritional and physiological needs are crucial, the psychological well-being of reptiles is often overlooked. This neglect is evident in the conditions observed in pet stores, breeding facilities, and the personal collections of many reptile hobbyists (Laidlaw, 2019). Hoehfurtner et al. (2021) and Hollandt et al. (2021) found significant behavioural differences between snake species housed in big and small cages. It was discovered that snakes demonstrated greater activity in big cages and regularly extended out, which was impossible in smaller enclosures. Furthermore, individuals maintained in smaller terrariums exhibited strange habits. Thus, the study emphasises the need to provide adequate enclosure size and enrichment to encourage normal behaviour in reptiles.

2.7 Trends and Current Status of Reptile Welfare

Previous research has scarcely examined reptile owners' awareness, attitudes, and behaviours concerning reptile welfare, especially in Malaysia. Nonetheless, some studies indirectly related to the topic offer insights into trends and the current state of reptile welfare.

In November of 2023, a study investigated how owning reptiles affects people's views on reptile intelligence and care needs (Crisante et al., 2023). The research revealed that people who own reptiles understand the importance of providing stimulating environments and acknowledge reptile cognitive abilities more than non-reptile owners. However, these results alone don't guarantee that reptile owners always provide higher-quality care.

It's important to not only measure owners' awareness but also to evaluate the knowledge of veterinarians, or those training to be veterinarians, who will be responsible for treating reptiles and educating reptile owners. In 2021, a study was conducted among veterinary students, assessing their opinions and knowledge on exotic non-mammal pet welfare. The findings showed that many statements about keeping pet reptiles received neutral or unfavourable feedback. This proves that veterinarians need to understand reptiles better as it affects the advice they give to reptile owners, the quality of care they provide, and how they shape people's views towards reptile care (Ostović et al., 2021).

Another aspect to consider is the frequency of certain diseases among reptiles, which can offer clues about the quality of care they receive. In veterinary clinics, common issues such as nutritional deficiencies, skin and eye problems may develop due to improper diets, improper hygiene and use of unsuitable substrates, resulting in irritation, while internal parasites may arise from feeding contaminated or low-quality food (Rowland, 2009). A similar pattern was observed in an Australian study involving captive central bearded dragons, where internal parasites were found to be the most common health problem (103 cases), followed by metabolic bone disease (65 cases), skin wounds (59 cases), and periodontal disease (48 cases) (Sollom & Baron, 2023).

From the above, it can be deduced that most reptile illnesses are linked to care and management practices. Unfortunately, many reptile owners think that as long as their pets are alive, not visibly sick, and able to reproduce, they are healthy, even if they're not kept in ideal conditions. Despite available information, some owners don't want to spend much money or effort on their pets' health. This is particularly more pronounced among reptile species that are easily obtained at low prices locally, making them easily replaceable.

CHAPTER 3

METHODOLOGY

3.1 Study Area, Design and Population

This study, conducted in Malaysia from September 10 to October 4, 2024, employed a cross-sectional survey to evaluate the knowledge, attitudes, and practices of Malaysian reptile owners regarding animal welfare. The study was carried out among reptile owners in Malaysia.

3.2 Selection Criteria: Inclusion and Exclusion Criteria

The inclusion criteria for this study consisted of reptile owners who owned or had owned reptiles within the past five years, were Malaysian citizens, and were 18 years of age or older and willing to participate. Conversely, the exclusion criteria included non-reptile owners, non-Malaysians, and individuals under 18.

3.3 Sampling Method and Procedure

This study employed a non-probability, convenience sampling method, using online surveys created with Google Forms. The questionnaire was distributed extensively across social media platforms popular among Malaysians, such as Instagram, WhatsApp, Facebook, and Telegram. A single proportion formula was used to determine the minimum sample size for this investigation.

Using the sample size calculator from Calculator.net, the population proportion, P , was set to 50% in the single proportion formula, while the margin of error was set to 10%. This adjustment

was made based on expert opinion upon consultation with the appointed co-supervisor of the research. The purpose of reducing the population proportion was to obtain a minimum number of necessary samples to meet the achievable statistical constraints. From this, a sample size of 97 was obtained for the study. However, during the sample collection, a total of 100 samples were obtained.

3.4 Data Collection Tools

Data was gathered through a newly developed and validated questionnaire hosted on Google Forms, which employed the quantitative KAP survey method. The questionnaire was structured into four parts: sociodemographic, knowledge, attitude, and practices, featuring a mix of closed-ended and Likert scale queries to facilitate quantitative examination.

Malaysian reptile owners' KAP levels were rated as 'good, 'moderate' or 'poor' using Bloom's cut-off criterion (Goni et al., 2019). Incorrect or doubtful responses in the knowledge section were assigned a score of 0, while correct answers earned 1 point, with a maximum possible knowledge score of 16. Therefore, for knowledge, scores between 11 and 16 (above 60%) indicate 'Good' knowledge, while scores between 0 and 10 (below 60%) are classified as 'Poor'.

In the attitude and practice sections, scoring was structured to evaluate respondents' commitment and adherence to animal welfare principles and practices. The highest possible scores represented full marks on all questions, while the minimum score was set at 20% of the total for each section. For attitude, responses ranging from 'strongly agree' to 'strongly disagree' were scored from 5 to 1, respectively (Goni et al., 2019), with scores categorised as Good (80% or

higher, 72–90 points), reflecting strong commitment; Moderate (60–79%, 54–71 points), indicating partial alignment; and Poor (below 59%, 1–53 points), suggesting limited adherence.

Similarly, for practice, responses ranging from ‘always’ to ‘never’ were scored from 5 to 1, with scores classified as Good (over 80%, 81–100 points), denoting consistent preventive behaviours, and Poor (below 80%, 1–80 points), indicating deficiencies in care practices. This framework provided a comprehensive approach to assessing attitudes toward animal welfare and the practical application of care behaviours.

3.5 Validity and Reliability

A pilot study was conducted and the questionnaire was translated into Malay and English and underwent content validation by two veterinary lecturers. Before the main study, a pilot test was conducted with 19 respondents who met similar criteria to assess face validity. Reliability testing was then performed using Cronbach's alpha on the knowledge, attitude, and practice (KAP) sections, yielding values of 0.712, 0.815, and 0.722 for knowledge, attitude, and practice, respectively. These values, being more than 0.7, indicated an acceptable internal consistency reliability. (Arof et al., 2018)

3.6 Data Analysis

Data entry and statistical analysis were performed using the IBM Statistical Package for Social Sciences (SPSS) version 29. The categorical data from socio-demographic variables were analysed descriptively and presented as frequency (percentage %), while numerical data were analysed and presented as mean \pm standard deviation. The Chi-Square test was used to evaluate the association between the knowledge, attitude, and practice (KAP) levels and the socio-

demographic variables. The KAP relationship was evaluated using the parametric test Pearson Correlation and tabulated.

3.7 Ethical Approval

As there were humans involved in this investigation, human ethics approval was required. Therefore, an application for human ethics was carried out and approval was obtained, with the UMK/FPV/HUMAN/EXT/0008/2024 approval code.



CHAPTER 4

RESULTS

4.1 Respondent Profile

The respondent profile, as shown in Table 4.1 for this study, included 100 respondents and highlighted the dominant characteristics of the respondent group across various sociodemographic variables. Most respondents (n = 58, 58%) fell within the age range of 21–30 years. In terms of gender, most respondents were male (n = 81, 81%). The highest representation by state was from Selangor (n = 43, 43%). Regarding education level, most had a Bachelor's degree (n = 43, 43%). Most respondents reported an income range of RM 2500–RM 5000 (n = 37, 37%), while a small proportion (n = 20, 20%) earned less than RM 2500 or were full-time students/unemployed. Additionally, more respondents (n = 73, 73%) had access to veterinary clinics that treated reptiles.

Table 4.1: Summary of Respondent (N=100) Profile

Socio-Demographic Characteristics	Total (n=100)		
	n	%	
Age	18 - 20	8	8
	21 - 30	58	58
	31 - 40	27	27
	41 - 50	4	4
	51 - 60	3	3

Gender	Male	81	81
	Female	19	19
State	Johor	8	8
	Melaka	2	2
	Negeri Sembilan	5	5
	Federal Territory of Kuala Lumpur	17	17
	Selangor	43	43
	Perak	9	9
	Penang	7	7
	Perlis	1	1
	Kelantan	1	1
	Terengganu	1	1
	Pahang	4	4
	Sabah	1	1
	Federal Territory of Labuan	1	1
Education Level	Primary	1	1
	High school	14	14
	Diploma / Matriculation / Foundation / STPM	32	32
	Bachelor's degree	43	43

	Master's degree	9	9
	Doctor of Philosophy (PhD)	1	1
Income	< RM 2500	20	20
	RM 2500 - RM 5000	37	37
	RM 5000 - RM 8000	13	13
	RM 8000 - RM 10000	4	4
	> RM 10000	6	6
	None (Eg: Full- time Student, unemployed)	20	20
Access to Veterinary Clinics Providing Treatment for Reptiles	Yes	73	73
	No	16	16
	I am not sure	11	11

4.2 Respondent Owned Reptile's Information

Based on Table 4.2, the most commonly owned reptile class was lizards (n = 65, 65%) of respondents selecting this category, followed closely by snakes (n = 62, 62%). In contrast, crocodilians were the least commonly owned, with only 1% (n = 1) of respondents selecting this category. Regarding the number of reptiles owned, most respondents owned between 1 to 10 reptiles (n = 72, 72%). This was significantly higher compared to other ownership categories. The lowest ownership class was those owning 31 to 40 reptiles, with only 1% (n = 1) of respondents falling into this group.

