**1. Introduction:**

In today's world, people are getting increasingly urbanized. Keeping animals as pets, including exotic animals, is becoming more popular every day. Pets have evolved into important members of the household, and are frequently regarded as extended family. Pet animals are kept by a large number of individuals all across the world, regardless of their social standing, including Bangladesh. Having a pet animal can provide a variety of benefits, including psychological support, companionship, and even healthy habits. Pets have replaced childbirth and child care in a number of countries. Pet animals help children and their owners in many households with their physical, social, and emotional well-being (Dohoo et al., 1998; Robertson et al., 2000). There are numerous advantages to having a dog or cat. Companionship, play with children, guarding the house, alerting the owner of any unfavorable conditions, gifting to special people, and economic goals are just a few of the many benefits that dogs and cats provide to our society (Parvez et al., 2014).Pet ownership is frequently associated with particular factors, such as housing, disease prevention, and pet ownership responsibility, all of which are important for public health. Since they reside in the same environment as people, pets are a major reservoir for zoonotic infections. It has also been found that household pets play a direct role in zoonosis transmission (Kornblatt and Schantz 1980). The most common health concerns in humans are animal bites and allergic reactions resulting from pets.

Domestic pets, on the other hand, transmit a wide variety of ailments to people, including parasitic, bacterial, fungal, and viral diseases (Plant et al., 1996 and Geffray, 1999). Cat rearing is becoming more popular in urban areas than in rural regions in Bangladesh, however people there have inadequate understanding of scientific cat rearing systems and effective cat management methods. As a result, they become infected with many zoonotic diseases and pose a public health risk. Cat diseases will, without a doubt, continue to be a public health concern as a result of changes such as growing globalization and associated rises in both cats and people. Despite the fact that a variety of ways to cat management exist, some have resulted in conflict between stakeholders (Peterson et al., 2012; Lohr and Lepczyk, 2014; Lohr et al., 2014). In terms of cat management, there are non-controversial ways to influence behavior that can reduce disease transmission or risk.

Animal welfare is about the experiences of an animal and how it is feeling and coping, including its physical and psychological state. Animal welfare science uses scientific methods to help us to determine the impact of human actions on the welfare of the animals. Many things can have an impact on the welfare of cats in human care. The social and physical environment, dietary considerations, interactions with people and members of their own or other species, and their ability to perform behaviors that are normal or typical for their species are all factors to consider. There are particular welfare problems for different animals due to variances in species and their behavior. Cats, for example, may have problems managing when there is rivalry over supplies or social tension with other cats since they are selectively sociable. Conflicts between animal needs and individual desires can result in welfare issues.

Dhaka city, more than any other city in Bangladesh, has a large number of cats kept as pets. Many people of Tejgaon metro in Dhaka city possess pet cats, but they have little awareness of the scientific pet cat rearing system and welfare management that aids in the prevention of pet zoonoses and safety of animals. As a result, the purpose of this study was to understand more about how cat owners in Dhaka city manage their cats' breeding, housing, feeding, and health-care and welfare habits.

**2. Review of literature:**

It appears that the following discussion that studies conducted so far mostly focused on management and animal welfare practices in some cases housing, feeding, hygiene protocols (vaccination, deworming information etc.) Rearing pet is becoming is very popular in Bangladesh. Cat rearing as companion animal is very frequent in urban areas of Dhaka. It is new rising Bangladesh and research dealing with very little in this matter. But on the contrary, in European and Ohanian countries there are a lot of survey, investigation and studies about management & welfare assessment of domestic cats. Some of these studies which are more relevant to the present study, are discuss as below-

