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EXPLORING HUMAN-PET BOND, KNOWLEDGE AND ATTITUDES AMONG MALAYSIANS ON ANIMAL-ASSISTED INTERVENTION TO ENHANCE HEALTH AND WELL-BEING

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EXPLORING HUMAN-PET BOND, KNOWLEDGE AND ATTITUDES AMONG MALAYSIANS ON ANIMAL-ASSISTED INTERVENTION TO ENHANCE HEALTH AND WELL-BEING

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CERTIFICATION

It is hereby certified that we have read this project paper entitled "Exploring human-pet bond, knowledge and attitudes among Malaysians on animal-assisted intervention (AAI) to enhance health and well-being", by Kong San Ling and in our opinion it is satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the course VPD 4999 - Final Year Project.

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DEDICATION

This thesis is dedicated to my supervisor, Dr. Nur Indah Ahmad, my co-supervisors, Dr. Mark Hiew Wen Han and Dr. Nor Sheereen Zulkefly, my family and friends.

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CONTENTS

LIST OF ABBREVIATIONS

AAI	animal-assisted intervention
AAT	animal-assisted therapy
AAE	animal-assisted education
AAA	animal-assisted activity
MRSA	methicillin-resistant Staphylococcus aureus

LIST OF TABLES

MENGKAJI IKATAN ANTARA MANUSIA DENGAN HAIWAN KESAYANGAN, PENGETAHUAN DAN PANDANGAN RAKYAT MALAYSIA TENTANG INTERVENSI BANTUAN HAIWAN UNTUK MENINGKATKAN KESIHATAN DAN KESEJAHTERAAN

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ABSTRAK

Kajian ini menunjukkan bahawa Intervensi Bantuan Haiwan (AAI) telah diaplikasikan secara meluas di negara-negara maju dan keputusannya positif dari segi kesihatan psikologi, fizikal, dan emosi pesakit. Walau bagaimanapun, AAI kurang dikaji di Malaysia dan data pemilikan haiwan kesayangan di Malaysia kurang lengkap. Oleh itu, kajian ini bertujuan untuk (i) menyelidik ikatan manusia-haiwan melalui interaksi yang dilaporkan sendiri, (ii) menyiasat manfaat dan risiko yang dirasai dari interaksi antara manusia dengan haiwan, dan (iii) menentukan tahap pengetahuan dan sikap rakyat Malaysia terhadap AAI. Satu tinjauan dalam talian telah dijalankan dan seramai 402 rakyat Malaysia telah menyertai kajian ini. Data yang dikumpul telah dianalisis secara deskriptif dan hubungan ditentukan menggunakan ujian Mann-Whitney U dan ujian Kruskal-Wallis H. Majoriti responden adalah wanita (73.9%) dan majoriti responden berketurunan Cina (76.4%). Berkenaan dengan status pekerjaan, majoriti responden bekerja (55.0%). Kebanyakan responden melaporkan memiliki sekurang-kurangnya seekor haiwan kesayangan (62.7%) dan di kalangan pemilik haiwan kesayangan, kebanyakan dari mereka memiliki anjing (40.9%). Jantina dan status pekerjaan tidak memberi kesan signifikan terhadap tahap ikatan manusia-haiwan di kalangan pemilik haiwan kesayangan. Kajian ini menunjukkan perbezaan yang signifikan ($p<0.05$) antara individu dengan atau tanpa ikatan manusia-haiwan dalam persepsi manfaat dan risiko interaksi manusia-haiwan. Pemilik haiwan kesayangan menunjukkan persepsi manfaat interaksi manusia-haiwan yang lebih baik daripada bukan pemilik haiwan, manakala

individu bukan pemilik haiwan menunjukkan tahap persepsi risiko interaksi manusia-haiwan yang lebih tinggi daripada pemilik haiwan. Tiada perbezaan yang signifikan diperhatikan antara individu dengan atau tanpa ikatan manusia-haiwan dalam tahap pengetahuan rakyat Malaysia tentang penggunaan AAI untuk meningkatkan kesihatan dan kesejahteraan mereka. Berkenaan dengan sikap rakyat Malaysia terhadap penggunaan AAI untuk meningkatkan kesihatan dan kesejahteraan mereka, perbezaan yang signifikan ($p<0.05$) diperhatikan antara individu dengan atau tanpa ikatan manusia-haiwan. Pemilik haiwan menunjukkan sikap yang lebih positif daripada bukan pemilik haiwan terhadap penggunaan AAI untuk meningkatkan kesihatan dan kesejahteraan. Kesimpulannya, individu dengan ikatan manusia-haiwan menunjukkan persepsi manfaat yang lebih baik terhadap interaksi manusia-haiwan dan sikap yang lebih positif terhadap AAI untuk meningkatkan kesihatan dan kesejahteraan, menunjukkan kepentingan mempromosikan pemilikan haiwan kesayangan, yang seterusnya dapat mendorong pelaksanaan AAI secara meluas di Malaysia, seiring dengan One Health.