Table 4.2: Summary of Respondent Owned Reptile's Information (N=100)

Respondent Owned Reptile's Information		Total (n=100)	
		n	%
Class of Reptiles	Tortoise and terrapins	26	26
	Snake	62	62
	Lizard	65	65
	Crocodylians	1	1
Number of Reptiles Owned	0	2	2
	1 to 10	72	72
	11 to 20	14	14
	21 to 30	2	2
	31 to 40	1	1
	41 to 50	3	3
	51 and above	6	6

4.3 Descriptive Analysis of KAP

Based on Table 4.3, the knowledge scores ranged from 6.00 to 16.00, with a mean of 12.18 and a standard deviation of 1.898, indicating that respondents had relatively consistent knowledge levels with minimal variability. In contrast, the attitude scores ranged more broadly, from 24.00 to 90.00, with a mean of 71.06 and a standard deviation of 10.338, reflecting diverse perspectives

and beliefs. The practice scores ranged from 46.00 to 100.00, with a mean of 75.35 and a standard deviation of 10.924, suggesting that respondents had relatively high practice levels but with moderate variability.

Table 4.3: Descriptive Statistics of KAP

Variable	N	Mean	Std. Deviation.	Minimum Score	Maximum Score
Knowledge	100	12.1800	1.89832	6.0	16.0
Attitude	100	71.0600	10.33756	24.0	90.0
Practice	100	75.3500	10.92433	46.0	100.0

4.4 Assessment of Knowledge, Attitude and Practice

4.4.1 Assessment of Knowledge

Based on Table 4.4, most respondents (n = 78, 78%) were aware that reptiles were protected under the Animal Welfare Act 2015, and an even larger majority (n = 95, 95%) knew that certain species required licensing under the Wildlife Conservation Act 2010 Amendment 2022. Awareness of the Five Freedoms of Animal Welfare was evenly split (n = 50, 50% aware; n = 50, 50% unaware). Nearly all respondents (n = 98, 98%) understood that reptiles require species-specific care and diets, though fewer (n = 40, 40%) recognised the need for calcium supplementation.

A strong majority demonstrated awareness of reptiles' enclosure needs, including adequate space (n = 96, 96%), enrichment (n = 94, 94%), species-specific design (n = 97, 97%), and maintaining proper humidity and temperature (n = 98, 98%). However, awareness of heat lamps

(n = 17, 17%) and UV lamps (n = 19, 19%) was notably lower. All respondents (n = 100, 100%) agreed on the importance of cage cleanliness for reptile welfare.

Most participants (n = 70, 70%) knew the importance of physical examinations, and many (n = 84, 84%) were aware of reptile veterinary services in Malaysia. Almost all respondents (n = 98, 98%) acknowledged that unmet husbandry and dietary needs could cause reptile illness or stress, while a majority (n = 84, 84%) were aware of platforms providing information on reptile care and management.

Table 4.4: Summary of Responses for Knowledge Variable Questions

Knowledge-based item		Total (n=100)			
		Yes		No/I am not sure	
No	Item	<i>n</i>	%	<i>n</i>	%
1	Are you aware that reptiles are protected by the Animal Welfare Act 2015?	78	78	22	22
2	Are you aware that certain species of reptiles require licensing under the Wildlife Conservation Act 2010 in Malaysia?	95	95	5	5
3	Are you aware of the Five Freedoms of animal welfare?	50	50	50	50
4	Different reptile species require different care and diet requirements.	98	98	2	2
5	Do all reptiles need to be provided with calcium supplementation in their diet?	40	40	60	60
6	Reptiles require adequate enclosure space to live comfortably.	96	96	4	4
7	Reptiles require enrichment to stimulate natural behavior.	94	94	6	6
8	Reptiles should be kept in enclosures designed and accessorized in accordance to species requirements and lifestyle habits.	97	97	3	3
9	Reptiles require appropriate maintenance of enclosure humidity and temperature according to species to thrive.	98	98	2	2
10	Do all reptiles need to be provided with heat lamps within their enclosure?	17	17	83	83

11	Do all reptiles need to be provided with UV lamps within their enclosure?	19	19	81	81
12	Cage cleanliness is part of maintaining reptile welfare.	100	100	0	0
13	Do you know how to conduct physical examination on your reptile?	70	70	30	30
14	Are you aware of the availability of reptile veterinary services available in Malaysia?	84	84	16	16
15	Reptiles can become ill and/or stressed when their husbandry and dietary requirements are not met.	98	98	2	2
16	Are you aware of the platforms to access information about care and management of reptiles?	84	84	16	16

4.4.2 Assessment of Attitude

Based on Table 4.5, the majority (n = 48, 48%) remained neutral when questioned if reptiles were sufficiently protected under the Animal Welfare Act 2015, while some respondents (n = 23, 23%) agreed that reptiles were sufficiently protected. Similarly, the majority (n = 45, 45%) held neutral attitudes when questioned if reptiles were sufficiently protected under the Wildlife Conservation Act 2010 Amendment 2022, while a quarter (n = 22, 22%) agreed that reptiles were sufficiently protected. More than half (n = 62, 62%) agreed or strongly agreed that licensing for reptile ownership benefited reptile welfare. The Five Freedoms of animal welfare were valued, with (n = 63, 63%) agreeing or strongly agreeing on the importance of adherence while some (n = 31, 31%) held neutral views.

Regarding dietary needs, the majority (n = 70, 70%) strongly agreed that reptiles require high-quality, species-specific diets, and more than half (n = 69, 69%) strongly agreed on the importance of providing care tailored to species needs. Enclosure requirements were also prioritized, with most (n = 58, 58%) strongly agreeing that enclosures should allow freedom of movement and exploration. Similarly, most respondents (n = 52, 52%) strongly agreed for the need for sensory enrichment, and (n = 56, 56%) strongly agreed to species-specific enclosure requirements. Two-thirds (n = 66, 66%) strongly agreed on maintaining proper humidity and temperature, and a similar proportion (n = 62, 62%) strongly supported regular enclosure cleaning.

Physical examinations were considered important by many, with (n = 77, 77%) agreeing or strongly agreeing. Over half (n = 59, 59%) believed self-treatment of sick reptiles was inadvisable, while some (n = 28, 28%) were neutral. Veterinary costs were seen as high, with (n =

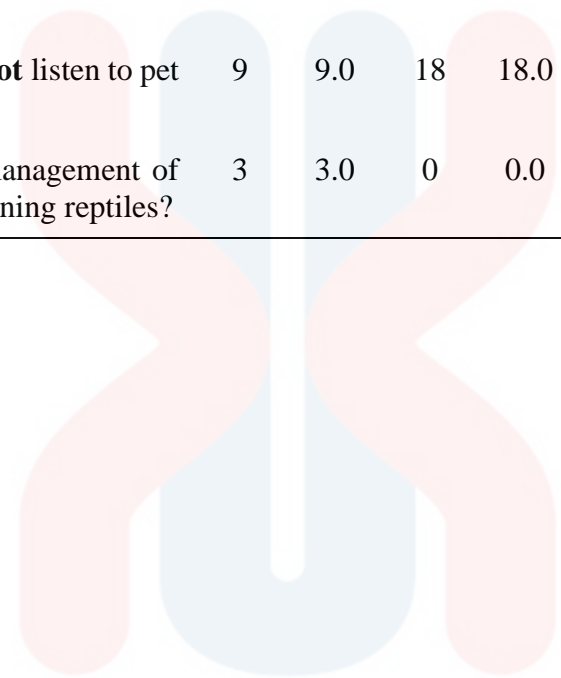
64, 64%) agreeing or strongly agreeing and a moderate portion holding (n = 28, 28%) neutral views. Most respondents (n = 51, 51%) strongly agreed on the importance of following veterinarians' advice. Next, while the majority group (n = 42, 42%) were neutral about ignoring breeder's advice, a similar portion (n = 48, 48%) disagreed or strongly disagreed with ignoring breeder's advice. Similarly, nearly half (n = 49, 49%) were neutral about ignoring pet shop advice, however a split response was obtained between agreeing/strongly agreeing (n = 24, 24%) and disagreeing/strongly disagreeing (n = 27, 27%) with ignoring pet shop advice. Finally, preparation for reptile ownership was widely emphasized, with half (n = 51, 51%) strongly agreeing on the need for research.

Table 4.5: Summary of Responses for Attitude Variable Questions

Attitude-based item		Total scale (n=100)									
		Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
No	Item	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1	Do you think that reptiles are sufficiently protected under the Animal Welfare Act 2015?	9	9.0	9	9.0	48	48.0	23	23.0	11	11.0
2	Do you think that reptiles are sufficiently protected under the Wildlife Conservation Act 2010 Amendment 2022?	10	10.0	9	9.0	45	45.0	22	22.0	14	14.0
3	Do you think reptile ownership licensing is beneficial in the maintenance of reptile welfare?	12	12.0	10	10.0	16	16.0	24	24.0	38	38.0
4	Do you think the Five Freedoms of animal welfare should always be consistently adhered to in reptile keeping?	2	2.0	4	4.0	31	31.0	31	31.0	32	32.0
5	Do you think that reptiles require specific diets of good quality to guarantee maximum development and nourishment?	2	2.0	2	2.0	6	6.0	20	20.0	70	70.0
6	Do you think providing proper care and management according to species requirements is part of maintaining reptile welfare?	3	3.0	3	3.0	0	0.0	25	25.0	69	69.0

7	Do you think that reptiles require enclosures that allows them to stretch out to their full body length, move around and explore to live comfortably?	4	4.0	1	1.0	6	6.0	31	31.0	58	58.0
8	Do you think that reptiles require enrichment to provide sensory stimulation in their environment?	3	3.0	2	2.0	9	9.0	34	34.0	52	52.0
9	Do you think reptiles should be kept in enclosures suited for and accessorized in accordance to species requirements and lifestyle habits?	4	4.0	1	1.0	11	11.0	28	28.0	56	56.0
10	Do you think reptiles require appropriate maintenance of enclosure humidity and temperature according to species to thrive?	3	3.0	1	1.0	4	4.0	26	26.0	66	66.0
11	Do you think that reptile enclosures should be regularly cleaned?	1	1.0	2	2.0	9	9.0	26	26.0	62	62.0
12	Do you think that owners should conduct regular physical examinations of their reptile(s)?	2	2.0	6	6.0	15	15.0	38	38.0	39	39.0
13	Do you think that it is not advisable to self-treat sick reptiles, and instead bring them to the veterinarian for treatment?	6	6.0	7	7.0	28	28.0	28	28.0	31	31.0
14	Do you think that the cost of veterinary care for reptiles in Malaysia is costly?	2	2.0	6	6.0	28	28.0	24	24.0	40	40.0
15	Do you think reptile owner's should listen to veterinarian's advice?	2	2.0	1	1.0	15	15.0	31	31.0	51	51.0
16	Do you think reptile owner's should not listen to reptile breeder's advice?	17	17.0	31	31.0	42	42.0	4	4.0	6	6.0

17	Do you think reptile owner's should not listen to pet shop's advice?	9	9.0	18	18.0	49	49.0	17	17.0	7	7.0
18	Do you think researching care and management of reptiles is an important step before owning reptiles?	3	3.0	0	0.0	3	3.0	20	20.0	74	74.0



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4.4.3 Assessment of Practice

Table 4.6 highlights the respondents' practices regarding reptile care. Most respondents (n = 73, 73%) often or always adhered to the Animal Welfare Act 2015. Similarly, (n = 80, 80%) ensured their reptiles were legally licensed under the Wildlife Conservation Act 2010. Regarding the Five Freedoms of animal welfare, two-thirds of respondents (n = 66, 66%) practiced them frequently, whereas a slightly more than a quarter (n = 25, 25%) practiced it sometimes. High-quality feed was consistently provided by most (n = 74, 74%), while calcium supplementation was always ensured by two-fifths (n = 41, 41%). However, a few (n = 22, 22%) only provided calcium supplementation sometimes.