Pet ownership is a global phenomenon (McConnell et al., 2011). Nearly 70% of North Americans share their lives with at least one pet (Hodgson et al., 2015), while in Australia there are more than 24 million pets, equaling or surpassing the total human population (Animal Medicines Australia, 2016). Pet ownership in Brazil is estimated at 132 million cats, China more 53 million cats; Japan more than 7 million cats; France more than9 million cats, with least one cat owned20% of households respectively (McConnell et al., 2011; Statista, 2017), while in Tanzania nearly 14% of households owned at least one cat (Knobel, 2008).Lepczyk et al., 2010showed that over the last few decades, domestic cats have become more popular as pets in the United States and around the world. Understanding how behavior plays a role in cat illness acquisition and mobility is necessary for effective management measures and policies since disease impacts not only cats but also other animals and the ecosystems in which they reside. The key cat activities that can contribute to disease acquisition and transmission intra specifically and inter specifically, as well as the primary diseases that cats carry, are discussed here. Our focus is on outdoor cats because the majority of the behaviors we analyze are related to cats with regular access to the outdoors or free roaming cats (i.e., both owned and unowned or feral cats with free access to the environment). Urbanization can also lead to much denser numbers of cats (Lepczyk et al., 2004), which can result in some diseases becoming more prevalent. Lowe et al., 2000 said that Cats have wiped out local species, wiped out species native to oceanic islands, and have become a concern in ecosystems all across the world. Cats are one of the top 100 invasive species on the planet. Domestic cats (*Felis catus*) are widespread throughout the world, posing a threat to local fauna. The number of humans–wildlife conflicts about how feral cats should be managed has recently increased. Previous research in Hawaii has found that the majority of inhabitants want the feral cat population to be controlled.

In Peterson et al., 2012; Lohr and Lepczyk, 2014 studies showed that Cats with little or no access to the outdoors are healthier and live longer, and the risk of encounters with other cats or species is reduced. Allowing owned pet cats to freely roam outdoors can thus be halted in cases where they are now indoor-outdoor. Indoor pet cats, on the other hand, are just one of several cat groups based on their capacity to travel and interact with one another, as previously stated. Increasing vaccination rates, whether cats are let outside or not, can help manage diseases like rabies. In addition to immunizations, ectoparasite controls, such as flea treatment for cats, are used. (Liberg and Sandell, 1994; Denny et al., 2002), and (Kerby and Macdonald, 1994)studied that on specifics can interact with cats both directly and indirectly. Breeding habits, food sharing, and colony building are examples of direct interactions. Cat colonies are sometimes used to refer to groups of cats that congregate around food supplies that are often given by people, either purposefully or unintentionally, in or near human habitation. Cats naturally form colonies in highly modified resource-rich habitats, such as trash or waste transfer stations, large and small townships, homesteads, mining sites, and tourist resorts, which provide food, resting and nesting sites, and breeding opportunities for cats, according to Australian studies. Cats have been observed in such habitats creating dense localized colonies based on marlines, where females guard the resources and recruit their offspring.

Bhowmik et al.,*2020* showed that the bulk of government officers and merchants used to possess cats, but students had the highest percentage (50.0%). The Persian breed came in second (60.5%), followed by the local breed (35.5%). Females made up 52.6 percent of the cat population. Cats' favorite commercial foods were 'Lara' and 'Drools.' The cats were fed three times per day on average. Deworming was administered to 48.7% of the cats. 'Delentin' was the most commonly prescribed antihelmintic in both cats and dogs. In cats and dogs, vaccination was administered to 57.9% and 62.5 percent, respectively. The ownership of pets, pet owners' occupations, sex, breed, nutrition, and immunization pattern of cats and dogs in Chattogram and Dhaka cities were all shown to be significant.

