ความรู้เกี่ยวกับโรคติดต่อจากสัตว์สู่คน และพฤติกรรมการป้องกัน ในกลุ่มประชาชนอายุ 15-60 ปี ในเขตกรุงเทพมหานคร

Zoonotic disease knowledge and preventive behavior among Thai people aged 15-60 years old in Bangkok

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บทคัดย่อ

การเกิดและการแพร่กระจายของโรคที่ถูกถ่ายทอดระหว่างสัตว์สู่มนุษย์มีผลกระทบต่อมนุษย์และสัตว์ในหลายทางโดยส่วนใหญ่เป็นผลกระทบทางลบ การศึกษาพฤติกรรมและความรู้ของเจ้าของสัตว์เลี้ยงจะช่วยให้เข้าใจการถ่ายทอดของโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ได้ดีขึ้นและช่วยการส่งเสริมและปกป้องสุขภาพสัตว์เลี้ยงแบบ One Health งานวิจัยนี้ศึกษาเกี่ยวกับความรู้

เกี่ยวกับการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ และพฤติกรรมป้องกัน และปัจจัยที่มีผลต่อพฤติกรรมการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ เป็นการวิจัยแบบภาคตัดขวาง ศึกษาคนไทยที่มีอายุ 15-60 ปี อาศัยอยู่ใน เขตกรุงเทพมหานคร เก็บรวบรวมข้อมูลด้วยแบบสอบถามออนไลน์ (Google Form) ระหว่างวันที่ 1-31 ตุลาคม พ.ศ. 2566 ผลการศึกษาแสดงให้เห็นว่ากลุ่มตัวอย่างมีคะแนนความรู้เกี่ยวกับการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ อยู่ระดับดี (M=11.60, SD=2.06) และระดับพฤติกรรมการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์อยู่ระดับดี (M=34.94, SD=36.10) ปัจจัยที่ทำนายสำหรับพฤติกรรมการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์รวมถึงเพศ (Beta=1.344, $p<0.05$) และความรู้เกี่ยวกับการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ (Beta=0.44, $p<0.05$) ผลการศึกษาครั้งนี้ แสดงให้เห็นว่ากลุ่มตัวอย่างมีระดับความรู้ และพฤติกรรมป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์อยู่ระดับดี นอกเหนือจากนี้ระบุให้เห็นว่าเพศและความรู้ป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ เป็นปัจจัยที่มีอิทธิพลต่อพฤติกรรมป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ ควรจัดแคมเปญให้ความรู้เกี่ยวกับการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์กับกลุ่มเป้าหมายอย่างเหมาะสม เพื่อเสริมสร้างพฤติกรรมการป้องกันโรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์ที่ดีขึ้น

คำสำคัญ : โรคที่ถูกถ่ายทอดระหว่างสัตว์และมนุษย์, ความรู้, พฤติกรรมการป้องกัน

Abstract

The emergence and spreading of zoonotic diseases affects humans and pets in many ways, mostly negative effects. Studying the behaviors and knowledges amongst pet owners will help us better understand the transmission of zoonotic diseases and help us preserve and protect one health. This study aims to study zoonotic disease prevention related knowledge and preventive behaviors and factors affect zoonotic disease preventive behaviors. This is a cross sectional survey research that studied Thai people aged 15-60 years old. The data was collected by an online survey (Google from) between 1-31 October 2023. From the result, participants showed a good level of zoonotic disease prevention related knowledge (M=11.60, SD=2.06) and a good level of zoonotic disease prevention behavior (M= 34.94, SD=36.10). Predictive factors for zoonotic disease prevention behaviors were gender (Beta=1.344, $p<0.05$) and zoonotic disease prevention related knowledge (Beta=0.44, $p<0.05$). In conclusion, the study not only highlighted the satisfactory levels of knowledge and behavior exhibited by the participants in preventing zoonotic diseases but also

identified gender and knowledge as influential factors in shaping these preventive behaviors. The findings underscore the importance of targeted interventions and educational campaigns to further enhance zoonotic disease prevention practices among the population, ultimately contributing to the overarching goal of fostering a healthier coexistence between humans and their animal companions.