Enclosure suitability was a priority, with the majority (n = 58, 58%) providing species-appropriate enclosures often or always. Sensory enrichment was often or always by (n = 77, 77%). Environmental controls varied, with less than half (n = 40, 40%) often providing heat lamps and some (n = 27, 27%) doing so sometimes. Similarly, (n = 42, 42%) often used UV lights, while some (n = 27, 27%) did so occasionally. However, just over half (n = 51, 51%) maintained optimal humidity levels consistently, and cleaning practices were followed often or always by (n = 86, 86%).

Physical examinations were conducted often or always by more than half (n = 58, 58%) of respondents, while a smaller portion (n = 28, 28%) performed them occasionally. Self-treatment practices varied, with some (n = 35, 35%) engaging often or always, a few (n = 21, 21%) occasionally, and a higher portion (n = 44, 44%) rarely or never attempting self-treatment. Veterinary care was evenly distributed, with some (n = 36, 36%) often or always taking their

reptiles for health checks, those responding with sometimes and rarely or never were the same (n = 32, 32%). When reptiles showed signs of illness, (n = 63, 63%) sought veterinary care often or always. Compliance with prescribed treatments was high, with (n = 66, 66%) adhering often or always, with only a quarter (n = 22, 22%) complying occasionally.

Listening to veterinarian advice revealed a positive trend, with a prevailing portion (n = 77, 77%) often or always following recommendations. Meanwhile, reliance on breeders and pet shops for advice were moderately high. Only a few (n = 18, 18%) reported often or always disregarding advice from breeders, with the highest majority (n = 44, 44%) disregarding advice from breeders sometimes while some (n = 38, 38%) had never or rarely ignored such advice. With some differences, more than a quarter (n = 27, 27%) often or always disregarded pet shop advice, while the highest group (n = 44, 44%) only did so sometimes while (n = 29, 29%) had never or rarely ignored such advice. Lastly, preparedness in reptile ownership had stood out, as the bulk of respondents (n = 74, 74%) always researched care and management before purchasing reptiles.

Table 4.6: Summary of Responses for Practice Variable Questions.

Practice-based item		Total scale (n=100)									
		Never		Rarely		Sometimes		Often		Always	
No	Item	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
1	Do you ensure to adhere to the Animal Welfare Act 2015 rules and regulations as a reptile(s) owner?	2	2.0	6	6.0	19	19.0	29	29.0	44	44.0
2	Do you ensure that the reptiles under your care that are listed under the Wildlife Conservation Act 2010 are legally licensed?	6	6.0	4	4.0	10	10.0	35	35.0	45	45.0
3	Do you practice and adhere to the Five Freedoms of animal welfare whilst reptile keeping?	4	4.0	5	5.0	25	25.0	27	27.0	39	39.0
4	Do you take the initiative to source high quality feed for your reptile(s)?	1	1.0	0	0.0	8	8.0	17	17.0	74	74.0
5	Do you supplement your reptile(s) diet with calcium?	6	6.0	7	7.0	22	22.0	24	24.0	41	41.0
6	Do you provide your reptile(s) with an enclosure that meets its species requirements?	1	1.0	2	2.0	9	9.0	30	30.0	58	58.0
7	Do you provide enrichment to provide sensory stimulation in your reptile(s) environment?	2	2.0	2	2.0	19	19.0	34	34.0	43	43.0
8	Do you provide heat lamp to your reptile(s)?	27	27.0	6	6.0	27	27.0	12	12.0	28	28.0

9	Do you provide UV light to your reptile(s)?	27	27.0	4	4.0	27	27.0	14	14.0	28	28.0
10	Do you provide the optimal humidity for your reptile(s)?	3	3.0	2	2.0	13	13.0	31	31.0	51	51.0
11	How often do you clean your reptile(s) enclosure?	0	0.0	2	2.0	12	12.0	41	41.0	45	45.0
12	How often do you conduct physical examination on your reptile(s) to asses its health?	6	6.0	8	8.0	28	28.0	29	29.0	29	29.0
13	Do you self-treat your reptile(s)?	23	23.0	21	21.0	21	21.0	22	22.0	13	13.0
14	Do you take your reptiles for health checks at the veterinary clinic?	22	22.0	10	10.0	32	32.0	14	14.0	22	22.0
15	Do you bring your reptile(s) to the veterinarian when it starts acting abnormal and shows signs of sickness?	8	8.0	9	9.0	20	20.0	27	27.0	36	36.0
16	How often do you comply to the treatment regime for your sick reptile(s) prescribed by the veterinarian?	8	8.0	4	4.0	22	22.0	29	29.0	37	37.0
17	How often would you listen to the advice given by your veterinarian?	5	5.0	4	4.0	14	14.0	31	31.0	46	46.0
18	How often do you not listen to the advice given by your breeder?	16	16.0	22	22.0	44	44.0	12	12.0	6	6.0
19	How often do you not listen to the advice given by your pet shop?	14	14.0	15	15.0	44	44.0	18	18.0	9	9.0
20	Do you research about the care and management of a reptile before purchasing?	1	1.0	1	1.0	3	3.0	21	21.0	74	74.0

4.5 Summary of Respondent’s Level of Knowledge, Attitude, And Practice

Referring to Table 4.7, for Knowledge, the 'Good' level (scores 11 to 16) had the highest representation, with (n = 82, 82%) respondents. In the Attitude section, the 'Good' level (scores 72 to 90) also ranked highest, with (n = 54, 54%) respondents. However, for Practice, most respondents fell under the 'Poor' level (scores 1 to 80), with (n = 66, 66%) respondents. These findings highlighted strong knowledge and positive attitudes among respondents, while most demonstrated deficiencies in applying effective reptile care practices.

Table 4.7: Summary of Respondent’s Level of Knowledge, Attitude, And Practice.

Variables	Level	Score	n (%)
Knowledge	Poor	01 to 10	18 (18.0%)
	Good	11 to 16	82 (82.0%)
Attitude	Poor	01 to 53	4 (4.0%)
	Moderate	54 to 71	42 (42.0%)
	Good	72 to 90	54 (54.0%)
Practice	Poor	01 to 80	66 (66.0%)
	Good	81 to 100	34 (34.0%)

4.6 The Associations Between Socio-Demographic Variables And KAP

4.6.1 The Associations Between Socio-Demographic Variables and Knowledge Level

Based on table 4.8, the majority of respondents with ‘Good’ knowledge (46%) were aged 21–30 years, although no significant association was found with age ($p = 0.218$). Males had the highest proportion of ‘Good’ knowledge (68%), but the association with gender was not significant

($p = 0.294$), with an odds ratio of 0.535, suggesting females were less likely to have ‘Good’ knowledge.

In terms of state, Selangor had the highest number of respondents with ‘Good’ knowledge (31%), but the association was not significant ($p = 0.632$). Regarding education, those holding a Bachelor's degree had the largest proportion of ‘Good’ knowledge (32%), though the association was non-significant ($p = 0.132$). For income, respondents earning between RM 2500–RM 5000 had the highest number of ‘Good’ knowledge (33%), with no significant association ($p = 0.434$).

Access to veterinary clinics providing treatment for reptiles showed a significant association with knowledge levels ($p = 0.004$), with the majority of respondents with ‘Good’ knowledge (63%) having access. Ownership of snakes was associated with a higher proportion of ‘Good’ knowledge (52%), although the association was not significant ($p = 0.534$), and the odds ratio suggested a slight increase in knowledge likelihood for snake owners. Lizard owners, though having an odds ratio of 2.154, were twice as likely to have ‘Good’ knowledge, but the association was not significant ($p = 0.141$). Ownership of tortoises, terrapins, and crocodilians showed no significant associations. Lastly, respondents owning 1–10 reptiles had the highest proportion of ‘Good’ knowledge (55%), but the association with the number of reptiles owned was not significant ($p = 0.454$).

Table 4.8: Summary of The Associations Between Socio-Demographic Variables and Knowledge.