Lue, Pantenburg and Crawford, 2008 and (HABRI, 2016) said in their studies, building trust with animal owners requires a strong understanding of how to cater for the pet's welfare. According to studies, owners who regard their pets to be "part of the family" are more receptive to veterinary advice, as are those who have a long-standing relationship with their veterinarian. According to a recent poll, clients of veterinarians who addressed the importance of human-animal connections with them were up to 77 percent more likely to follow veterinary recommendations, attend wellness appointments, and get pet insurance. Overall, this can lead to better patient care, increased professional satisfaction for veterinarians and their teams, and healthier and happier animals. Growing public concern in the United Kingdom over the treatment of animals in intensive livestock farming prompted the establishment of an independent inquiry into farm animal welfare in 1965, which resulted in the publishing of the Brambell Report (Brambell, 1965). The U.K. Farm Animal Welfare Council was formed as a result of this (FAWC). FAWC was a non-profit organization that created the Five Freedoms as a framework for meeting the welfare needs of farmed animals (National Archives, 2012). The Five Freedoms were renamed the Five Animal Welfare Needs in 2006, and they now apply to all household animals.

**3. Materials and Methods:**

**3.1 Study Area**: The investigation was conducted in Dhaka`s Tejgaon Metro station. Tejgaon Thana (Dhaka metropolitan) covers an area of 2.74 square kilometers and is located between 23°44' and 23°46' north latitudes and 90°23' and 90°23' east longitudes. On the north, it is bordered by kafrul, cantonment, and Tejgaon industrial area thanas; on the south, it is bordered by kalabagan and ramna thanas; on the east, it is bordered by Tejgaon Industrial Area thana; and on the west, it is bordered by sher-e-banglanagar and kafrul thanas. Male 67439, female 51101; total population 118540; administration Tejgaon Thana was established in the year 1953. When the Tejgaon Industrial Area Thana was founded on August 7, 2006, this thana was rebuilt.



**Figure 1: Map of Dhaka city corporation area with Tejgaon Metro**

**3.2 Data collection:** A total number of 20 pet cat owners were interviewed during Upazilla veterinary hospital placements of internship program in Metro livestock office, Tejgaon, Dhaka. The owners were randomly selected while they were visited to the hospital with their pet cats. The information about total number of 56 cats of 20 cat owners from different zones of Tejgaon thana such as Jatrabari, Sonirakhra, rayerbag, Dolaipar, Jurainetc. The author used face-to-face interviewing with the cat owners to construct a standardized questionnaire consisting of open-ended and closed-ended questions on management strategies and disease preventative measures. The name of the cat owner, information on the breeds kept in their homes, the population of cats, and the sources of cats were among the information collected. The questionnaire also collected information on cat management& cat welfare practices. The following items are also included in the data collection: the use of veterinary services and the veterinarian's role in the cats; the level and type of disease prevention measures used, such as deworming practices (mode of administration) and ectoparasite control methods (dipping, shampooing, and spraying) vaccination frequency etc. Data on the type of management practice, such as type of housing (confinement), nutritional diet & housing, food type and other aspects, as well as welfare management factors, veterinary services, and other people's perspectives on stray cat awareness.

**3.3 Methods**:

**3.3.1 Management practices assessment**: Managements of domestic cats were evaluated by housing system, feeding habits, providing nutritional diet and spaces, diseases preventive practices, welfare factors, opinions about different factors.

**3.3.1.1 Housing system**: Unsuitable environmental issues, such as bad weather, humidity, noise, heat, and cold, must be addressed by houses. Food, water, bedding, and toileting facilities should be readily available to all residents.

**3.3.1.2 Feeding habits:** As our understanding of the relationship between diet and health advances, and the number of cat foods available grows, it's more vital than ever to make feeding decisions based on sound information. This was evaluated by food types, frequency of proving foods and comparison with standard diet needs of cats. Cats require a variety of nutrients to survive, including protein-derived amino acids, fatty acids and carbs, vitamins, minerals, and water.

**3.3.2 Diseases preventive practices:** This was evaluated by the vaccination habits, ecto- parasites controls& methods.

**3.3.3 Cat welfare practices:** This was evaluating by health status, five domain of animal welfare, physiological responses (body temperature, respiratory rate, heart rate, BCS etc.) & behavioral responses such as active responders and passive responders etc.