Keywords: zoonotic disease, knowledge, preventive behavior

Introduction

Due to the changes in society and population, Thai citizens are starting to lean more towards having pets instead of children[1] elderly population[2] pets as friends. The pet market grew 8-10% in the last years[3-4] Thai citizen are trending towards having exotic pets[5], which are such as reptiles: iguanas, lizards, bearded dragons, snakes, turtles; amphibians: Poison dart frogs, Goliath frogs, African dwarf frogs, Chinese edible frogs, Madagascar tomato frogs, African bullfrogs, salamanders; vertebrates: beetles, Tarantula spiders; birds: Cockatiel birds, Macaw birds, falcons, peacocks; fishes: Fahaka pufferfishes, Paroon sharks; and mammals: rabbits, ferrets, hamsters, foxes, raccoons, Prairie dogs, meerkats, galagos, sugar gliders.

Zoonotic diseases (diseases which are transmitted from animals to humans) are dangerous because of their variety of negative effects on humans and pets[6]: some zoonotic diseases transmit extremely fast and can cause pandemics like COVID-19[7]; some zoonotic diseases are contagious and can spread really fast; some zoonotic diseases have lethal and variety of symptoms such as bird flu, COPD [8], some zoonotic diseases have genetics that allow them to resist drugs and antibiotics which makes curing difficult[9]; a population like youth or elderly will receive more harmful effects from zoonotic diseases because of their immature and weaker immune system[6]; zoonotic diseases can negatively affect the economy by slowing down operations, creating resource scarcity[10]; zoonotic diseases can affect human's mental health by causing fear, stress, anxiety, confusion[11]. The emergence of zoonotic diseases can have big effects on individuals, society, and global population. Therefore, we must be more aware of zoonotic diseases and try our best to limit and control them effectively.

Precautions of taking care of pets and behaviors of pet owners can create risk of zoonotic diseases emerging in many ways: getting in contact with infected pets can transmit diseases to owners, owners living in the same household as pets can increase risk of transmitting diseases, carelessness about the surroundings and environments around pets can create risk of spreading diseases, ignorance of pets' vaccination or other protective procedures will make spreading diseases more likely, getting in contact with wildlife can transmit diseases, adopting pets without prior professional checking and assurance can be risky of human receiving zoonotic diseases. Studying how pet owners take care of their pets will help us understand the spreading and emergence of various zoonotic diseases.[12-13] This research studies knowledge, psychology, and behaviors of pet owners, which will help protect us from diseases coming from animals.

Objective

1. To study zoonotic disease prevention related knowledge and preventive behavior
2. To study factors affecting to zoonotic disease preventive behaviors

Study method

This is a cross sectional survey research that studied Thai people aged 15-60 years old in Bangkok, Thailand. The data was collected by an online survey (Google form) between 1-31 October 2023

Population and sample group

Population for this study was Thai people who live in Bangkok, Thailand aged between 15-60 years old who could connect to the internet which is an infinite population. The sample group was calculated by Cochran formula[14] at 95% confidence level. The sample group was 346 people. However, there were 396 people who were willing to participate and filled in the online survey, therefore we conducted this study on all 396 participants.

Instrument

The tool that is used to collect the data information is a questionnaire. The research team has developed according to the principles of research instrument development. By studying infectious diseases from animals to people, prevention of infection from animals, pet avoidance behavior and demographic changes that affect pet avoidance behavior and the study of

documents and related research. And developed them into a questionnaire used to collect data divided into 3 parts below,

Part 1 Personal information of the survey takers, including gender, age, education and pets, total 4 questions.

Part 2 Questions to measure knowledge about the prevention of diseases transmitted from animals to humans, a total of 14 questions, with 4 options and only 1 correct answer. The answer will be included in the score. The range of the score is 0-14, with the following score translation criteria: 80-100 percent or 11-14 points, converts into good knowledge, 60-79 percent or 8-10 points, converts into moderate knowledge and 0-60 or 0-7 percent points, converts into low-level knowledge.