Variables	Knowledge Level		Total	Chi Square	P value	Odds Ratio	
	Poor	Good					
Age (year)	18- 20	3	5	8	5.754 ^a	0.218	-
	21- 30	12	46	58			
	31- 40	2	25	27			
	41- 50	0	4	4			
	51- 60	1	2	3			
Gender	Male	13	68	81	1.099 ^a	0.294	0.535
	Female	5	14	19			
State	Johor	0	8	8	9.820 ^a	0.632	-
	Melaka	1	1	2			
	Negeri Sembilan	1	4	5			
	Federal Territory of Kuala Lumpur	3	14	17			
	Selangor	12	31	43			

	Perak	1	8	9			
	Penang	0	7	7			
	Perlis	0	1	1			
	Kelantan	0	1	1			
	Terengganu	0	1	1			
	Pahang	0	4	4			
	Sabah	0	1	1			
	Federal Territory of Labuan	0	1	1			
	Primary	0	1	1	8.483 ^a	0.132	-
	High school	2	12	14			
Education level	Diploma / Matriculation / Foundation / STPM	3	29	32			
	Bachelor's degree	11	32	43			
	Master's degree	1	8	9			
	Doctor of Philosophy (PHD)	1	0	1			
Income	< RM 2500	5	15	20	4.856 ^a	0.434	-
	RM 2500 - RM 5000	4	33	37			

	RM 5000 - RM 8000	2	11	13			
	RM 8000 - RM 10000	0	4	4			
	> RM 10000	1	5	6			
	None (Eg: Full- time Student, unemployed)	6	14	20			
Access to Veterinary Clinics Providing Treatment For Reptiles	Yes	10	63	73	11.196 ^a	0.004	-
	No	2	14	16			
	I am not sure	6	5	11			
Reptile class - Tortoise and terrapins	Not Selected	14	60	74	.163 ^a	0.687	1.283
	Selected	4	22	26			
Reptile class - Snake	Not Selected	8	30	38	.387 ^a	0.534	1.387
	Selected	10	52	62			
Reptile class - Lizard	Not Selected	9	26	35	2.171 ^a	0.141	2.154
	Selected	9	56	65			
Reptile class - Crocodilians	Not Selected	18	81	99	.222 ^a	0.638	0.818
	Selected	0	1	1			

Number of Reptiles Owned

0	0	2	2	5.727 ^a	0.454	-
1 to 10	17	55	72			
11 to 20	1	13	14			
21 to 30	0	2	2			
31 to 40	0	1	1			
41 to 50	0	3	3			
51 and above	0	6	6			

4.6.2 The Associations Between Socio-Demographic Variables and Attitude Level

Based on Table 4.9, most respondents' 'Good' attitudes (32%) and 'Poor' attitudes (24%) were aged between 21–30, but the association was not significant ($p = 0.917$). Males also represented a higher proportion of 'Good' attitudes (42%), but this was not statistically significant ($p = 0.587$).

Respondents from Selangor showed the highest 'Good' attitudes by state (21%), and those with a Bachelor's degree had the largest share by education level (25%). Education level was significantly associated with 'Good' attitudes ($p = 0.001$). RM 2500–RM 5000 income levels had the highest proportion of 'Good' attitudes (23%), but the relationship was insignificant ($p = 0.186$).

Access to veterinary clinics was associated with many 'Good' attitudes (41%), though this was insignificant ($p = 0.659$). Snake owners had a meaningful association with 'Good' attitudes (28%, $p = 0.041$), while ownership of lizards, tortoises, or crocodilians showed no significant relationships ($p > 0.05$). Finally, respondents owning 1–10 reptiles had the highest proportion of 'Good' attitudes (40%), but the association was insignificant ($p = 0.926$).

Table 4.9: Summary of The Associations Between Socio-Demographic Variables and Attitude Level

Variables	Attitude Level			Total	Chi Square	P value	Odds Ratio
	Poor	Mode-rate	Good				
Age (year)	18- 20	1	2	5	3.259 ^a	0.917	-
	21- 30	2	24	32			
	31- 40	1	12	14			
	41- 50	0	2	2			
	51- 60	0	2	1			
Gender	Male	3	36	42	1.064 ^a	0.587	-
	Female	1	6	12			
State	Johor	0	5	3	22.932 ^a	0.524	-
	Melaka	0	1	1			
	Negeri Sembilan	0	1	4			
	Federal Territory of Kuala Lumpur	1	6	10			
	Selangor	1	21	21			

	Perak	1	1	7	9			
	Penang	1	1	5	7			
	Perlis	0	0	1	1			
	Kelantan	0	1	0	1			
	Terengganu	0	1	0	1			
	Pahang	0	4	0	4			
	Sabah	0	0	1	1			
	Federal Territory of Labuan	0	0	1	1			
	Primary	1	0	0	1	29.223 ^a	0.001	-
	High school	1	7	6	14			
Education level	Diploma / Matriculation / Foundation / STPM	1	16	15	32			
	Bachelor's degree	1	17	25	43			
	Master's degree	0	2	7	9			
	Doctor of Philosophy (PHD)	0	0	1	1			
Income	< RM 2500	1	11	8	20	13.715 ^a	0.186	-

	RM 2500 - RM 5000	3	11	23	37			
	RM 5000 - RM 8000	0	8	5	13			
	RM 8000 - RM 10000	0	2	2	4			
	> RM 10000	0	0	6	6			
	None (Eg: Full- time Student, unemployed)	0	10	10	20			
Access to Veterinary Clinics Providing Treatment For Reptiles	Yes	2	30	41	73	2.421 ^a	0.659	-
	No	1	6	9	16			
	I am not sure	1	6	4	11			
Reptile class - Tortoise and terrapins	Not Selected	4	31	39	74	1.495 ^a	0.474	-
	Selected	0	11	15	26			
Reptile class - Snake	Not Selected	0	12	26	38	6.397 ^a	0.041	-
	Selected	4	30	28	62			
Reptile class - Lizard	Not Selected	1	13	21	35	.837 ^a	0.658	-
	Selected	3	29	33	65			
Reptile class - Crocodilians	Not Selected	4	41	54	99	1.395 ^a	0.498	-
	Selected	0	1	0	1			

Number of Reptiles Owned	0	0	0	2	2	5.791 ^a	0.926	-
	1 to 10	4	28	40	72			
	11 to 20	0	7	7	14			
	21 to 30	0	1	1	2			
	31 to 40	0	1	0	1			
	41 to 50	0	2	1	3			
	51 and above	0	3	3	6			

4.6.3 The Associations Between Socio-Demographic Variables and Practice Level

According to Table 4.10, most respondents 'Poor' practices (38%) and 'Good' practices (20%) were aged between 21–30, but this association was not significant ($p = 0.266$). Males had the highest percentages of 'Poor' (56%) and 'Good' practices (25%), with no significant association ($p = 0.172$). However, males were about twice as likely as females to have 'Poor' practices (odds ratio = 2.016).

In Selangor, the highest number of respondents reported both 'Poor' (33%) and 'Good' practices (10%), but this was also not significant ($p = 0.419$). Bachelor's degree holders and those earning RM 2500–RM 5000 showed no significant associations. Access to veterinary clinics revealed a potential trend, with 29% exhibiting 'Good' practices and 44% 'Poor' practices, but it was insignificant ($p = 0.096$).

Snake owners had the highest percentages of both 'Poor' (44%) and 'Good' practices (18%), with slightly lower odds of 'Good' practices (odds ratio = 0.563), but this was not significant ($p = 0.180$). Lizard ownership showed no significant association ($p = 0.400$) but had slightly higher odds of 'Good' practices (odds ratio = 1.463). Ownership of tortoises and crocodylians also showed no significant relationships. Respondents with 1–10 reptiles had the highest representation in both 'Poor' (46%) and 'Good' practices (26%), with no significant association ($p = 0.151$).

Table 4.10: Summary of The Associations Between Socio-Demographic Variables and Practice Level

Variables	Practice Level		Total	Chi Square	P value	Odds Ratio	
	Poor	Good					
Age (year)	18- 20	6	2	8	5.213 ^a	0.266	-
	21- 30	38	20	58			
	31- 40	15	12	27			
	41- 50	4	0	4			
	51- 60	3	0	3			
Gender	Male	56	25	81	1.868 ^a	0.172	2.016
	Female	10	9	19			
State	Johor	5	3	8	12.339 ^a	0.419	-
	Melaka	2	0	2			
	Negeri Sembilan	3	2	5			
	Federal Territory of Kuala Lumpur	8	9	17			
	Selangor	33	10	43			

	Perak	4	5	9			
	Penang	4	3	7			
	Perlis	1	0	1			
	Kelantan	1	0	1			
	Terengganu	1	0	1			
	Pahang	3	1	4			
	Sabah	0	1	1			
	Federal Territory of Labuan	1	0	1			
	Primary	1	0	1	3.419 ^a	0.636	-
	High school	9	5	14			
Education level	Diploma / Matriculation / Foundation / STPM	23	9	32			
	Bachelor's degree	28	15	43			
	Master's degree	4	5	9			
	Doctor of Philosophy (PHD)	1	0	1			
	Income	< RM 2500	13	7	20	4.505 ^a	0.479

	RM 2500 - RM 5000	22	15	37			
	RM 5000 - RM 8000	8	5	13			
	RM 8000 - RM 10000	2	2	4			
	> RM 10000	4	2	6			
	None (Eg: Full- time Student, unemployed)	17	3	20			
Access to Veterinary Clinics Providing Treatment For Reptiles	Yes	44	29	73	4.686 ^a	0.096	-
	No	12	4	16			
	I am not sure	10	1	11			
Reptile class - Tortoise and terrapins	Not Selected	46	28	74	1.868 ^a	0.172	0.493
	Selected	20	6	26			
Reptile class - Snake	Not Selected	22	16	38	1.794 ^a	0.180	0.563
	Selected	44	18	62			
Reptile class - Lizard	Not Selected	25	10	35	.707 ^a	0.400	1.463
	Selected	41	24	65			
Reptile class - Crocodilians	Not Selected	65	34	99	.520 ^a	0.471	0.657
	Selected	1	0	1			

**Number of Reptiles
Owned**

0	0	2	2	9.423 ^a	0.151	-
1 to 10	46	26	72			
11 to 20	12	2	14			
21 to 30	1	1	2			
31 to 40	1	0	1			
41 to 50	3	0	3			
51 and above	3	3	6			

4.7 Correlation Analysis Between Total Knowledge, Attitude and Practice

Based on Table 4.11, the correlation analysis among knowledge, attitude, and practice levels revealed varied relationships. Knowledge and attitude were marginally correlated ($r = 0.045$, $p = 0.654$), with no significant link. However, knowledge and practice showed a low but significant correlation ($r = 0.226$, $p = 0.024$). On the other hand, attitude and practice had a moderate and significant correlation ($r = 0.367$, $p = 0.000$).