**3.3.4 Animal welfare assessment:** Animal welfare is the physical and psychological, social and environmental well-being of animals” (WSAVA, 2019). Our data represented that health status, health conditions, behavioral & mental conditions of sample cats. Professor David Mellor of Massey University established the Five Domains Model to "enable systematic, structured, thorough, and cohesive assessment of animal welfare" (Mellor, 2017) (Fig.2). This model has been refined to include both positive and negative welfare indicators, as well as protection from negative welfare states.



**Fig.2: *Five Domains Model of measuring animal welfare with examples in each domain of the features being measured (from Mellor, 2017)***

**3.4 Analytical statistics:** By the use of Microsoft Corporation's 2019 windows package, all data collected from 20 distinct cat owners in Dhaka city's Tejgaon metro was organized, formatted, and evaluated. The data was entered into a Microsoft Excel spreadsheet and saved. The data was tabulated and percentages were calculated to analyze it.

**4. Result& Discussion**:

The information about cat numbers, breeds, sources, housing feeding behavior, diseases managements strategies welfare factors, different opinions of cat owners about several aspects are given-

**4.1 Cat numbers and breeds**:

Thousands of people of Dhaka city rear cats of different breeds. This study was conducted on 20 typical owners of cats by face-to-face interviewing of Tejgaon metro bin Dhaka city. Total 56 cats of 20 cat owners of Tejgaon metro were investigated during the study period (Upazilla Veterinary hospital placement.(Table 1).Among the cats 30.36% were male, 35.71% were female& kitten were 35.71%.Here female and kitten were higher than male because male cats become more violent and it seems to difficult to control them sometimes so urban people are more curious to rear female cats and adopted or stray kitten due to animal loving mentality or as companion aspect. Furthermore, because raising a pet cat incurs costs, the children rarely receive financial assistance from their parents. Many studies have shown that the bond that may be formed between people and animals as a result of having and caring for a pet has significant social and health benefits. Pet animals provide companionship, a sense of purpose, and unconditional love, which can be especially beneficial to lonely, elderly, or mentally troubled persons. Pet ownership has also been shown to teach children responsibility, caring, and devotion, according to several research findings (Bhowmik et al. *BJVAS,* 2020). Desi breed cats were highest range in 71.43% due to the increased availability of local breeds through adoption, stray, pet market etc. Then 2nd highest breed was Persian cats 19.64% because We further discovered that Persian cats were preferred above other breeds, owing to the fact that the dignified and gentle Persian cat is recognized for being peaceful and loving (Bhowmik et al. *BJVAS,*2020). Mixed breed cats were the lowest due to this breed cats were less available except breeder.

**Table 1: Information about number & breeds of cats**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Male  | Female | Kitten | Total |
| Cat no | 17 | 20 | 20 | 56 |
| Percentage(%) | 30.36 | 35.71 | 35.71 |  |
| Breed | Deshi | Persian | Mixed |  |
| Cat no | 40 | 11 | 7 | 56 |
| Percentages (%) | 71.43 | 19.64 | 12.75 |  |

**4.2 Housing system:** Different system of cat housing is presented in Table2. From the table it was observed in the cat holders of Tejgaon metro. Among them most (60%) system was fully confinement methods and 2nd most (25%) was the semi confined which is slightly agreement with survey of cat management in New Zealand (Gates et al. 2019).

**Table 2: Housing system**

|  |  |  |
| --- | --- | --- |
| Types of housing | Frequency | Percentage (%) |
| Fully confined | 12 | 60 |
| Semi confined | 5 | 25 |
| Non confined | 3 | 15 |

**4.3 Sources of cats**: Our data showed that the highest range of sources was adoption (40%) and stray (40%)and lowest were pet store(25%) & (20%)(Fig 3). This study slight match with the survey of (Gates et al. 2019).