EXPLORING HUMAN-PET BOND, KNOWLEDGE AND ATTITUDES AMONG MALAYSIANS ON ANIMAL-ASSISTED INTERVENTION TO ENHANCE HEALTH AND WELL-BEING

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ABSTRACT

Animal-assisted intervention (AAI) has been commonly implemented in developed countries and the outcomes are positive in terms of psychological, physical and emotional health of the patients. However, AAI is poorly studied in Malaysia and pet ownership data in Malaysia is sparse. Hence, this study aimed to (i) explore human-pet bond through their self-reported interactions, (ii) investigate the perceived benefits and risks from human-pet interactions and (iii) determine the level of knowledge and attitudes of Malaysians towards AAI. A cross-sectional online survey was conducted and a total of 402 Malaysians participated in this study. Data collected were descriptively analysed and associations were determined using Mann-Whitney U test and Kruskal-Wallis H test. Majority of the respondents were female (73.9%) and the survey consisted of a predominantly Chinese respondents (76.4%). Regarding their employment status, majority of the respondents were working (55.0%). Most of the respondents reported owning at least a pet (62.7%) and among the pet owners, most of them owned dogs (40.9%). Gender and employment status did not significantly affect the level of human-pet bond among pet owners. This study showed significant difference ($p<0.05$) between people with or without human-pet bond in the benefits and risks perception of human-pet interaction. Pet owners were shown to have a more favorable perception of benefits of human-pet interaction than non-pet owners while non-pet owners shown to have a higher level of risks perception of human-pet interaction compared to pet owners. No significant difference was observed between

people with or without human-pet bond in the level of knowledge of Malaysians on the use of AAI to enhance their health and well-being. Regarding to attitudes of Malaysians on the use of AAI to enhance their health and well-being, significant difference ($p<0.05$) was observed between people with or without human-pet bond. Pet owners exhibited a more positive attitude than non-pet owners on the use of AAI to enhance health and well-being. In conclusion, people with human-pet bond shown to have a more favorable benefits perception towards human-pet interaction and a more positive attitude towards AAI to enhance health and well-being, indicating the importance of promoting pet ownership, which, in turn, can encourage AAI to be widely implemented in Malaysia, aligning with the One Health approach.

1.0 INTRODUCTION

Animal-assisted intervention (AAI) is defined as goal-oriented and organised intervention, utilising animals in health, education and human-service for positive therapeutic effects in humans (Jegatheesan et al., 2014). It consists of three subtypes which are animal-assisted therapy (AAT), animal-assisted education (AAE) and animal-assisted activity (AAA).

AAI has been implemented in developed countries and the outcomes are positive in terms of psychological, physical and emotional health of the patients. There is a study showing that AAI reduces depression levels in people with dementia (Batubara et al., 2022). Another study showed that feeding dogs a treat with a pair of tongs can improve perception, focus and provide sensory stimulation (Püllen et al., 2013). In some countries, dogs have been trained for sniffing out disease in people due to their superior sense of smell. Early detection of diseases such as cancer is crucial for effective treatment.

While there are many potential benefits of AAI, there are also concerns and risks associated with AAI. However, with strict protocol, the benefits of AAI seems to outweigh the risks of it. Consequently, AAI has been widely implemented in many developed countries, resulting in positive outcomes in terms of physical, emotional, social and cognitive functioning (Bert et al., 2016).

The potential use of AAI is poorly studied in Malaysia. As the societal and cultural factors in Malaysia differs than Western countries where AAI has been implemented and established, there is a significant gap in our understanding on how AAI is perceived, accepted and utilised in the Malaysian context. Therefore, this study will provide

preliminary data which can be used as a basis to enhance animal-human bond and explore the implementation of animal-assisted interventions as a means to achieve One Health. Moreover, this study also explored the characteristics of human-pet bond through their self-reported interactions and investigate the perceived benefits and risks from human-pet interactions as well as determine the level of knowledge and attitude of Malaysians of AAI on human health and well-being.

1.1 Objectives

The objectives of this study were:

1. To explore the characteristics of human-pet bond through their self-reported interactions.

2. To investigate the perceived benefits and risks from human-pet interactions.

3. To determine the level of knowledge and attitude of Malaysians of AAI on human health and well-being.

1.2 Hypothesis

The null hypotheses (H_0) for this study were:

1. There is no significant difference between people with or without human-pet bond in the benefits and risks perception of human-pet interactions.

2. There is no significant difference between people with or without human-pet bond in the level of knowledge and attitude of Malaysians on the use of AAI to enhance their health and well-being.

The alternative hypotheses (H_a) for this study were:

1. There is a significant difference between people with or without human-pet bond in the benefits and risks perception of human-pet interactions.

2. There is a significant difference between people with or without human-pet bond in the level of knowledge and attitude of Malaysians on the use of AAI to enhance their health and well-being.

2.0 LITERATURE REVIEW

2.1 Definition of Animal-Assisted Intervention

Animal-assisted intervention (AAI) is defined as goal-oriented and organised approach, involving animals in health, education and human-service for rehabilitative effects in humans (Jegatheesan et al., 2014). It is an umbrella term that includes animal-assisted therapy (AAT), animal-assisted education (AAE) and animal-assisted activity(AAA) (Santaniello et al., 2020). AAT is described to enhance human health and well-being through inclusion of animals, depending on the emotional, psychological and physical interactions between human, animals and the environment (Chen et al., 2022). AAE is an approach designed to be delivered by educational or related service professionals for academic purposes to enhance social skills and improve cognitive performance while AAA is defined as an organised and goal-oriented informal engagement and visitation carried out by human-animal team to deliver encouragement, education or enjoyment. (Jegatheesan et al., 2014).