Part 3 Questions to measure zoonotic disease prevention behavior from animals to humans, 8 questions. The question is a frequency gauge (Likert scale) 1-5 by 5 = always follow; 4 = follow; 3 = follow sometimes; 2 = rarely follow; and 1 = do not follow. The range of the score is 8-40, with the following score translation criteria: 80-100 percent or 32-40 points, converts into good level of zoonotic disease prevention behavior, 60-79 percent or score 24-31, interpreted as having medium level of zoonotic disease prevention behavior, and 0-60 percent or score 8-23, and interpreted as a low level of zoonotic disease prevention behavior.

The survey used in this study has been examined by 3 experts in the fields of veterinary science and infectious diseases, IOC value was more than 0.5.

Data collection

This study collected data with an online questionnaire. The invitation was sent to the sample group through social media groups such as education groups, animal groups, house and garden groups, tourist groups, car trading groups, construction groups, etc. The survey inquired about the participants' place of residence. If respondents indicated that they reside in Bangkok, their data was included in this study. The data were collected between 1-31 October in 2023, in total of 396 participants in this study

Data analysis

Personal data was analyzed by descriptive statistics such as frequency, percentage, mean, and standard deviations and inferential statistics such as regression analysis was used to analyze variables affecting dependent variables.

Results

Out of the 396 participants, 65.15% were female, and 34.85% were male. The predominant age groups were 41-51 years old at 47.23%, 51-60 years old at 20.20%, and 15-20 years old at 15.15%. Those with a bachelor's degree comprised approximately half of the participants (50.50%), while individuals with a master's degree accounted for 29.04%, with the remainder were still in high school.

The findings indicated that the majority of participants demonstrated a good level of knowledge related to the prevention of zoonotic diseases (M=11.62, SD=2.06). Notably, females exhibited a higher level of knowledge in zoonotic disease prevention compared to males (M=11.91, SD=1.64). Among age groups, those aged 41-50 demonstrated the highest knowledge in zoonotic disease prevention (M=11.80, SD=1.97). Regarding educational attainment, participants with a bachelor's degree displayed the most comprehensive understanding of preventive measures (M=12.71, SD=1.25).

In terms of zoonotic disease prevention behavior, the overall level was considerable (M=34.94, SD=6.10), with females exhibiting a slightly superior level of preventive behaviors (M=36.55, SD=6.07). Conversely, the age group of 31-40 appeared to have a higher level of knowledge. Finally, participants with master's degrees or higher demonstrated the highest understanding of animal-to-human disease prevention (M=36.86, SD=2.54).as shown in table 1.

Table 1. Personal data, zoonotic disease prevention related knowledge and behavior scores among participants (n=396)

Variable	Number (%)	Zoonotic disease prevention related knowledge Mean (S.D.)	Zoonotic disease preventive behavior Mean (S.D.)
Gender			
Male	138 (34.85)	11.02 (2.58)	33.80 (6.01)
Female	258 (65.15)	11.91 (1.64)	36.55 (6.07)

Year of age			
15-20	60 (15.15)	10.60 (2.99)	34.60 (5.30)
21-30	13 (3.28)	10.62 (1.89)	35.15 (3.56)
31-40	56 (14.14)	11.39 (2.01)	35.45 (4.97)
41-50	187 (47.23)	11.97 (1.58)	35.22 (6.46)
51-60	80 (20.20)	11.80 (1.97)	34.15 (6.83)
Educational Attainment			
High school	74 (18.69)	10.78 (2.70)	34.36 (6.22)
Bachelor degree	200 (50.50)	11.73 (1.85)	35.12 (6.51)
Master degree	115 (29.04)	11.84 (1.82)	34.90 (5.41)
Higher than master degree	7 (1.77)	12.71 (1.25)	36.86 (2.54)
Total	396 (100)	11.60 (2.06)	34.94 (6.10)

The majority of respondents indicated having dogs and cats as their primary pets, accounting for 71.93%. Fish were reported by 16.45% of participants, while exotic pets constituted 10.75%, and wildlife made up 0.88%. It's worth noting that respondents had the option to select more than one type of animal, as illustrated in Table 2.