**Fig.3: Sources of cat**

**4.4 Feeding system**: Table 3 shows the Feeding practices of cat owners and it was observed that most of the cat owners of Tejgaon metro was fed their cats with kitchen residue (40%) and then 2nd most was commercial cat food (15%). 'Lara' is a brand of cat food which one adequate, balanced food is affordable, and of the nine varieties of commercial diets, it is frequently the cheapest. Dry food includes rice, poultry meal, corn gluten meal, soybean meal, chicken oil, beet pulp, flax seed, dried lip whole egg, brewer's dried yeast, lecithin, fish oil, milk replacer, iodized salt, vitamin and mineral, food coloring, and antioxidants with CP-26 percent, CF-4 percent, Fat-10 percent, and moisture-10 percent. Additionally, dry foods are considerably more convenient to package, transport, store, and feed than soft moist foods and canned foods. In this study, it was also found that the maximum cats were fed most three times (65%) (table 3) which result is consistent with the observations presented by (Bhowmik et al. *BJVAS,* 2020). Providing indispensable nutrient needs incats slackens the aging process and lessens the risk for cancer, renal disease, arthritis and immune-mediated diseases in pets (Baldwinet al., 2010; Freeman et al., 2011).

**Table 3: Feeding practices of cat owners**

|  |  |  |  |
| --- | --- | --- | --- |
| Factors |  | frequency | Percentages % |
| Types of feed | Rice, Meat, Fish | 7 | 35 |
|  | Kitchen residue and others | 8 | 40 |
|  | Uncooked fish & meat | 2 | 10 |
|  | Commercial food | 3 | 15 |
|  | Milk | 2 | 10 |
| Frequency of feeding per feed | Once | 2 | 10 |
|  | Twice | 5 | 25 |
|  | Thrice | 13 | 65 |

**4.5 Providing nutritional diet:** Our collected data presented that most of the people could not offer their cats with nutritional food (65%) due to socio economic condition of our country (Fig.4). The majority of homemade foods are prepared (90%) compared to other raw animal products which is similar with the study of (Bhowmik et al. *BJVAS,* 2020). They also think that its very essential to provide nutritional diet for maintain perfect animal health which is constructed by the survey of (Gates et al. 2019)



 **Fig.4: Information about providing enough feed to cats**

**4.6 Providing adequate space:** Our collected data (Fig.5) also showed that most of the cat owners provided their pets enough spaces (70%)because they all think this is very important to give adequate space to ensure proper animal health condition which is also match with the data presented by (Gates et al. 2019).Other 30% could not able to provide enough spaces to their pets due to shortage of places which indicated their lower social status and lack of knowledge of cat rearing.

**Fig.5: Information about providing enough spaces to cats**

**4.7 Diseases management practices:** Table 4 provides a summary of cleanliness and management strategies for preventing disease in cats at Tejgaon metro in Dhaka metropolis. In this study we observed that most of the cats were not vaccinated (75%.) and frequency of vaccination in every year also the lowest most (65%). This information is not match with the other articles because the study population is not so much literate and aware about the vaccination of cats. They also did not maintain ecto parasite control procedure (75%). Most of the methods was oral medication such as Syp. Delentine & Helminticide L according to our hospital record book and data presented by (Bhowmik et al. *BJVAS,* 2020). Inj. Vermic was also used.

**Table 4: Information about diseases prevention practices**

|  |  |  |  |
| --- | --- | --- | --- |
| Factors |  | frequency | Percentages% |
| Vaccination of cat | Yes | 5 | 25 |
|  | no | 15 | 75 |
| Frequency of vaccination | Every year | 2 | 10 |
|  | Not maintain | 18 | 90 |
| Deworming | Yes | 7 | 35 |
|  | Not maintain properly | 13 | 65 |
| Ecto parasite control | Yes | 5 | 25 |
|  | Not maintain properly | 15 | 75 |
| Ecto parasite control method | Dipping | 3 | 15 |
|  | Shampoo | 5 | 25 |
|  | Injection | 6 | 30 |
|  | oral | 7 | 35 |