2.2 Human-Animal Bond

Effective implementation of AAI relies on the interaction between human and animals, where this interaction between the two can refer as human-animal bond. Hence, the human-animal bond is the indispensable factor for successful execution of AAI. Human-animal bond is a mutually advantageous and active interaction between human and

animals, with this bond consistently forming between human and animals. (Applebaum et al., 2021).

Based on an online survey carried out by Rakuten Insight in January 2021, approximately 59% of Malaysians owning a pet. Among these pet owners, 20% have dogs as their pets, while 34% have cats as pets (Rakuten Insight, 2021). This data suggests the significant presence of pets in Malaysian households, underscoring the importance of pets in the lives of Malaysians and the special bond they share with their companion animals.

Furthermore, there is a rising trend in pet humanization, where people treat their pets as their family members, indicating by the increasing purchase of pet care products and pet insurance for their pets. This is further evidenced in the report of Mordor Intelligence (2023), predicting that the Malaysia Pet Food Market size is expected to grow from USD 230.13 million in 2023 to USD 309.42 million by 2028, at a CAGR of 6.10% from 2023 to 2028. This highlights the growing intensity of the industry, and reflects the massive pet ownership among Malaysians.

2.3 Benefits and Risks of Pet Ownership

Having pets can offer a wide range of benefits to individuals in terms of social, mental and physical aspects. Pet dog has been recognised as a social catalyst that can enhance interaction between people and boost social network as pet dog can motivate conversation between strangers (McNicholas & Collis, 2000). Another study also proposed that pet owners were more likely to be familiar with their neighbours compared to those without pets through incidental social interaction and bonding (Wood

et al., 2015). In terms of mental well-being, pets as companions has been proved as an approach to address loneliness among homeless youth as pets can offer unconditional love to their owners, motivating them to live on due to the responsibilities to take care of their pets (Rew, 2000). A study by Friedman and Krause-Parello (2018) claimed that pets can improve owner's quality of life by providing a calming and anxiolytic effect on the owners. Besides, pets have also been shown to reduce systolic blood pressure, mean arterial pressure and heart rate of children during physical examination in a clinical setting, thereby decreasing stress and anxiety levels in children (Nagengast et al., 1997). In terms of physical well-being, a study revealed that both cat and dog owners have shown higher level of daily physical activity than those without pets (Raina et al., 1999). A study also showed that dog walking can promote physical activity and play a crucial role in weight management with the evidence of decrease in the prevalence of obesity among dog walkers than those dog owners who did not walk their dogs as well as non-dog owners(Coleman et al., 2008).

While owning pets comes with lots of advantages, it is important to acknowledge that pets also pose risks to humans. Interacting with companion animals exposes humans to the potential of contracting zoonotic diseases such as salmonellosis, giardiasis, cryptosporidiosis, bartonellosis, campylobacteriosis and toxoplasmosis (Friedmann & Son, 2009). While there is a potential for contracting diseases, Friedmann & Son (2009) indicated that proper education can significantly reduce the risk, even for individuals with compromised immune system. Besides that, pet bites are also considered a frequent risk that could lead to bacterial infection (Damborg et al., 2016). Damborg et al. (2016) also claimed that pet birds, especially the psittacine family can act as a significant source of Chlamydia psittaci, leading to parrot fever which can be severe and life-threatening. Furthermore, companion animals, food-producing animals and humans can also carry

pathogens and parasites that can easily transmit between species, causing marked health issues (Sterneberg-Van der Maaten et al., 2016). Moussa et al. (2021) also stated that companion animals such as dogs and cats are noteworthy reservoirs of Helicobacter infection, with either no or mild clinical signs.

2.4 Knowledge and Attitudes Towards AAI

Malaysian National Animal Welfare Foundation (MNAWF) was founded in 1998, primarily to raise awareness and promote a sense of responsibility among all Malaysians on animal welfare. Animal-assisted activities is one of the actions of this foundation, involving the introduction of pets into orphanages and welfare homes where they will instill affection within the home through caring for pets.

Another program called Dr. Dog was initiated in 2007 in Malaysia, providing animal-assisted therapy to a diverse range of individuals such as elderly, physically handicapped, mentally impaired and orphans. A pilot study revealed that this program is able to enhance the patient's pro-activeness, verbal interaction and increase participation of a group of mentally impaired adults in different activities, improving cooperation between patients and staffs as well as among the patients themselves.

Furthermore, Curtin University Malaysia (2018) claimed that they had reintroduced animal-assisted therapy as a measure to relieve the stress of students during their preparation for the upcoming final exams by involving pet owners from both campus and public who volunteered their pets to be engaged with staffs and students.

Several examples of AAI have been implemented in Malaysia; however, widespread adoption of AAI practices is still limited, which could be due to concerns about the risks associated with animals.

2.5 Benefits and Risks of AAI

Several studies have highlighted the advantages of AAI. One study revealed that AAI can enhance the physiological and psychological well-being of patients with schizophrenia as well as boosting their social skills and encouraging a healthier lifestyle (Chieh-An and Man Hua,2023). Batubara et al. (2022) claimed that AAI has the potential to reduce depression levels in people with dementia. Additionally, a study also indicated that feeding dogs a treat with a pair of tongs can improve perception, focus and provide sensory stimulation (Pullen et al., 2013).