Table 4.11: Results of Pearson Correlation

Variables	Pearson Correlation Coefficient (r)	p-value
Knowledge - Attitude	0.045	0.654
Knowledge - Practice	.226*	0.024
Attitude - Practice	.367*	0.000

*. Correlation is significant at $p < 0.05$

CHAPTER 5

DISCUSSION

This study was the first in Malaysia to evaluate the knowledge, attitudes, and practices (KAP) towards animal welfare among reptile owners, as no prior research with the same objective had been conducted locally. The sociodemographic analysis revealed that the majority of respondents (58%) were aged between 21 and 30 years, indicating that reptile ownership was more common among young adults. A study attributed the overrepresentation of younger participants to their increased social media use (Chan et al., 2024), exposing them to reptile-related content and likely contributing to their higher participation in online surveys. Additionally, the gender distribution showed that 81% of respondents were male, suggesting a higher interest among males in reptile ownership. One possible reason could be the perception of reptiles, such as snakes, as being more ‘masculine’ or ‘intimidating’. Another reason could also be influenced by factors such as the appeal of owning exotic or ‘scary’ animals and the thrill associated with keeping them. This trend warrants further investigation to better understand the underlying motivations and cultural factors that shape reptile ownership preferences among different genders.

Most respondents (43%) were from Selangor, likely due to the state's larger population and urban environment, which offered better access to pet stores, veterinary services, and restricted living space. The assumption supported by Corcoran (2021) links urbanisation to increased reptile ownership, as reptiles require less space, making them preferable. In terms of income distribution, the largest group (37%) earned between RM 2500 and RM 5000, from here, it can be presumed that individuals earning moderate incomes are more capable of affording the long-term

maintenance required by reptiles. This aligned with research from Brazil indicating that while some reptiles had high initial acquisition costs, their ongoing dietary and enclosure needs could have led to substantial maintenance expenses (De la Fuente et al., 2023). However, a significant portion (40%) of respondents earned less than RM 2500 or were students/unemployed. This could reflect reptile owners' assumption that reptiles would incur lower maintenance costs due to their small size and relatively low social demands.

Sociodemographic factors like age, gender, state, and income showed no significant associations with KAP levels, suggesting they did not strongly influence reptile care knowledge, attitudes, or practices. However, a few variables exhibited associations. Education emerged as a significant variable, with 43% of respondents holding a Bachelor's degree. Higher education likely fosters more positive attitudes toward animal welfare, as individuals are more inclined to research reptile care, consider feedback, and adapt their attitudes accordingly, an assumption supported by research conducted by Chan et al (2024).

Access to veterinary services was significantly linked to knowledge levels, with 73% of respondents having access to clinics that treat reptiles. This availability likely encourages regular checkups and treatment, through which strong relationships between owners and veterinarians are formed. Such connections help build trust in veterinary care, while also ensuring that owners receive accurate, professional guidance on reptile care. Supporting this notion, Janke et al. (2021) noted as pet owners become increasingly reliant on online sources for information, therefore veterinarians play a crucial role in guiding them toward credible resources. However, in future studies, assessing whether such access is equally available in rural or less developed areas is essential.

As for reptile ownership, lizards were the most owned reptiles, followed by snakes, tortoises and terrapins, and finally, crocodylians. Valdez (2021) states that the popularity of lizards can be attributed to their attractive appearance, variety of morphs, engaging personalities, small size, ease of care, resilience, and docile temperament. In contrast, snake ownership is strongly associated with good attitudes toward animal welfare. This could be due to snake owners' greater involvement in reptile communities, where exposure to diverse opinions and information shapes their views. Additionally, the higher value placed on snakes may encourage owners to adopt more positive attitudes toward animal welfare, driven by the desire to care for their valuable reptiles. Another contributing factor could be the assumption that many respondents were breeders, from the author's knowledge of the respondents' source, which may lead to a greater focus on animal welfare and reinforce the value-driven perspective. However, this aspect was not captured in the study, highlighting the need for further research into how community involvement and breeder status influenced knowledge and attitudes toward reptile care.

We then analysed the KAP scores, which revealed that participants generally had solid foundational knowledge of reptile welfare, suggesting consistent education or exposure. One study attributed the high knowledge to expertise, guidance from influential figures, and collaborative peer learning (Alemayehu et al., 2022). Additionally, favourable attitudes likely stemmed from cultural influences, personal values, and experiences. Studies like Bruder et al. (2022) highlight cultural aversions to reptiles, which may influence these attitudes. Practices scored highest, potentially due to differences in financial resources, dedication, and access to veterinary care. Research indicates that owners who have more access to veterinary care and educational resources are more likely to engage in manners that promote overall well-being (Zhou et al., 2024).

When moving over to the KAP levels, the knowledge evaluation indicated that most participants (82%) demonstrated a strong awareness of animal welfare. Regarding attitudes, 54% of reptile owners held positive views, while 42% exhibited moderate attitudes. However, the practice assessment revealed a concerning trend as most respondents (66%) fell into the ‘poor’ category, indicating widespread inconsistency in preventive care practices among reptile owners.

Focusing on the Animal Welfare Act 2015 and the Wildlife Conservation Act 2010 Amendment 2022, a significant majority of participants demonstrated high awareness of these laws, with 78% recognising reptile protection under the Animal Welfare Act and 95% understanding the licensing requirements for certain species under the Wildlife Conservation Act. However, results revealed that most respondents held a neutral view on whether these laws adequately protect reptiles. This uncertainty might stem from weak enforcement of animal protection laws, as noted by Mohd Ismail (2024), alongside factors identified by Zolkipli (2022), such as insufficient training for law enforcement and the frequent prosecution of offenders under the Penal Code instead of the Animal Welfare Act. As a result, reptile owners may feel less motivated to adhere to welfare standards due to a perceived lack of consequences for neglecting proper care.

Despite these concerns, adherence to laws was reported to be high among respondents. Therefore, while many hesitated to trust their effectiveness, this did not hinder compliance. The findings hint that reptile owners demonstrate a strong sense of responsibility, even with doubts about the laws' efficacy, as reflected by over half (62%) supporting licensing as beneficial for reptile welfare. However, the motivation behind this compliance—whether driven by a genuine

commitment to animal welfare or a desire to avoid legal consequences—warrants further investigation.

Understanding of the Five Freedoms of Animal Welfare among respondents was mixed, likely due to the absence of it being clearly stated in Malaysia's Animal Welfare Act 2015 and uncertainty regarding what the Five Freedoms stood for. Regardless, over half (63%) of participants agreed/strongly agreed that it should always be followed, indicating that the respondents may still value its significance despite the lack of clarity. This was further reflected in practice whereby two-thirds of respondents (66%) reported active implementation, indicative of commitment among many owners to adhere to these welfare standards.

Regarding management, participants generally demonstrated good knowledge of the varied care requirements for different reptile species. However, many owners struggled to recognise that all reptiles need UV and heat sources, as reflected in the divided responses. This confusion may result from the belief that Malaysia's climate is sufficient to provide adequate ambient temperatures and abundant sunlight for most reptiles, potentially leading owners to underestimate the necessity for additional heat sources. For example, Malaysia's average temperature of 27 °C (80.6 °F) is ideal for species such as the Green Iguana and Boa Constrictor, which thrive in temperatures ranging from 24 °C to 32 °C (75 °F to 90 °F) (Vet, 2024). The low understanding of heat lamp and UV light requirements was evident in practice, reflecting gaps in knowledge highlighted in the study.

Similarly, many reptile owners struggled to grasp the importance of calcium supplementation. While most owners recognised that different species have varying care and dietary needs, fewer than half knew calcium supplementation is essential for all reptiles. This is

likely attributed to insufficient knowledge about the importance of calcium supplementation and the dietary composition associated with different reptile feeding habits. Donoghue (1998) highlights that while carnivorous reptiles typically obtain sufficient calcium from vertebrate prey, neonatal prey or exclusively muscle meat may lack adequate calcium. Similarly, invertebrate prey for omnivorous or insectivorous reptiles, as well as vegetable diets for herbivorous reptiles, usually do not provide enough calcium on their own. (Donoghue, 1998) In some cases, owners may rely on ready-made reptile food for species with readily available commercial diets, trusting it to provide all necessary nutrients. This can create the misconception that additional calcium supplementation is unnecessary. As a result of the low understanding, only two-fifths of respondents (41%) reported always providing calcium supplements. This inconsistency underscores a significant gap in knowledge about the nutritional needs of reptiles.

Veterinary costs emerged as a significant concern among reptile owners, with 64% of participants agreeing that veterinary care was expensive. This perception might stem from financial barriers, including consultation and treatment costs, as suggested by Kogan et al. (2024). Additionally, personal perceptions, such as the belief that veterinarians are profit-driven, may further influence these attitudes (Kogan et al., 2024). Meanwhile, over half of respondents (59%) agreed that self-treating sick reptiles was inadvisable. However, self-treatment practices varied, with 44% rarely or never attempting it, while 35% still reported doing so sometimes. This may be due to financial constraints, perceptions of high veterinary costs, and a lack of awareness about the risks of self-treatment, leading some owners to seek alternative purchasing treatments online or from third parties. Pons-Hernandez et al. (2022) suggest that the rise of online selling has exacerbated the issue of illicit veterinary medicines as it caters to those who cannot afford

veterinary care but still wish to treat their pets. As a result, reptile owners can access medications without a prescription, risking improper dosing and contributing to increased AMR from unregulated antibiotic use.

Concerning the above, when asked about bringing their reptiles to veterinary clinics for health check-ups, only 36% of participants indicated that they always or often did so. This response may be influenced by many factors, including limited access to veterinary clinics, the number of reptiles owned, attitudes toward the importance of veterinary care, and concerns about the high cost of treatment. This finding is consistent with owners' attitudes towards veterinary costs in Malaysia. However, despite these concerns, most respondents (63%) sought veterinary care for their reptiles when signs of illness appeared. This suggests that while financial barriers exist, many owners prioritise seeking veterinary assistance when their pets are unwell. However, owners should acknowledge that prevention should be the main goal through regular vet check-ups and good husbandry practices. By focusing on prevention, owners can detect signs of illness and avoid costly treatments.