Table 2. Type of domestic rise pets among participants

Type of domestic rise pets	Number (%)
Dog and cat	328 (71.93)
Fish	75 (16.45)
Exotic pets	49 (10.75)
Wild animals	4 (0.88)

Upon analyzing the knowledge questions related to the prevention of diseases transmitted from animals to humans, it was observed that the top three questions with the highest correct response rates were as follows: 1) “Rabies transmitted by which method?” - 93.94% of participants answered this question correctly. 2) “After taking your pet out of the house, when returning home, what should you do?” - 93.18% of participants provided the correct response. And 3) “What is the cause of the disease related to animals from food consumption?” - 92.17% of participants answered this question correctly.

Conversely, the three questions with the lowest correct response rates were: 1) “Which is the method of preventing diseases from parasites in pets?” - Only 45.45% answered this question correctly. 2) “What are the diseases related to pets?” - 69.19% percent provided the correct response. 3) “From the following list, what are the diseases caused by pets?” - 77.53% answered this question correctly, as detailed in Table 3.

Table 3. number and percentage of correctly answered questions about zoonotic disease prevention related knowledge

Zoonotic disease prevention related knowledge question items	No. of correctly answered (%)
1. What is a zoonotic disease?	274 (69.19)
2. How often should you wash your hands after handling your pet?	334 (86.87)
3 Which of the following is an example of a zoonotic disease?	307 (77.53)
4. What precautions should you take when handling your pet after it has been outdoors?	369 (93.18)
5. Which of the following is a preventive measure for parasites in pets?	180 (45.45)
6. What is the primary mode of transmission for rabies?	372 (93.94)
7. How often should pets receive veterinary check-ups?	330 (83.33)
8. What is a common source of zoonotic diseases related to food safety?	365 (92.17)
9. Which category of people is most vulnerable to severe complications from zoonotic diseases?	358 (90.40)

Zoonotic disease prevention related knowledge question items	No. of correctly answered (%)
10. What is the significance of the One Health approach?	341 (86.11)
11. How can pet owners help prevent the spread of zoonotic diseases from wildlife to pets?	331 (83.59)
12. What should you do in case of an emergency involving your pet?	388 (97.98)
13. Which of the following is an example of a zoonotic disease that can be transmitted through contaminated water?	298 (74.75)
14. What is a potential source of zoonotic diseases for individuals who work closely with animals?	339 (85.61)

Upon analyzing the disease prevention behaviors consistently adhered to by survey participants in relation to diseases transmitted from animals to humans, the top three are as follows: 1) “Including avoiding contact with infectious diseases or infected animal carcasses” - 84.34% always follow this behavior 2) “Avoiding pets from contact with wildlife or other living places outside” - 71.97% always adhere to this practice, and 3) Eating cooked meat” - 69.44% always engage in this behavior.

Conversely, the three behaviors that survey participants do not often follow include: 1) “Taking pets to check with the veterinarian regularly” - Only 52.78 % always follow this practice 2) “Getting rid of fleas and ticks for pets every month” - Only 54.80% always adhere to this behavior ,and 3) “Cleaning the area where pets sleep regularly” - Only 55.81% always follow this practice, as illustrated in Table 4.

Table 4. Number of answers for each question item for zoonotic disease preventive behavior

Zoonotic disease prevention behavior question items	Always practice 5	Often Practice 4	Practice sometimes 3	Seldomly practice 2	Rarely practice 1
1. Providing regular veterinary check-ups for your pet	209 (52.78)	83 (20.96)	63 (15.91)	24 (6.06)	17 (4.29)
2. Seek prompt veterinary care when your pet is sick	259 (65.40)	79 (19.95)	30 (7.58)	13 (3.28)	15 (3.79)
3. Avoid contact with wildlife and their habitats	285 (71. 97)	56 (14.14)	27 (6.82)	7 (1.77)	21 (5.30)
4. Clean the pet's living area regularly	221 (55.81)	103 (26.01)	48 (12.12)	14 (3.54)	10 (2.53)
5. Always eat cooked meat	275 (69.44)	75 (18.94)	29 (7.32)	4 (1.01)	13 (3.28)
6. Monthly flea and tick treatments	217 (54.80)	84 (21.21)	54 (13.64)	18 (4.55)	23 (5.81)
7. Providing a well-balanced and nutritious diet to your pet	227 (57.32)	106 (26.77)	45 (11.36)	9 (2.27)	9 (2.27)
8. Contact with infected animals or their products	334 (84.34)	33 (8.33)	9 (2.27)	5 (1.26)	15 (3.79)

