



Original Article

A pilot study on knowledge, attitude, and practice of pet bird owners on zoonotic diseases

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Summary

Pet ownership in general and pet bird ownership, in particular, is increasing recently. However, the status of pet ownership and the demographics of owners are unclear in Iran. The current study was designed to characterize the knowledge and attitude of pet bird ownership status, factors influencing pet bird ownership in metropolitan Tehran. A questionnaire was administered to pet bird owners in Parseh Pet Clinic. The questions were related to pet bird owners towards pet bird choice, management practice, and disease control. Local bird markets were more frequently visited for providing pet birds. Most pet owners reported a low level of information on prevalent and zoonotic diseases of the pet birds; however, most owners (90%) indicated that they consider veterinarians the primary source for providing information about management and zoonosis. This study was the first to provide concise information about pet bird ownership in Tehran. Providing more information to visitors in the bird markets is recommended to preserve the visitors' health and to prevent the transmission of infectious diseases. Strength communication between clients and veterinarians is essential to promote the health and welfare of the owners and the pet birds as well. Further research to investigate the knowledge, attitude, and practice of owners towards pet management and health are recommended.

Keywords: Bird, Pet ownership, Management and health, Zoonotic diseases, Iran

Introduction

Nowadays, the special and important role of pet animals in human life is undeniable (Gee et al., 2017), and pet animals are usually considered as a part of the family by their owners. The history of

pet ownership dates back to ancient times when they were first kept for economic exploitation. Later this relationship turned into a new form with bilateral dependence and companionship (Serpell, 2003). During the 20th century, the idea of human-

animal bond and its benefits became popular (Friedmann, 2013), and recent findings show that 68% of the U.S. households and 46% of British households keep at least one pet animal (Purewal et al., 2017). Other findings also confirm that in most countries, pet ownership is common in the majority of households.

Pet ownership is found to have an important role in promoting emotional, social, and physical health (Downes et al., 2009). It is found that pet ownership is associated with a higher rate of physical activity (Cherniack and Cherniack, 2015). A study demonstrated that dog ownership is associated with reduced depression in people living with human immunodeficiency virus (Muldoon et al., 2017). The role of pet companionship in restoring and preserving human health triggered further research studies and later the idea of using animals for human treatment. However, pet animals can serve as a source of zoonotic pathogens, which has public health concern (Stull et al., 2015). Many common zoonotic diseases with no clinical signs in pets are easily transmitted to owners (Steele and Mor, 2015).

Recently, the choices of pets are being changed, and new animal species such as birds are kept as a companion. Pet bird is defined as birds kept and bred for ornamental use (Boseret et al., 2013). A wide range of bacterial, viral, fungal, and parasitic diseases are described to cause illness in both pet birds and humans. Some of these diseases, such as avian influenza, chlamydia, and tuberculosis are fatal to animal life with zoonotic potential posing a high risk for humans. Main routes of transmission include direct contact and vector-borne transmission (Boseret et al., 2013). In Iran, alongside other parts of the world, pet ownership is increasing. However, local and national studies on pet ownership status, owned species, and knowledge and attitude of owners are rare. The current study was aimed to investigate pet bird ownership status, pet-borne zoonotic diseases, and factors influencing pet bird ownership in metropolitan Tehran.

Materials and methods

Study design

This is a questionnaire-based study conducted over a two-week period (December 2018). The target population was clients attending an animal pet clinic (Parseh Pet Clinic located in the Shahryar region) in Tehran.

Data collection

Clients in the waiting area of the clinic were asked to participate in the study. Only clients owning pet birds were eligible to take part in the survey. Clients were asked to complete a two-page anonymous, close-ended, and semi-structured questionnaire on-site. The questionnaire assessed the public knowledge and attitude towards pet bird husbandry, sanitation practice, knowledge on common and zoonotic diseases, and disease treatment attitude.

The content of the questionnaire was confirmed based on expert review. Four experts from the Faculty of Veterinary Medicine, University of Tehran, were asked to evaluate the questionnaire. They could also add open commentaries to enhance the content and dimension of questions.

Data analysis

The data were collected and recorded in an Excel sheet. Descriptive statistics were presented for the variables.

Results

A total of thirty-one bird owners were interviewed. The pet birds included parrot (psittacine) (30%), Mynah (*Gracula religiosa*) (27%), cockatiel (*Nymphicus hollandicus*) (24%), pigeon (*Columba livia domestica*) (8%), canary (*Serinus canaria domestica*) (5%), poultry (*Gallus gallus domesticus*) (3%), and lovebird (*Agapornis spp*) (3%). The parrots and lovebirds had the highest and the least frequency among clients, respectively. Five owners (16.5%) reported that they keep more than one bird species.

Forty-seven percent of bird owners reared pet birds for the hobby and 28% to enjoy the beauty of birds, 10% for natural interest, and 15% to diminish loneliness feeling. In Table 1, data on pet bird husbandry practice is shown. The last part of the questionnaire contained questions to assess

knowledge and attitudes toward pet bird diseases and control strategies (Table 2). Nearly 52% of respondents said that they are unfamiliar with common pet bird diseases, and 71% were unfamiliar with zoonotic diseases from their pet birds. Furthermore, 71% of owners were

unfamiliar with vaccines that are used for the prevention of pet bird diseases. Seventy-seven percent of owners were satisfied with services offered by pet clinics. Furthermore, 90% of owners believed that veterinarians had a significant role in proper pet care.