As for advice seeking, 82% of respondents relied on veterinarians' advice, nonetheless, attitudes toward reptile breeders were divided. Nearly half (48%) disagreed with ignoring breeders' advice, while 42% remained neutral, indicating that many still trust breeders, though with some uncertainty. This reliance on breeder advice was reflected in practice, with 18% of respondents often or always disregarding breeder recommendations, while 38% rarely or never ignored them. Trust among owners may stem from owners being breeders themselves, strong post-purchase relationships, endorsements from the reptile community, positive breeder reviews, and the naivety of new owners. White and Barber (2017) highlight that beginners often trust breeders' advice,

which can lead them to overlook important signs of illness. Breeders often promote reptiles as hardy pets, and new owners may view them as experienced and knowledgeable, leading to this misplaced trust.

In addition to the above, this reliance may also be influenced by the growing trend of reptile owners purchasing animals online from breeders, complicating the dissemination of accurate care information. According to White and Barber (2017), online sellers often prioritise sales over educating buyers about proper care, focusing on the immediate health of the animal rather than ensuring that new owners understand how to provide long-term care. Consequently, many new owners may neglect to seek reliable information after their purchase.

In contrast, attitudes, and practices of ignoring advice from pet shops revealed uncertainty among respondents, with nearly half remaining neutral about the reliability of such guidance for reptile care. This may result from the perception among new reptile owners that pet shop staff are knowledgeable, as they are expected to be in their roles. This belief is particularly pronounced in speciality reptile shops, where expertise is assumed. This highlights the need for improved education and resources to ensure all pet owners receive accurate reptile information.

It is often assumed that individuals with higher levels of knowledge would likely have a more positive attitude towards animal welfare, which would, in return, promote better practices. However, this was not observed in the study. The correlation analysis revealed a statistically insignificant relationship between knowledge and attitude ($r = 0.045$, $p = 0.654$), suggesting that knowledge does not necessarily influence attitudes. On the other hand, knowledge showed a weak but significant positive correlation with practice ($r = 0.226$, $p < 0.05$), indicating that more

knowledge only slightly improved practical application. In contrast, attitude and practice exhibited a moderate positive correlation ($r = 0.367$, $p < 0.01$), meaning that a more positive attitude is associated with better practices. This suggests that attitude is stronger in driving effective practice, emphasising its importance in improving practical performance. The discrepancy could be due to the companionate relationship between reptiles and their owners. This bond focuses on the emotional connection and intrinsic value of the animal as a companion, rather than any functional or material benefits. As a result, even with limited knowledge, owners who maintain a positive attitude toward their reptiles' welfare will likely demonstrate better practices.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

In conclusion, while most reptile owners demonstrate a good knowledge of welfare principles and maintain predominantly good attitudes toward reptile care, significant gaps remain in practical implementation, with majority falling into the poor practice category. Education, access to veterinary services, and reptile ownership emerged as influential factors shaping knowledge and attitudes. Higher education fosters positive attitudes by encouraging engagement and adaptability, while access to reptile-focused veterinary care strengthens knowledge through trust and professional guidance. Ownership trends, such as the popularity of lizards and the advanced knowledge often associated with snake owners, further highlight the diversity within the reptile-keeping community. These findings emphasise the need for targeted interventions to bridge the gap between knowledge, attitudes, and practice, ensuring consistent and effective adherence to reptile welfare standards.

6.2 Recommendations

To address these gaps, the Department of Veterinary Services should collaborate with institutions such as Universiti Putra Malaysia (UPM) and Universiti Malaysia Kelantan (UMK), and private veterinary clinics specialising in exotic animal care to conduct joint educational activities. Educational initiatives centred on the core principles of reptile welfare, including the Five Freedoms, proper husbandry, and responsible ownership, should be widely disseminated across various platforms, focusing on social media platforms. The emphasis on social media arises

from the majority demographic profile, which is predominantly young adults known for being highly tech-savvy and relying heavily on social media as their primary source of information. However, efforts should prioritise leveraging credible social media platforms, including those managed by veterinary clinics, registered, and licensed breeders, and educational institutions.

Educational efforts should also extend beyond social media to include platforms like radio and websites, ensuring that clear reptile care information reaches a broader audience, particularly older generations who may prefer traditional communication methods. By diversifying the platforms used for education, we can ensure that reptile care information is inclusive and accessible to all demographics, fostering better understanding and care practices across generations.

Collaboration among local veterinary faculties, private practice veterinarians, reptile breeders, pet shops, and care experts can organise workshops, webinars, and seminars to enhance local breeders' knowledge and care practices. This ensures that accurate information is provided to purchasers when reptiles are sold. To boost local interest and foster active participation, these events could feature guest speakers such as certified herpetologists, international reptile veterinarians, and expert breeders.

Next, local exotic veterinary clinics could collaborate with international exotic specialist clinics, through exchange training programs to enhance the skills of veterinarians and veterinary technicians. By improving diagnostic accuracy, treatment outcomes, and confidence in handling complex cases, these collaborations would elevate the standard of exotic animal care in Malaysia. This is relevant as building expertise in reptile care would strengthen trust among reptile owners,

encouraging them to seek veterinary care and rely more on local professionals for their reptiles' health and wellbeing.

In addition to educational efforts, the enforcement of the Animal Welfare Act 2015 and the Wildlife Conservation Act 2010 Amendment 2022 can be strengthened through increased training programs, with mandatory participation required for maintaining licenses and authority. These programs should equip veterinarians, animal handlers, and law enforcement personnel with updated knowledge and practical skills related to legislative provisions, ethical treatment, and reptile conservation. This approach will strengthen law enforcement, ensure better maintenance of animal welfare and build trust and compliance amongst reptile owners.

To further improve this research, future studies could address the imbalance in representation by focusing on under-represented groups among reptile owners rather than predominantly on snake owners, who were well-represented in this study. By expanding the sample size and diversity among non-snake owners, researchers can gather more detailed and comprehensive data on animal welfare practices and attitudes. This approach ensures a broader understanding of welfare standards across the reptile-owning community. Additionally, this research did not account for breeder status, involvement in reptile communities, or accessibility to veterinary clinics offering reptile care within the state of residence. Further studies are needed to explore how these factors influence knowledge and attitudes toward reptile care, providing a deeper understanding of their impact.

Another limitation of this study lies in the scoring criteria utilized. To enhance the consistency and comparability of results in future studies, a standardized three-level scoring

system could be adopted, with categories such as 'Poor,' 'Moderate,' and 'Good' applied across all three sections of the KAP analysis. However, implementing such a system would require future researchers to source or develop a credible and validated scoring framework specifically tailored to assess levels of KAP concerning animal welfare. This would ensure that the scoring system is both reliable and relevant, enabling more accurate assessments of participants' understanding and behavior regarding animal welfare issues.

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APPENDIX

8.1 Appendix 1: Google Survey Questionnaire

<p>11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS</p> <div style="border: 1px solid black; height: 60px; width: 100%;"></div> <h3>KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS</h3> <p>Hello, greetings to all reptile owners! My name is Aishah Nadine Crowley, a fourth year Doctor of Veterinary Medicine student from the Faculty of Veterinary Medicine, University Malaysia Kelantan.</p> <p>We wish to invite you to participate in a simple online survey regarding animal welfare among Malaysian reptile owners. This survey aims to investigate the current level of knowledge, attitude and practice towards animal welfare among Malaysian reptile owners.</p> <p>You are eligible to participate in this study if you meet the following criteria as listed below:</p> <ol style="list-style-type: none"> 1. Reptile owners who currently have reptile(s) or previously had reptile(s) in the past 5 years 2. Malaysians 3. Age of 18 years and above 4. Non-veterinarians <p>This survey contains 5 sections:</p> <ol style="list-style-type: none"> 1. Reptile owner's socio-demographic information 2. Reptile(s) information 3. Knowledge about animal welfare for reptiles 4. Attitude towards animal welfare for reptiles 5. Practice towards animal welfare for reptiles <p>Participation in this study is entirely voluntary. You have the right to refuse to participate and are free to withdraw at any time without facing coercive action. All the personal information collected will be kept strictly confidential and will be used solely for research purposes only. Your response will</p> <p>Pre-fill responses, then click "Get link"</p> <p>Uzuzus ammas wemare diring mlayesian repture owners.</p> <p>https://docs.google.com/forms/d/1DCPX5v9uu2JZ1X1E8GCGQbwg1UzzMBA16Mco9Eh0j/prefill 1/25</p>	<p>11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS</p> <p>If you have any questions about the study, please contact:</p> <ol style="list-style-type: none"> 1. Aishah Nadine Crowley (d20b0087@siswa.umk.edu.my) 2. Dr. Goh Soon Heng (soonheng.g@umk.edu.my) <p>By completing this survey, you are consenting to participate in this study.</p> <p><i>Salam sejahtera kepada semua pemilik haiwan reptilia! Saya Aishah Nadine Crowley, pelajar tahun empat Doktor Perubatan Veterinar daripada Fakulti Perubatan Veterinar, Universiti Malaysia Kelantan.</i></p> <p><i>Kami ingin menjemput anda untuk mengambil bahagian dalam soal selidik kami tentang kebajikan haiwan dalam kalangan pemilik haiwan reptilia Malaysia. Tujuan soal selidik ini adalah untuk memahami tahap pengetahuan, sikap dan amalan tentang kebajikan haiwan dalam kalangan pemilik haiwan reptilia Malaysia.</i></p> <p><i>Anda layak untuk menyertai kajian ini jika anda memenuhi kriteria seperti berikut:</i></p> <ol style="list-style-type: none"> 1. Pemilik haiwan reptilia yang membela reptilia pada masa ini atau pernah membela haiwan reptilia dalam tempoh 5 tahun yang lalu 2. Rakyat Malaysia 3. Umur 18 tahun ke atas 4. Bukan doktor veterinar <p><i>Kajian ini mempunyai 5 bahagian:</i></p> <ol style="list-style-type: none"> 1. Maklumat sosio-demografi pemilik haiwan reptilia 2. Maklumat haiwan reptilia 3. Pengetahuan tentang kebajikan haiwan untuk haiwan reptilia 4. Sikap terhadap kebajikan haiwan untuk haiwan reptilia 5. Tahap amalan ke arah kebajikan haiwan untuk haiwan reptilia <p><i>Penyertaan dalam kajian ini adalah secara sukarela. Anda mempunyai hak untuk menolak daripada menyertai dan bebas untuk menarik diri pada bila-bila masa sahaja tanpa menghadapi sebarang tindakan paksaan. Semua maklumat peribadi yang dikumpul akan dirahsiakan sepenuhnya dan hanya akan digunakan untuk tujuan penyelidikan sahaja. Maklum balas anda akan sangat membantu saya menilai tahap pengetahuan, sikap dan amalan semasa terhadap kebajikan haiwan dalam kalangan pemilik haiwan reptilia Malaysia.</i></p> <p>Pre-fill responses, then click "Get link"</p> <p>https://docs.google.com/forms/d/1DCPX5v9uu2JZ1X1E8GCGQbwg1UzzMBA16Mco9Eh0j/prefill 2/25</p>
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11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

2. Dr. Goh Soon Heng (soonheng.g@umk.edu.my)
 Dengan melengkapai soal selidik ini, anda bersetuju untuk mengambil bahagian dalam kajian ini.