While there are many potential benefits of AAI, there are also concerns and risks associated with AAI. A research claimed that therapy animals can carry hospital-associated pathogens (Dalton et al., 2020), which is further supported in another study, which asserted that therapy dogs visiting hospitals are approximately 5 times more likely to carry methicillin-resistant *Stapylococcus aureus* than those therapy dogs visiting other places (Lefebvre et al., 2009).

3.0 MATERIALS AND METHODS

3.1 Ethical Approval

This study commenced after obtaining approval from the Ethics Committee for Research Involving Human Subjects, Universiti Putra Malaysia (JKEUPM-2023-479) and the proposal of study was approved by the research committee at the faculty level (Faculty of Veterinary Medicine).

3.2 Study Design

A cross-sectional survey using a questionnaire that has been pre-tested with was conducted online using Google Form that was validated to explore human-pet bond, perceived benefits and risks from human-pet interactions and to determine the level of knowledge and attitude towards animal-assisted intervention among Malaysians on human health and well-being.

3.3 Subject Criteria

3.3.1 Inclusion criteria

The respondents must be Malaysians, aged 18 and above and can understand Bahasa Malaysia or English language.

3.4 Sampling methods and data collection

Purposive sampling and snowball method have been employed for this study. The calculated sample size using Raosoft calculator was 385 respondents. The targeted respondents was recruited for a period of 3 weeks (28 August 2023 - 18 September 2023). A set of online questionnaire (Google Form) was distributed to the public through social media platform such as Whats-App, Facebook and Instagram. The respondents' consent to participate was obtained, confidentiality was assured and the data collected

will solely be used for this study. Respondents participated on a voluntary basis and had the right to withdraw at any time without giving reasons.

3.5 Research tools/instruments

A survey questionnaire in a form of online Google Form was employed. The survey was provided in both Bahasa Malaysia and English languages which required approximately 10 minutes to complete.

The survey questionnaire was divided into 4 sections: i) Demographic details; ii) Self-reported human-pet interaction to indicate human-pet bond; iii) Perceived benefits and risks of human-pet interaction on self-health and well-being; iv) Knowledge and attitudes on animal-assisted intervention to enhance human health and well-being. The questions were designed using dichotomous and multichotomous closed-ended questions as well as 5-point Likert scale. Section 1 consisted of 6 questions on the respondents' personal information and whether they owned pets. Section 2 which is adapted from Poresky's Companion Animal Bonding Scale consisted of 8 questions on human-pet bond using a 5-point Likert scale ranging from never to always. Section 3 comprised of 11 questions using a 5-point Likert scale ranging from strongly disagree to strongly agree. Among these, 6 questions related to perceived benefits of pet ownership while 5 questions related to perceived risks of pet ownership. Section 4 consisted of 12 questions at which 4 questions focused on knowledge towards AAI while 8 questions focused on attitude of respondents towards AAI. Overall, the survey consisted a total number of 37 questions (Appendix).

3.6 Data analysis

3.6.1 Pilot study

Prior to the actual study, a pre-test phase of the questionnaire was conducted on 40 participants, all of which matched to the inclusion criteria of the study. Comprehension of instructions and questions from the survey, time taken for completion of the questionnaire and problems raised during the pre-test were assessed and addressed based on the respondents' feedback. The calculated Cronbach alpha value of more than 0.7 was achieved except for the questions assessing knowledge of respondents towards AAI with a Cronbach alpha of 0.6 which is considered acceptabe as the questions are related to exploratory assessment. Hence, the survey was deemed reliable and valid. The same questionnaire was used throughout the entire study with only minor modifications.

3.6.2 Score calculation

There were 8 questions in section 2 assessing human-pet bond, using a 5-point Likert scale. Score 1 was given to "Never", score 2 was given to " Rarely", score 3 was given to "Sometimes", score 4 was given to "Often" while score 5 was given to "Always". The total scores for section 2 was 40. Higher scores indicates a stronger human-pet bond among pet owners.

There were 11 questions in section 3 using a 5-point Likert scale. Score 1 was given to "Strongly disagree", score 2 was given to "Disagree", score 3 was given to "Neutral", score 4 was given to "Agree", score 5 was given to " Strongly agree". The 6 questions focused on perceived benefits of pet ownership. Higher scores indicates a stronger perception of the benefits of pet ownership. The 5 questions focused on perceived risks

of pet ownership. Higher scores indicates a stronger perception of the risks of pet ownership.

For knowledge assessment, 4 dichotomous closed-ended questions were designed. A score of 1 was assigned to "No" while a score of 2 was given to "Yes" for the first 3 questions in the knowledge section. Conversely, a score of 1 was given to "Yes" while a score of 2 was given to "No" for the fourth question. The total scores for this part was 8. Higher scores indicates a higher level of knowledge regarding AAI.

For attitude assessment, 8 dichotomous closed-ended questions were designed. Respondents received a score of 1 for "No" and a score of 2 for "Yes". The total scores for attitude assessment was 16. Higher scores indicates a more positive attitude towards AAI.