From regression analysis, the results showed that gender (β=1.344, p-value<0.05) and zoonotic disease prevention related knowledge (β=0.44, p-value<0.05) were predictive factors for zoonotic disease prevention behavior statistically significant, as shown in Table 5.

Table 5. Regression analysis on factors affect zoonotic disease preventive behavior among participants

Variable	B	S.E.	t	p-Value
Gender	1.344	0.649	2.072	0.039*
Age	-0.327	0.285	-1.148	0.252
Education Level	0.357	0.494	0.723	0.470
Zoonotic disease prevention related knowledge	0.440	0.155	2.841	0.005*

Discussion

The findings indicated that participants exhibited a commendable level of knowledge related to zoonotic diseases (M=11.62, SD = 2.06). This proficiency could be attributed to the fact that over 80% of participants held a bachelor's degree or higher, suggesting a strong comprehension and the ability to access new information regarding their pets or public advisories. While various factors may contribute to this, we also hypothesized that it could stem from encountering warnings and precautions shared by others throughout their lives. Notably, our examination revealed that the questions posed were foundational, covering topics such as the transmission of rabies in dogs, the consumption of cooked meat, and the importance of handwashing upon returning home. These align with information disseminated by the government to the general public over the years.[15-17]

This study finds support in another research conducted by Francesco Chiesa and colleagues, titled "A Survey on One Health Perception and Experiences in Europe and Neighboring Areas." Their investigation focused on the general population's awareness of "One Health." The alignment of our findings with theirs suggests a potential similarity in physiology and understanding of this theme among diverse populations.[18]

This outcome contrasts with findings from a study by Gezahegn Alemayehu et al., which explored "Knowledge, attitude, and practices related to zoonotic disease risks from livestock birth products among smallholder communities in Ethiopia." Their research indicated that the tested group had a lower understanding of diseases related to animals and how to prevent them[19]. Similarly, research by Athanasios Moutos et al., titled "Knowledge, Attitude, and Practices (KAP)

of Ruminant Livestock Farmers Related to Zoonotic Diseases in Elassona Municipality, Greece," also highlighted the need for continued consideration and implementation of actions related to animal-related diseases and prevention.

Concerning zoonotic disease preventive behavior, the results showed that participants had a good average score on preventive behavior about zoonotic disease (M=34.94, SD=6.10). This may be because the participants have a good knowledge of zoonotic disease prevention, which results in good treatment according to the principles described by KAP theory, explaining the relationship of human health behavior and correct understanding[20] In addition, the recent COVID-19 pandemic may raise public awareness and caution about animal infections[21-22], as well as most of them graduated at least with a bachelor's degree, which will aid in their understanding of the significance of avoiding animal-to-human illness, zoonotic diseases.

Individuals who may have encountered unfavorable incidents in the past are likely to possess a comprehensive grasp of the necessary precautions for their pets. The majority of participants exhibit a robust understanding of these precautions, possibly derived from insights shared by fellow pet owners, past veterinary consultations, online research endeavors, or personal encounters. This accumulated knowledge translates into a heightened awareness of essential actions, such as scheduling monthly checkups and ensuring the overall well-being of their pets. In summary, survey respondents demonstrate a proficient understanding of the requisite precautions for their pets, underscoring their proficiency in responsible and secure pet care practices.