** Indicates required question*

CONSENT FORM / BORANG PERSETUJUAN *

I do understand the purpose of the survey and agree to participate in this study.
 Saya memahami tujuan tinjauan dan bersetuju untuk mengambil bahagian dalam kajian ini.

Yes, I agree / Ya, saya setuju

SECTION A: REPTILE OWNER'S SOCIO-DEMOGRAPHIC / BAHAGIAN A: SOSIO-DEMOGRAFI PEMILIK HAIWAN REPTILIA

Age (year) / Umur (tahun) *

18-20
 21-30
 31-40
 41-50
 51-60
 61-65
 > 65

Gender / Jantina *

Male / Lelaki
 Female / Perempuan

Pre-fill responses, then click "Get link"

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11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

State / Negeri *

Johor
 Melaka
 Negeri Sembilan
 Federal Territory of Kuala Lumpur / Wilayah Persekutuan Kuala Lumpur
 Federal Territory of Putrajaya / Wilayah Persekutuan Putrajaya
 Selangor
 Perak
 Penang
 Kedah
 Perlis
 Kelantan
 Terengganu
 Pahang
 Sabah
 Sarawak
 Federal Territory of Labuan / Wilayah Persekutuan Labuan

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGQbwg1UzzMBA16McojfcEhcnjpreffill> 4/25



11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Education level / Peringkat Pendidikan *

What is the highest degree or level of school you have completed?
If currently enrolled, highest degree received.

*Apakah ijazah atau tahap tertinggi sekolah yang pernah anda terima?
Jika masih berdaftar, ijazah tertinggi yang sudah anda diterima*

- Primary / Sekolah Rendah
- High school / Sekolah Menengah
- Diploma / Matriculation / Foundation / STPM
- Bachelor's degree / Ijazah Sarjana Muda
- Master's degree / Ijazah Sarjana
- Doctor of Philosophy (PHD) / Doktor Falsafah
- No formal schooling / Tiada persekolahan forma

Income / Pendapatan *

- < RM 2500
- RM 2500 - RM 5000
- RM 5000 - RM 8000
- RM 8000 - RM 10000
- > RM 10000
- None (Eg: Full-time Student, unemployed) / Tiada (Cth: Pelajar sepenuh masa, tidak bekerja)

Pre-fill responses, then click "Get link"

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5/25

11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you have access to veterinary clinics providing treatment for reptiles? *

Adakah anda mempunyai akses ke klinik veterinar yang menyediakan rawatan untuk haiwan reptilia?

- Yes/ Ya
- No / Tidak
- I am not sure / Saya tidak pasti

SECTION B: OWNED REPTILE'S INFORMATION / BAHAGIAN B: MAKLUMAT HAIWAN REPTILIA YANG DIMILIKI

Which class does your reptile belong in? (select one or more answers) *

Haiwan reptilia anda tergolong dalam kumpulan kelas yang manakah? (pilih satu atau lebih jawapan)

- Tortoise and terrapins / Kura-kura dan labi-labi
- Snake / Ular
- Lizard / Cicak
- Crocodilians / Buaya

How many reptiles do you own? *

Berapakah bilangan haiwan reptilia yang anda miliki?

Your answer

SECTION C: KNOWLEDGE ABOUT ANIMAL WELFARE FOR REPTILES / BAHAGIAN C: PENGETAHUAN TENTANG KEBAJIKAN HAIWAN UNTUK REPTILIA

Pre-fill responses, then click "Get link"

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11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS	11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS
<p>2. No / Tidak 3. I am not sure / Saya tidak pasti</p>	<p>Different reptile species require different care and diet requirements. *</p>
<p>Are you aware that reptiles are protected by the Animal Welfare Act (2015)? *</p> <p>Adakah anda sedar bahawa haiwan reptilia dilindungi oleh Akta Kebajikan Haiwan (2015)?</p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>	<p>Spesies haiwan reptilia yang berbeza memerlukan penjagaan dan keperluan diet yang berbeza.</p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>
<p>Are you aware that certain species of reptiles require licensing under the Wildlife Conservation Act (2010) Amendment 2022 to be owned in Malaysia? *</p> <p>Adakah anda sedar bahawa terdapat spesies haiwan reptilia tertentu yang memerlukan pelesenan di bawah Akta Pemuliharaan Hidupan Liar (2010) Pindaan 2022 untuk dimiliki di Malaysia?</p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>	<p>Do all reptiles need to be provided with calcium supplementation in their diet? *</p> <p>Adakah semua haiwan reptilia perlu dibekalkan dengan suplemen kalsium dalam diet mereka?</p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>
<p>Are you aware of the Five Freedoms of animal welfare? *</p> <p>Adakah anda sedar tentang Lima Kebebasan kebajikan haiwan?</p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>	<p>Reptiles require adequate enclosure space to live comfortably. (eg., reptiles require enclosures that allow them fully stretch their entire bodies length as well as move around) *</p> <p>Haiwan reptilia memerlukan ruang kandang yang mencukupi untuk hidup dengan selesa. (cth., haiwan reptilia memerlukan kandang yang membolehkan mereka meregangkan seluruh badannya sepenuhnya serta bergerak)</p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>
<p>Pre-fill responses, then click "Get link"</p>	<p>Pre-fill responses, then click "Get link"</p>
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<p>7/25</p>	<p>8/25</p>



<p>11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS</p>	<p>11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS</p>
<p>Reptiles require enrichment to stimulate natural behavior (e.g., adding fresh substrate, new enclosure accessories, or rearranging the enclosure). *</p> <p><i>Haiwan reptilia memerlukan pengayaan untuk merangsang tingkah laku semula jadi. (cth., menambah substrat baru, aksesori kepungan baharu atau menyusun semula kepungan).</i></p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>	<p>Do all reptiles need to be provided with heat lamps within their enclosure? *</p> <p><i>Adakah semua haiwan reptilia mesti mempunyai lampu haba dalam kandang mereka?</i></p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>
<p>Reptiles should be kept in enclosures designed and accessorized in accordance to species requirements and lifestyle habits. *</p> <p><i>Haiwan reptilia hendaklah disimpan dalam kandang yang direka bentuk dan dilengkapi aksesori mengikut keperluan spesies dan tabiat gaya hidup.</i></p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>	<p>Do all reptiles need to be provided with UV lamps within their enclosure? *</p> <p><i>Adakah semua spesies haiwan reptilia memerlukan lampu UV di dalam kandangnya?</i></p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>
<p>Reptiles require appropriate maintenance of enclosure humidity and temperature according to species to thrive. *</p> <p><i>Haiwan reptilia memerlukan penyelenggaraan yang sesuai pada kelembapan dan suhu kandang mengikut spesies untuk berkembang maju.</i></p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>	<p>Cage cleanliness is part of maintaining reptile welfare. *</p> <p><i>Kebersihan kandang adalah sebahagian daripada menjaga kebajikan haiwan reptilia.</i></p> <p><input type="radio"/> Yes / Ya <input type="radio"/> No / Tidak <input type="radio"/> I am not sure / Saya tidak pasti</p>
<p>Pre-fill responses, then click "Get link"</p>	<p>Pre-fill responses, then click "Get link"</p>
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11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you know how to conduct physical examination on your reptile? *

Adakah anda tahu cara menjalankan pemeriksaan fizikal pada haiwan reptilia anda?

Yes / Ya

No / Tidak

I am not sure / Saya tidak pasti

Are you aware of the availability of reptile veterinary services available in Malaysia? *

Adakah anda sedar tentang ketersediaan perkhidmatan veterinar haiwan reptilia yang terdapat di Malaysia?

Yes / Ya

No / Tidak

I am not sure / Saya tidak pasti

Reptiles can become ill and/or stressed when their husbandry and dietary requirements are not met.(eg., **weakness, reduced feeding, diarrhea or sudden weight loss**) *

*Haiwan reptilia boleh menjadi sakit dan/atau tertekan apabila keperluan pemernakan dan pemakanan mereka tidak dipenuhi. (cth., **kelemahan, kurang makan, cirit-birit atau penurunan berat badan secara tiba-tiba**)*

Yes / Ya

No / Tidak

I am not sure / Saya tidak pasti

Pre-fill responses, then click "Get link"

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11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Are you aware of the platforms to access information about care and management of reptiles? *

Adakah anda mengetahui tentang platform untuk mengakses maklumat tentang penjagaan dan pengurusan haiwan reptilia?