3.6.3 Statistical analysis

Data from the Google Form was exported to Microsoft Excel, data filtering and coding was carried out. The data was then transferred into IBM SPSS version 26.0 for statistical analysis. Categorical variables were measured as frequencies and percentages. Kolmogorov-Smirnov test was performed to evaluate data normality. As the data exhibited a non-normal distribution, inference statistics (Mann-Whitney U and Kruskal-Wallis H tests) were used to determine the difference in mean rank. A P-value <0.05 was considered statistically significant for Mann-Whitney U test and Kruskal-Wallis H test.

4.0 RESULTS

A total of 402 responses were received within the data collection phase of the study.

4.1 Socio-demographic characteristics

The socio-demographic details of the respondents were summarised in Table 1. There were 297 (73.9%) female respondents and 105 (26.1%) male respondents. The survey consisted of a predominantly Chinese respondent group, comprising 307 (76.4%) respondents. Additionally, there were 51 (12.7%) Malay respondents, 16 (4.0%) Indian respondents and 28 (7.0%) respondents which are categorised as others are mainly 'bumiputera', including Iban, Kadazan, Dusun and Melanau. Regarding their employment status, majority of the respondents are working (55.0%), followed by 30.8% who are currently students, 9% are retired and 5.2% are unemployed. In terms of pet ownership, majority of the respondents (62.7%) reported owning at least one pet, while 37.3% did not have any pets. Out of the 252 respondents who are pet owners, 103 individuals (40.9%) owned dogs. This was followed by 89 respondents (35.3%) who owned cats and 19.4% of them owned both dogs and cats.

Table 1: Socio-demographic details of respondents.

Characteristics		Frequency (n)	Percentage (%)
Age	18 and above	402	100
Gender	Male	105	26.1
	Female	297	73.9
Ethnicity	Malay	51	12.7
	Indian	16	4.0
	Chinese	307	76.4
	Other	28	7.0
Nationality	Malaysian	402	100.0
Employment status	Studying	124	30.8
	Working	221	55.0
	Unemployed	21	5.2
	Retired	36	9.0
Pet Ownership	No	150	37.3
	Dogs	103	25.6
	Cats	89	22.1
	Dogs and cats	49	12.2
	Dogs and fish	1	0.2
	Rabbits	4	1.0
	Fish	1	0.2
	Tortoise and fish	1	0.2
	Tortoise	1	0.2
	Tortoise, turtles, fish and leopard gecko	1	0.2
	Hamster	1	0.2
	Birds	1	0.2

4.2 Self-reported human-pet interaction to indicate human-pet bond

The result of human-pet bond details is summarised in Table 2. Among 252 pet owners, majority of them (46.0%) always were responsible for their companion animal's care. There were 34.1% of the pet owners always cleaned up after their companion animals. More than half of the pet owners (52.0%) always hold, stroke or pet their companion animals. Majority of the pet owners (46.8%) never let their companion animals sleep in their room. Majority of the pet owners always felt that their companion animals were responsive to them (43.7%) and felt that they had a close relationship with their companion animals (48.4%). Most of the pet owners (70.2%) never travelled with their

companion animals within a year and the majority of them (38.5%) never slept near their companion animals.

Table 2: Human-pet bond

Questions	Never (n,%)	Rarely (n,%)	Sometimes (n,%)	Often (n,%)	Always (n,%)
1. How often were you responsible for your companion animal's care?	2 (0.8%)	17 (6.7%)	56 (22.2%)	61 (24.2%)	116 (46.0%)
2. How often did you clean up after your companion animal?	10 (4%)	36 (14.3%)	53 (21.0%)	67 (26.6%)	86 (34.1%)
3. How often did you hold, stroke, or pet your companion animal?	7 (2.8%)	11 (4.4%)	39 (15.5%)	64 (25.4%)	131 (52.0%)
4. How often did your companion animal sleep in your room?	118 (46.8%)	27 (10.7%)	35 (13.9%)	24 (9.5%)	48 (19.0%)
5. How often did you feel that your companion animal is responsive to you?	3 (1.2%)	13 (5.2%)	36 (14.3%)	90 (35.7%)	110 (43.7%)
6. How often did you feel that you had a close relationship with your companion animal?	6 (2.4%)	9 (3.6%)	48 (19.0%)	67 (26.6%)	122 (48.4%)
7. How often do you travel with your companion animal in a year?	177 (70.2%)	44 (17.5%)	22 (8.7%)	4 (1.6%)	5 (2%)
8. How often did you sleep near your companion animal?	97 (38.5%)	38 (15.1%)	45 (17.9%)	33 (13.1%)	39 (15.5%)

4.3 Perceived benefits and risks of human-pet interaction on self-health and well being

The data for perceived benefits of human-pet interaction on self-health and well-being was tabulated in Table 3 below. Among the 402 respondents, more than half of the respondents (57.4%) do agree that pets increase human's physical activity. There were 48.5% of the respondents and 38.6% of the respondents do agree that pets can decrease stress level. Majority of the respondents agree (47.8%) and strongly agree (47.0%) that pets can decrease feelings of loneliness. More than half of the respondents (52.2%) do agree that pets reduce symptoms of depression and majority of the respondents (49.5%) do agree that pets reduce symptoms of anxiety. Majority of the respondents (48.5%) do agree that pets improve relationships between partners, friends, or family members.