**4.8 Animal Welfare Assessment:** According to (WSAVA welfare guideline, 2019) our collected data represented the statistical analysis of feeding management (Table 4), housing system (Table no 3), moreover analysis of proving nutritional diet and enough spaces to cats (figure 2&3). It also contain the analysis of other factors for assessment animal welfare such as health status (body temperature, heart & respiratory rate, most important factors BCS), health condition (diseased/ non-diseased), behavioral (active/ passive) and mental condition of cats (anxiousness) (Table 5).These were evaluated by the information of (WSAVA welfare guideline, 2019) and (WSAVA-nutrition assessment guideline -August,2019). By these data analysis we can say that the welfare practices did not maintain in a proper way and there was far deviation of welfare practices of cats. In Table 5 showed that most of the animal were diseased (57%) and their behavior conditions also not suitable according to WSAVA guidelines passive (64%). Their thermal condition was most of the abnormal (64%) due to their diseased health condition. In case of BCS( Body condition score), most of the cats were below ideal range (51%) due to parasitic infection for lack of deworming, unhealthy home made food feeding and frequent attacking of other diseases.

**Table 5: Animal welfare factors**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Factors |  |  | Frequency | Percentage |
| Health status | Thermal conditions | Normal | 20 | 36 |
|  |  | Abnormal | 36 | 64 |
|  | Heart rate | Normal | 28 | 50 |
|  |  | Abnormal  | 28 | 40 |
|  | Respiratory rate | Normal | 27 | 48 |
|  |  | Abnormal | 29 | 51 |
|  | BCS | >2 to 34-56-7 | 27263 | 48465 |
| Health condition | Diseased |  | 32 | 57 |
|  | Non-diseased |  | 24 | 42 |
|  | Pain\injury |  | 12 | 21 |
| Behavioral indicator | Active |  | 20 | 36 |
|  | Passive |  | 36 | 64 |
| Mental condition | Non-anxious |  | 38 | 68 |
|  | Anxious |  | 18 | 32 |

**4.9 Awareness of people\further information:** Table no 6represents the different opinions about several aspect of cat management for further investigation about their management & welfare habits. Here, most of the cat owners (50%) did not know the importance of routine vet check up of their cats due to lack knowledge of management practices. So, they did not perform regular vet visit unless their cats become injured or sick which data are not similar about the information of (Gates et al.2019). Most of the people did not have enough or proper idea about the importance of confinement of cats which helps ton decline the zoonotic diseases of cats and they also had no awareness about the stray cats in their locality (70%) for protection their own pets which causes to damages of their domestic cats sometimes.

**Table 6: Information about different opinions of cat owners**

|  |  |  |  |
| --- | --- | --- | --- |
| Factors |  | Frequency | Percentages (%) |
| Importance of routine cheak up | Very important | 4 | 20 |
|  | Important | 6 | 30 |
|  | Don’t know | 10 | 50 |
| Vet visit | Regular | 8 | 40 |
|  | irregular | 12 | 60 |
| Confinement of cats | Should confine | 4 | 20 |
|  | Allowed roam | 6 | 30 |
|  | None | 10 | 50 |
| Awareness of local stray cat | YesNo | 614 | 3070 |

**Conclusion:**

Finally, managing cats in terms of behavior necessitates reducing disease transmission chances. In this study, management techniques for pet cats were reported in 20 different cat owners in the Tejgaon area of Dhaka city, and it was discovered that all cat owners lacked knowledge about scientific pet cat rearing, which leads to the chances of arising zoonotic diseases. As a result, effective cat management is crucial. However, due to a lack of data, it is not possible to show a accurate presentation therefore it is recommended that researchers should conduct a thorough investigation to identify the most effective method of scientific cat rearing.

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