Yes / Ya

No / Tidak

I am not sure / Saya tidak pasti

SECTION D: ATTITUDE TOWARDS ANIMAL WELFARE FOR REPTILES / BAHAGIAN D: SIKAP TERHADAP KEBAJIKAN HAIWAN UNTUK REPTILIA

Choice: / Pilihan:

1. Strongly disagree / Sangat tidak setuju
2. Disagree / Tidak setuju
3. Neutral / Neutral
4. Agree / Setuju
5. Strongly agree / Sangat bersetuju

Do you think that reptiles are sufficiently protected under the Animal Welfare Act (2015)? *

Adakah anda berpendapat bahawa haiwan reptilia cukup dilindungi di bawah Akta Kebajikan Haiwan (2015)?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Pre-fill responses, then click "Get link"

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11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you think that reptiles are sufficiently protected under the Wildlife Conservation Act (2010) Amendment 2022? *

Adakah anda berpendapat bahawa haiwan reptilia dilindungi secukupnya di bawah Akta Pemuliharaan Hidupan Liar (2010) Pindaan 2022?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think reptile ownership licensing is beneficial in the maintenance of reptile welfare? *

Adakah anda fikir pelesenan pemilikan haiwan reptilia bermanfaat dalam pemeliharaan kebajikan haiwan reptilia?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think the Five Freedoms of animal welfare should always be consistently adhered to in reptile keeping? *

Adakah anda fikir Lima Kebebasan kebajikan haiwan perlu sentiasa dipatuhi secara konsisten dalam pemeliharaan haiwan reptilia?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzMBA16McojfcEh0jrefill>

13/25

11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you think that reptiles require specific diets of good quality to guarantee maximum development and nourishment? *

Adakah anda berpendapat bahawa haiwan reptilia memerlukan diet khusus yang berkualiti untuk menjamin perkembangan dan pemakanan yang maksimum?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do think providing proper care and management according to species requirement is part of maintaining reptile welfare? *

Adakah anda fikir menyediakan penjagaan dan pengurusan yang betul mengikut keperluan spesies adalah sebahagian daripada menjaga kebajikan haiwan reptilia?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think that reptiles require enclosures that allows them to stretch out to their full body length, move around and explore to live comfortably? *

Adakah anda fikir haiwan reptilia memerlukan kandang yang membolehkan mereka meregangkan badannya ke seluruh badan, bergerak dan meneroka untuk hidup dengan selesa?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Pre-fill responses, then click "Get link"

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14/25



11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you think that reptiles require enrichment to provide sensory stimulation in their environment?(e.g., adding fresh substrate, new enclosure accessories, or rearranging the enclosure). *

*Adakah anda fikir haiwan reptilia memerlukan pengayaan untuk memberikan rangsangan deria dalam persekitaran mereka?
(cth., menambah substrat baru, aksesori kepungan baharu atau menyusun semula kepungan).*

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think reptiles should be kept in enclosures suited for and accessorized in accordance to species requirements and lifestyle habits? *

Adakah anda fikir haiwan reptilia harus disimpan dalam kandang yang sesuai dan dilengkapi aksesori mengikut keperluan spesies dan tabiat gaya hidup?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think reptiles require appropriate maintenance of enclosure humidity and temperature according to species to thrive? *

Adakah anda fikir haiwan reptilia memerlukan penyelenggaraan yang sesuai pada kelembapan dan suhu kandang mengikut spesies untuk berkembang maju?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Pre-fill responses, then click "Get link"

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15/25

11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you think that reptile enclosures should be regularly cleaned? *

Adakah anda fikir kandang haiwan reptilia perlu dibersihkan dengan kerap?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think that owners should conduct regular physical examinations of their reptile(s)? *

Adakah anda berpendapat bahawa pemilik haiwan reptilia harus menjalankan pemeriksaan fizikal secara berkala ke atas haiwan reptilia mereka?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think that it is not advisable to self-treat sick reptiles, and instead bring them to the veterinarian for treatment?(eg., weakness, reduced feeding, diarrhea or sudden weight loss) *

*Adakah anda berfikir bahawa tidak digalakkan untuk merawat sendiri haiwan reptilia yang sakit, dan sebaliknya membawanya ke doktor haiwan untuk rawatan?
(cth., kelemahan, kurang makan, cirit-birit atau penurunan berat badan secara tiba-tiba)*

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzMBA16McojfcEh0jrefill>

16/25



11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you think that the cost of veterinary care for reptiles in Malaysia is costly? *

Adakah anda fikir kos servis veterinar untuk haiwan reptilia di Malaysia mahal?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think reptile owner's **should** listen to veterinarian's advice? *

Adakah anda fikir pemilik haiwan reptilia **patut** mendengar nasihat doktor haiwan?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think reptile owner's **should not** listen to reptile breeder's advice? *

Adakah anda fikir pemilik haiwan reptilia **tidak patut** mendengar nasihat penternak reptilia?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Do you think reptile owner's **should not** listen to pet shop's advice? *

Adakah anda fikir pemilik haiwan reptilia **tidak patut** mendengar nasihat kedai haiwan peliharaan?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzM8A16McojfcEh0jpreffl> 17/25

11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you think researching care and management of reptiles is an important step before owning reptiles? *

Adakah anda fikir menyelidik penjagaan dan pengurusan haiwan reptilia adalah langkah penting sebelum memiliki haiwan reptilia?

1 2 3 4 5

Strongly disagree / Sangat tidak setuju Strongly agree / Sangat bersetuju

SECTION E: LEVEL OF PRACTICE TOWARDS ANIMAL WELFARE FOR REPTILES / BAHAGIAN E: TAHAP AMALAN KE ARAH KEBAJIKAN HAIWAN UNTUK REPTILIA

Choice: / Pilihan:

1. Never / Tidak pernah
2. Rarely / Jarang
3. Sometimes / Kadang-kadang
4. Often / Selalu
5. Always / Sentiasa

Do you ensure to adhere to the Animal Welfare Act (2015) rules and regulations as a reptile(s) owner? *

Adakah anda memastikan untuk mematuhi peraturan Akta Kebajikan Haiwan (2015) sebagai pemilik haiwan reptilia?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzM8A16McojfcEh0jpreffl> 18/25



11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you ensure that the reptiles under your care that are listed under the Wildlife Conservation Act (2010) are legally licensed? *

Adakah anda memastikan bahawa haiwan reptilia di bawah jagaan anda yang disenaraikan di bawah Akta Pemuliharaan Hidupan Liar (2010) dilesenkan secara sah?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you practice and adhere to the Five Freedoms of animal welfare whilst reptile keeping? *

Adakah anda mengamalkan dan mematuhi Lima Kebebasan kebajikan haiwan semasa memelihara haiwan reptilia?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you take the initiative to source high quality feed for your reptile(s)? (eg., buying fresh rats, sourcing clean feeder insects or high quality replacer diets). *

*Adakah anda mengambil inisiatif untuk mendapatkan makanan berkualiti tinggi untuk haiwan reptilia anda?
(cth., membeli tikus segar, mendapatkan serangga penyuaap bersih atau diet pengganti yang berkualiti tinggi).*

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Pre-fill responses, then click "Get link"

https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzMBA16McqJcEh0jrefill 19/25

11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you supplement your reptile(s) diet with calcium? *

Adakah anda menambah diet haiwan reptilia anda dengan kalsium?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you provide your reptile(s) with an enclosure that meets its species requirements? *

Adakah anda menyediakan haiwan reptilia anda dengan kandang yang memenuhi keperluan spesiesnya?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you provide enrichment to provide sensory stimulation in your reptile(s) environment?(e.g., adding fresh substrate, new enclosure accessories, or rearranging the enclosure). *

*Adakah anda menyediakan pengayaan untuk memberikan rangsangan deria dalam persekitaran haiwan reptilia anda?
(cth., menambah substrat segar, aksesori kandang baharu atau menyusun semula kandang).*

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Pre-fill responses, then click "Get link"

https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzMBA16McqJcEh0jrefill 20/25



11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you provide heat lamp to your reptile(s)? *

Adakah anda menyediakan lampu haba kepada haiwan reptilia anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you provide UV light to your reptile(s)? *

Adakah anda menyediakan cahaya UV kepada haiwan reptilia anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you provide the optimal humidity for your reptile(s)? *

Adakah anda menyediakan kelembapan optimum untuk haiwan reptilia anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

How often do you clean your reptile(s) enclosure? *

Berapa kerap anda membersihkan kandang haiwan reptilia anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzMBA16McojUcEhojrefill>

21/25

11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

How often do you conduct physical examination on your reptile(s) to assess its health? *

Berapa kerap anda menjalankan pemeriksaan fizikal ke atas haiwan reptilia anda untuk menilai kesihatannya?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you self-treat your reptile(s)? *

Adakah anda mengubat sendiri haiwan reptilia anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you take your reptiles for health checks at the veterinary clinic? *

Adakah anda membawa haiwan reptilia anda untuk pemeriksaan kesihatan di klinik veterinar?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzMBA16McojUcEhojrefill>

22/25



11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

Do you bring your reptile(s) to the veterinarian when it starts acting abnormal and shows signs of sickness?(eg., **weakness, reduced feeding, diarrhea or sudden weight loss**) *

Adakah anda membawa haiwan reptilia anda ke doktor veterinar apabila ia mula bertindak tidak normal dan menunjukkan tanda-tanda penyakit? (cth., kelemahan, kurang penyusuan, cirit-birit atau penurunan berat badan secara tiba-tiba)

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

How often do you comply to the treatment regime for your sick reptile(s) prescribed by the veterinarian? *

Berapa kerap anda mematuhi rejim rawatan untuk haiwan reptilia anda yang sakit yang ditetapkan oleh doktor haiwan?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

How often **would you listen** to the advice given by your veterinarian? *

Berapa kerap anda akan mendengar nasihat yang diberikan oleh doktor veterinar anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Pre-fill responses, then click "Get link"

<https://docs.google.com/forms/d/1DCPX5v9uu2J2X1sEaGCGGbwg1UzzM8A16McojlcEhojrefill> 23/25

11/16/24, 7:48 PM KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANIMAL WELFARE AMONG MALAYSIAN REPTILE OWNERS

How often **do you not listen** to the advice given by your breeder? *

Berapa kerap anda tidak mendengar nasihat yang diberikan oleh penternak anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

How often **do you not listen** to the advice given by your pet shop? *

Berapa kerap anda tidak mendengar nasihat yang diberikan oleh kedai haiwan kesayangan anda?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Do you research about the care and management of a reptile before purchasing? *

Adakah anda menyelidik tentang penjagaan dan pengurusan haiwan reptilia sebelum membeli?

1 2 3 4 5

Never / Tidak pernah Always / Sentiasa

Get link

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8.2 Appendix 2: Cronbach's Alpha Results

KNOWLEDGE

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.712	.650	12

ATTITUDE

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.815	.846	18

PRACTICE

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.722	.771	20