Table 1. Results of management knowledge and attitude in pet bird owners

Question	Category	Percent
Where to purchase a pet bird?	Local bird market	59
	Small animal clinics	13
	Online shopping	0
	Friends and relatives	28
A place to provide feed	Local bird market	51
	Pet shops	49
Where to keep the pet bird?	Cage	55
	Indoor free roaming	45
How to evaluate pet bird health?	Appearance and nutrition	29
	Dropping consistency	15
	Bird behavior	25
	Periodic check-up by a veterinarian	31
	Appearance and nutrition	29
Disinfection of birds nest?	Yes	84
	No	16
Method of disinfection	Water	37
	Water and soap	33
	Chemical disinfectant	30
Source of information on pet diet	Local bird market	24
	Veterinarian	45
	Friends and relatives	7
	Internet	19
	Textbooks	5
Source of information on proper management practice	Local bird market staff	13
	Veterinarian	47
	Friends and relatives	13
	Internet	21
	Textbooks	6

Discussion

There are different studies on pet ownership status in other countries such as Canada (Leslie et al., 1994), Australia (Steele and Mor, 2015), Italy (Slater et al., 2008), Brazil (Serafini et al., 2008), and Sweden (Sallander et al., 2001). Our findings showed that local bird markets are the main place to provide pet birds to the interested peoples. However, there are some health-related issues related to bird markets and fairs. During the exhibitions in bird markets and fairs, visitors are

usually allowed to watch and to have close contact with the birds. If biosecurity measures are not followed, it can have effects on human health. Birds can act as a transmitter of zoonotic diseases such as chlamydia, salmonellosis, and highly pathogenic avian influenza A H5N1 which have potential public health and economic impacts (Boseret et al., 2013).

Table 2. Results of health management and attitude in pet bird owners

Question	Category	Percent
Where to purchase a pet bird?	Local bird market	59
	Small animal clinics	13
	Online shopping	0
	Friends and relatives	28
A place to provide feed	Local bird market	51
	Pet shops	49
Where to keep the pet bird?	Cage	55
	Indoor free roaming	45
How to evaluate pet bird health?	Appearance and nutrition	29
	Dropping consistency	15
	Bird behavior	25
	Periodic check-up by a veterinarian	31
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	Veterinarian	47
	Friends and relatives	13
	Internet	21
	Textbooks	6

There are reports of infections during exposures with fair birds. In a bird park in Japan, 17 cases of psittacosis, including 12 visitors, were confirmed. Insufficient biosecurity measures were found to be the leading cause of the outbreak (Matsui et al., 2008). There are reports of infection during visiting bird fairs in the Netherlands (Koene et al., 2007) and France (Belchior et al., 2011). Our findings showed that the most owners keep parrots as a pet bird. Regarding the high vulnerability of the Psittacidae family to psittacosis (parrot fever), special attention to this disease is required. The disease is caused by the intracellular bacterium *Chlamydophila psittaci*. It is mainly transmitted to humans through inhalation of the pathogen, which is excreted by birds in feces and droplets from the respiratory tract (Hogerwerf et al., 2020; Boseret et

al., 2013). The lack of information on zoonoses reported by owners from the current study can be a warring situation and significantly increase the risk of infection. This finding was not surprising as more than half (52%) of owners were unfamiliar with common bird diseases. Since the most owners preferably consulted the veterinarian for the pet bird disease treatment or management guidance, it can be concluded that sufficient communication between doctors and clients about common and zoonotic diseases of the pet bird does not exist, and more specified guidance on zoonotic diseases is required. However, treatment by an authorized veterinarian can have more satisfactory results for the owner and the pet bird. Furthermore, knowledge of vaccination as a procedure for disease prevention was very low. Only 10% of

owners visited the veterinarian for periodic vaccination. Today, pet ownership in general and pet bird ownership, in particular, is increasing. In 2012, 8.3 million companion and exotic birds were kept by owners in the United States (Block et al., 2018). Likewise, in 2010, reports showed that 6 million pet birds are kept by French people (Boseret et al., 2013). Increasing visitor and staff knowledge on public health threats of pet birds and modes of disease transmission, especially in developing countries with low biosecurity measures, is essential. Prevention strategies such as quarantine, isolation, and treatment of ill birds, syndromic surveillance for both staff and birds in bird parks, and legal management of local bird markets have been recommended. A more detailed survey about more extended scale will provide a better picture of the pet ownership status in the country. This study was the first to provide a small size of the data about pet bird ownership in Tehran. According to the results, notification of visitors from prevalent Zoonotic Diseases in the bird markets is recommended to preserve their health and to prevent the transmission of infectious diseases. Also, increasing the relationship between pet owners and veterinarians is essential to promote the health and welfare of owners and the pet birds as well.

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Conflict of Interest Statement

The authors declare that they have no conflict of interest.

Ethical Approval

We hereby declare all ethical standards have been respected in preparation for the submitted article.

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