Table 3: Perceived benefits of human-pet interaction

Questions	Strongly Disagree (n,%)	Disagree (n,%)	Neutral (n,%)	Agree (n,%)	Strongly Agree (n,%)
1. Pets increase human's physical activity.	5 (1.2%)	8 (2%)	57 (14.2%)	230 (57.2%)	102 (25.4%)
2. Pets decrease stress level.	3 (0.7%)	6 (1.5%)	43 (10.7%)	195 (48.5%)	155 (38.6%)
3. Pets decrease feelings of loneliness.	4 (1.0%)	3 (0.7%)	14 (3.5%)	192 (47.8%)	189 (47.0%)
4. Pets reduce symptoms of depression.	0 (0.0%)	7 (1.7%)	40 (10.0%)	210 (52.2%)	145 (36.1%)
5. Pets reduce symptoms of anxiety.	3 (0.7%)	8 (2.0%)	72 (17.9%)	199 (49.5%)	120 (29.9%)
6. Pets improve relationships between partners, friends or family members.	0 (0.0%)	8 (2.0%)	82 (20.4%)	195 (48.5%)	116 (28.9%)

Table 4 showed the perceived risks of human-pet interaction of the respondents. Out of the 402 respondents, majority of the respondents (43.0%) neither agree nor disagree that pets often cause allergies in humans. There were 46.0% of the respondents expressed a neutral stance, neither agreeing nor disagreeing, on the notion that pets frequently cause asthma in humans. Most of the respondents (40.3%) neither agree nor disagree that pets often cause injury in humans and 36.1% of the respondents expressed a neutral stance, neither agreeing nor disagreeing that pets often cause disease transmission. Most of the respondents (42.0%) disagree that owning a pet is a risk to their health.

Table 4: Perceived risks of human-pet interaction

Questions	Strongly Disagree (n,%)	Disagree (n,%)	Neutral (n,%)	Agree (n,%)	Strongly Agree (n,%)
7. Pets often cause allergies in humans.	14 (3.5%)	95 (23.6%)	173 (43.0%)	103 (25.6%)	17 (4.2%)
8. Pets often cause asthma in humans.	25 (6.2%)	96 (23.9%)	185 (46.0%)	87 (21.6%)	9 (2.2%)
9. Pets often cause injury in humans.	30 (7.5%)	140 (34.8%)	162 (40.3%)	59 (14.7%)	11 (2.7%)
10. Pets often cause disease transmission.	34 (8.5%)	153 (38.1%)	145 (36.1%)	65 (16.2%)	5 (1.2%)
11. Owning a pet is a risk to your health.	97 (24.1%)	169 (42.0%)	95 (23.6%)	34 (8.5%)	7 (1.7%)

4.4 Assessment on knowledge and attitudes of Malaysians on AAI to enhance human health and well-being

The data indicating knowledge of Malaysians on AAI are tabulated in Table 5 below. Over half of the respondents (51.0%) indicated they have never been acquainted with the concept of AAI. A substantial majority of the respondents, accounting for 92.3%, were aware that AAI involves employing animals in health, education and humans services to yield positive effects in humans. The majority of the respondents (92.5%) were aware that AAI has been proven to improve physical, social, emotional or cognitive functioning. Most of the respondents (76.1%) acknowledged that AAI has not been widely implemented in Malaysia.

Table 5: Knowledge on AAI

Questions	No (n,%)	Yes (n,%)
1.Have you ever heard of animal-assisted intervention?	205 (51.0%)	197 (49.0%)
2. Animal-assisted intervention involves utilising animals in health, education and human service for beneficial effects in humans.	31 (7.7%)	371 (92.3%)
3. Animal-assisted intervention has been proved to improve physical, social, emotional or cognitive functioning.	30 (7.5%)	372 (92.5%)
4. Animal-assisted intervention has been widely implemented in Malaysia.	306 (76.1%)	96 (23.9%)

Table 6 shows the data of the attitudes of respondents on the use of AAI. Over half of the respondents believe that AAI improves physical health (84.1%), mental health (91.0%) and social health (87.8%). Most of the respondents (69.9%) do think that AAI should be implemented in hospital settings and most of the respondents (78.4%) believe that AAI should be implemented in educational setting which is school, college or university. Besides that, the majority of the respondents do think that AAI should be implemented in the workplace. Over 60% of the respondents do believe that AAI will

not negatively affect animal welfare and will not increase the risk of zoonoses transmission.

Table 6 : Attitudes on AAI

Questions	No (n,%)	Yes (n,%)
1. Do you think animal-assisted intervention improves physical health?	64 (15.9%)	338 (84.1%)
2. Do you think animal-assisted intervention improves mental health?	36 (9.0%)	366 (91.0%)
3. Do you think animal-assisted intervention improves social health?	49 (12.2%)	353 (87.8%)
4. Do you think animal-assisted intervention should be implemented in hospital settings?	121 (30.1%)	281 (69.9%)
5. Do you think animal-assisted intervention should be implemented in school, college or university?	87 (21.6%)	315 (78.4%)
6. Do you think animal-assisted intervention should be implemented in the workplace?	133 (33.1%)	269 (66.9%)
7. Do you believe that animal-assisted intervention will not negatively affect animal welfare?	141 (35.1%)	261 (64.9%)
8. Do you think that animal-assisted intervention will not increase the risk of zoonoses transmission?	155 (38.6%)	247 (61.4%)

4.5 Demographic details vs level of bonding

Table 7 shows the difference between dog and cat owners in terms of human pet bond. Since p value is less than 0.05, null hypothesis is rejected. There is a significant difference between cat and dog owners in the level of human-pet bond. In this study, cat owners have a higher mean rank than dog owners, indicating a higher level of human-pet bond compared to dog owners.