Based on the examination of factors influencing the prevention of diseases transmitted from animals to humans, the team identified that gender (Beta=1.344, $p<0.05$) and knowledge about preventing diseases from animals to humans could effectively predict prevention behavior (Beta=0.44, $p<0.05$). This observed connection may be attributed to gender-related disparities impacting the conceptualization, interest, attention, and actions concerning the prevention of diseases from animals to humans. For instance, a study by Daniela Fusco et al., titled "A sex and gender perspective for selected zoonotic diseases" [23], highlighted that gender differences are influenced by biological variations, values, norms, responsibilities, and expectations of different men and women in relation to preventing diseases transmitted from animals to humans.

Gender roles play a significant role in shaping the dynamics of pet care, with females typically assuming a more nurturing and responsible role compared to males[24]. Women, often characterized as gentler, are inclined to take greater responsibility for both the physical and mental well-being of their pets. Conversely, males may adopt more conventional dog training methods. This gender-based distinction can influence individuals' decisions regarding their choice of animal companions and the nature of their relationships with them. Additionally, gender plays a role in pet care as each gender exhibits unique traits that impact their treatment of pets. Females may prioritize specific breeds based on aesthetics, while males may lean towards breeds known for versatility and utility. In essence, the interaction with and care of pets can vary based on the owner's gender, thereby influencing the overall well-being and treatment of their pets. The care and treatment of pets, as a whole, are shaped by diverse factors, including gender roles and the specific type of pet individuals choose to care for.

Conclusion

Participants demonstrated a commendable level of knowledge related to the prevention of zoonotic diseases (M=11.60, SD=2.06) and exhibited strong zoonotic disease prevention behaviors (M=34.94, SD=36.10). The analysis identified gender (Beta=1.344, $p<0.05$) and knowledge regarding zoonotic disease prevention (Beta=0.44, $p<0.05$) as significant predictive factors for these preventive behaviors.

Recommendation

These recommendations aim to address the significance of gender and knowledge in shaping preventive behaviors, fostering a proactive community approach to zoonotic disease prevention as followed:

1. Develop and implement comprehensive educational campaigns that integrate gender-sensitive approaches. Tailor information dissemination to appeal to diverse gender preferences and communication styles. This approach aims to enhance overall awareness and knowledge about zoonotic disease prevention, leveraging the identified predictive factor of gender.

2. Establish collaborative forums, such as community workshops and online platforms, to encourage knowledge exchange among participants. Facilitate open discussions that incorporate both genders' experiences and insights related to zoonotic disease prevention. This collaborative model can contribute to a deeper collective understanding of preventive measures and build a sense of community engagement.

3. Design inclusive outreach programs that actively engage both males and females in promoting zoonotic disease prevention. Organize events and initiatives that cater to varied interests, ensuring broad participation. Additionally, implement continuous monitoring and assessment mechanisms to track changes in knowledge levels and preventive behaviors over time. This iterative process enables the refinement of educational strategies, ensuring sustained impact on zoonotic disease prevention.

Limitation

First, the data collected with the use of an online platform can result in some bias, particularly in the knowledge score since there is no guarantee that participants have not searched for answers in any resource. Being aware of this possibility, this was the best way to develop this study due to the confinement restrictions experienced. Moreover, by making it possible for participants to have sought answers to questions of knowledge, the social impact of this study may have been worthwhile, considering that, according to the results obtained, knowledge about zoonotic diseases were predictive factors for preventive behaviors. In addition, the preventive behaviors were self-reported so may not reflect exactly how the participants behave. Lastly, this study was carried out in Bangkok, the result may not be generalized to all Thai people living in different regions.

แนะนำการอ้างอิงสำหรับบทความนี้

ศุจิมน มังคลรังษี, ภูดิศ เสาเกลียว, ปฤม องค์วณิช, ศุภกร นิธิสิริ, นวพร ธนาธีรธร, โชทิ์ปัณณ์ ปานะกุล. ความรู้เกี่ยวกับโรคติดต่อจากสัตว์สู่คน และพฤติกรรมการป้องกัน ในกลุ่มประชาชนอายุ 15-60 ปี ในเขตกรุงเทพมหานคร. วารสารสถาบันป้องกันควบคุมโรคเขตเมือง. 2567;9(1):127-143.

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