Table 7: Dog owners and cat owners vs human-pet bond (N=192)

Variable	Ownership	N	Mean Rank	Sum of Ranks	*U*	P-value
Human-pet bond	Dog	103	85.95	8852.50	3496.50	.005**
	Cat	89	108.71	9675.50		

Note. ** indicates $p < .01$

4.6 Pet ownership vs benefits and risks perception of AAI

Table 8 compares the differences between pet ownership in benefits and risk perception on the use of AAI. Since p value is less than 0.05 for both benefits and risks perception of AAI, null hypothesis is rejected. There is a significant difference between people with or without human-pet bond in the benefits and risks perception of human-pet interaction. From the table, pet owners shown to have a higher mean rank than non-pet owners, indicating pet owners perceived more benefits than non-pet owners.

Table 8 : Differences between pet ownership in benefits and risks perception of AAI

Variable	Perception	Ownership	N	Mean Rank	Sum of Ranks	*U*	P-value
Pet Ownership	Benefit	Yes	252	220.95	25323.00	13998.0	.000***
		No	150	168.82	55680.00		
	Risk	Yes	252	185.57	34240.50	25323.0	.000***
		No	150	228.27	46762.50		

Note. *** indicates p <.001

4.7 Differences between pet owners and non-pet owners in the level of knowledge and attitudes of Malaysians on AAI

Table 9 shows the differences between pet owners and non-pet owners in the level of knowledge and attitudes of Malaysians on the use of AAI. P value for knowledge on AAI is not less than 0.05 while p value for attitudes of Malaysians on AAI is less than 0.05. Null hypothesis for level of knowledge of Malaysians on AAI is failed to be rejected while null hypothesis for attitudes of Malaysians on AAI is rejected. Hence there is no significant difference between people with or without human-pet bond in the level of knowledge while there is a significant difference between pet owners and non-pet owners in attitudes on the use of AAI to enhance their health and well-being. Pet owners showed to have a higher level of mean rank than non-pet owners in terms of attitudes on AAI, indicating pet owners have a more positive attitude towards AAI.

Table 9: Pet ownership vs level of knowledge and attitudes of Malaysians on AAI

	Ownership	N	Mean Rank	Sum of Ranks	*U*	P-value
Knowledge	Yes	252	200.07	50417.00	18539.0	.730
	No	150	203.91	30568.00		
Attitude	Yes	252	211.19	53219.50	16458.5	.026*
	No	150	185.22	27783.50		

Note. * indicates $p < .05$

5.0 DISCUSSION

This study investigated the human-pet bond among pet owners, benefits and risks perception of AAI as well as level of knowledge and attitude of Malaysians on the use of AAI to enhance health and well-being. In this study, majority of the respondents recruited were female. There was a study indicated that female were more willing to engage in online surveys than male (Smith, 2008). In this study, dogs and cats were kept by majority of the respondents as pets. There is also a study showed that two of the most popular pets in Malaysia is cat and dog (Taha, N. A. B., & Razak, N. R. B. A., 2022).

In this study, there is a significant difference between dog and cat owners in the level of human-pet bond. Cat owners showed higher level of human-pet bond than dog owners in this study. However, a previous study claimed that dog owners were more attached to their pets compared to cat owners (Winefield et al., 2008). Concerning queries about the positive effects of pets on increasing human physical activity, more than half of the respondents do agree the statement. This aligns with research findings that people who have never owned a cat have a 40% higher risk of death from heart attack (The Pet Effect org., n,d.). Additionally, close to 50% of the respondents acknowledged that having a pet can decrease stress level and reduce anxiety which is consistent with the study that indicated pets can provide a calming and anxiolytic effect on their owners (The Pet Effect org., n,d.). Around 20% of the respondents agreed that pet can cause allergy as well as asthma in humans in which a study by Ownby and Johnson (2016) also claimed that continuing exposure to pets is a potential risk for allergies and asthma at some stage of life.

From the results on benefits and risks perception of human-pet interaction, p value is less than 0.05, null hypothesis is rejected. Hence, there is a significant difference

between people with or without human-pet bond in the benefits and risks perception of human-pet interaction. From the result, pet owners had higher mean rank than non-pet owners in benefits perception of human-pet interaction, indicating that pet owners perceived more benefits than non-pet owners while non-pet owners had higher mean rank than pet owners in risks perception of human-pet interaction, indicating that non-pet owners perceived more risks than pet owners. More than 80% of the respondents do think that AAI can improve physical, mental and social health which these have been proved in other studies. A study has demonstrated that AAI has the potential to decrease stress level through physical contact with the therapy animals (Holder et al., 2020). Another study has asserted that AAT can improve social skills of children who diagnosed with autism spectrum disorder (Rehn et al., 2023). Furthermore, a study has suggested that equine-assisted intervention (EAI) may enhance physical functioning of elderly by engaging in activities such as walking, trotting or grooming the horse (Badin et al., 2022).

Regarding the inquiries about whether AAI would not impact animal welfare, over 60% of the respondents expressed their support for this statement. However, a study by Johnson and Eccles (2022) indicated that AAI has the potential to pose physical or psychological risks to therapy animals. Nonetheless, the study also stated that, by taking proactive initiatives to ensure animal welfare, animal abuse can be prevented (Johnson & Eccles, 2022). Besides that, more than 60% of the respondents also believed that AAI will not increase the risk of zoonoses transmission. However, a study showed that zoonoses and other common infection such as MRSA could be the risks of AAI, but, with strict protocol, the potential danger can be reduced (Bert et al., 2016).

In this study, there was no significant difference between people with or without human-pet bond in the level of knowledge while there was a significant difference between people with or without human-pet bond in attitude of Malaysians on the use of AAI to enhance their health and well-being. In this study, pet owners had a higher mean rank in attitudes on AAI than non-pet owners, showing pet owners had a more positive attitude towards AAI.

6.0 CONCLUSION

In conclusion, people with human-pet bond had a more favorable benefits perception towards human-pet interaction and a more positive attitude towards AAI. Hence, it is important to promote pet ownership in order to encourage AAI to be widely implemented in Malaysia, aligning with the One Health approach.

7.0 LIMITATION AND RECOMMENDATION

One of the suggestion for this study is to further investigate the types of AAI that could be more realistic to be implemented in Malaysia and the types of animals that Malaysians prefer to be involved in AAI. Also, other suggestion for this study is to recruit respondents from different geographical locations and demographic backgrounds in order to have better comparisons throughout the study. Furthermore, it is highly advisable to incorporate face-to-face interviews into the survey methodology. This approach not only allows for reaching a wider audience but also helps to clarify any questions that the respondents may have, contributing to a more thorough understanding of their perspectives.

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APPENDIX

Section 1 - Demographic Details

No.	Questions	Options
1.	Age	● 18 and above
2.	Gender	● Female ● Male
3.	Race	● Malay ● Chinese ● Indian ● Others
4.	Nationality	● Malaysian ● Others
5.	Employment Status	● Studying ● Working ● Unemployed ● Retired
6.	What kind of pet(s) do you have?	● No ● Dog(s) ● Cat(s) ● Dog(s) and Cat(s) ● Others

Section 2 - Self-Reported Human-Pet Interaction

No.	Questions	Options
1.	How often were you responsible for your companion animal's care?	● Never ● Rarely ● Sometimes ● Often ● Always
2.	How often did you clean up after your companion animal?	● Never ● Rarely ● Sometimes ● Often ● Always
3.	How often did you hold, stroke, or pet your companion animal?	● Never ● Rarely ● Sometimes ● Often ● Always
4.	How often did your companion animal sleep in your room?	● Never ● Rarely ● Sometimes ● Often ● Always
5.	How often did you feel that your companion animal is responsive to you?	● Never ● Rarely ● Sometimes ● Often ● Always
6.	How often did you feel that you had a close relationship with your companion animal?	● Never ● Rarely ● Sometimes ● Often ● Always
7.	How often do you travel with your companion animal in a year?	● Never ● Rarely ● Sometimes ● Often ● Always
8.	How often did you sleep near your companion animal?	● Never ● Rarely ● Sometimes ● Often ● Always

Section 3 - Perceived Benefits and Risks of Human-Pet Interaction on Self-Health and Well-Being

No.	Questions	Options
1.	Pets increase human's physical activity.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
2.	Pets decrease stress level.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
3.	Pets decrease feelings of loneliness.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
4.	Pets reduce symptoms of depression.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
5.	Pets reduce symptoms of anxiety.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
6.	Pets improve relationships between partners, friends or family members.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
7.	Pets often cause allergies in humans.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
8.	Pets often cause asthma in humans.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
9.	Pets often cause injury in humans.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree
10.	Pets often cause disease transmission.	● Strongly Disagree ● Disagree

		● Neutral ● Agree ● Strongly Agree
11.	Owning a pet is a risk to your health.	● Strongly Disagree ● Disagree ● Neutral ● Agree ● Strongly Agree

Section 4 - Knowledge and Attitudes Among Malaysians on AAI to Enhance Health and Well-Being

No.	Questions	Options
1.	Have you ever heard of animal-assisted intervention?	● Yes ● No
2.	Animal-assisted intervention involves utilising animals in health, education and human service for beneficial effects in humans.	● Yes ● No
3.	Animal-assisted intervention has been proved to improve physical, social, emotional or cognitive functioning.	● Yes ● No
4.	Animal-assisted intervention has been widely implemented in Malaysia.	● Yes ● No
5.	Do you think animal-assisted intervention improves physical health?	● Yes ● No
6.	Do you think animal-assisted intervention improves mental health?	● Yes ● No
7.	Do you think animal-assisted intervention improves social health?	● Yes ● No
8.	Do you think animal-assisted intervention should be implemented in hospital settings?	● Yes ● No
9.	Do you think animal-assisted intervention should be implemented in school, college or university?	● Yes ● No
10.	Do you think animal-assisted intervention should be implemented in the workplace?	● Yes ● No
11.	Do you believe that animal-assisted intervention will not negatively affect animal welfare?	● Yes ● No
12.	Do you believe that animal-assisted intervention will not significantly increase the risk of zoonotic disease transmission?	● Yes ● No