RESEARCH ARTICLE

Prevalence and risk factors of feline calicivirus and assessment of knowledge, attitudes and practices among cat owners in Pakistan

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ABSTRACT

Feline calicivirus is an upper respiratory tract infection characterized by mouth ulcers and runny eyes, and one of the commonest viral infections in cats. This study was conducted to determine the prevalence of feline calicivirus and to identify the public's knowledge, risk factors, attitude and practices towards calicivirus and general care of cats in Pakistan. The prevalence was determined based on diagnostic data (pathological observations and serological tests, i.e. CBC) from veterinary clinics in the study area during 2021. A questionnaire was designed to access the sociodemographic, knowledge, attitude and practices regarding feline calicivirus among 298 pet owners. The overall prevalence of feline calicivirus was 27.5%. The majority (62.75%) of the pet owners showed poor overall knowledge about the transmission of the virus and its infectiousness. A poor attitude towards the prevention of feline calicivirus was also observed in 52.68% of respondents. Most pet owners (62.75%) had poor values regarding the cleanliness of their cats. Because most surveys were completed by responders living in urban areas, very few cats were exposed to toxins such as pesticides. Despite not knowing much about the virus itself, responders were keen to keep their feline pets healthy with good hygiene, however, only a minimum ensured it.

Keywords: Islamabad, knowledge, mouth ulcers, prevalence, risk factors

INTRODUCTION

Feline calicivirus is a virulent systemic disease characterized by oral ulcers, edema, alopecia, jaundice (Pesavento et al., 2004), upper respiratory infection, lethargy, nasal and eye discharge, anorexia, sneezing and pyrexia (Wardley and Povey, 1977). The virus is a single-stranded piece of RNA with a length ranging up to approximately 7.7 kb and three open reading frames (Fumian et al., 2018). The particles are 33.5nm in diameter and have scalloped borders and surface indentations. It has strong genetic adaptability, meaning it has a tendency to mutate, which, in turn, increases mortality rates. Mutation could cause resistance to the vaccine administered in cats, which could increase fatality, if infected (Stone et al., 2020). In 2008, a chronic variant

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of feline calicivirus emerged with a higher mortality rate (Hofmann-Lehmann et al., 2022). It was associated with virulent systemic disease leading to ocular lesions, mainly conjunctivitis (Pesavento et al., 2004). Experiments have shown that the clinical symptoms are due to the combination of epithelial (cytolytic) and endothelial injury. Upon closer examination, antigens were found in the necrotic epithelial cells of various tissues. These included the cells of the mucosa, skin follicles and affected alveolar septae and bronchioles. Some of the viral particles were found in the pancreatic exocrine cells but were limited to the necrotic portions (Wardley and Povey, 1977).

The infected cat discharges a large number of oral secretions, which are the primary cause of virus transmission. Although the secretion rate is maximal during the onset of the disease, it progressively reduces. It is rare for an infected cat to shed after 30 days since it contracted feline calicivirus (Radford et al., 2021). The treatment of the virus includes intravenous fluids. In extreme cases where the cat is completely unable to eat, it is important to offer semi-solid food with an intense appealing smell. This is because the cat might be resistant to eat due to the ulcers in the mouth and nasal congestion (Hofmann-Lehmann et al., 2022).

Although calicivirus shows milder symptoms than feline herpesvirus, differentiating between the two viruses is difficult due to the high similarity of clinical symptoms; however, oral ulcers are present in feline calicivirus (Najafi et al., 2014). There are regional variations in the prevalence rate of feline calicivirus, with rates in Iran as low as 2.5% and in Japan as high as 59.1%. Prevalence rates of 17%, 9.2%, 13-36%, and 7.2%, respectively, were found by studies conducted in Pakistan, Europe, California, and Southern Italy. A recent study in Wuhan, China discovered a higher incidence rate of 40% for upper respiratory tract infections, indicating that increasing population density increases the danger of contagion (Afonso et al., 2017; Gao et al., 2023; Coyne and Elwyn, 2006).There is scarcity of literature in Pakistan about feline calicivirus; the present study was aimed to assess the seroprevalence of FCV and assessment of FCV-related knowledge, attitudes, and practices (KAP) among cat owners.

MATERIALS AND METHODS

Study Area

The current study was conducted in Rawalpindi and Islamabad (Twin cities). Both have an increasing population, which across both cities is 1.3 million (Maria and Imran, 2006). Rawalpindi and Islamabad are in the moderate seasonal region, with mild winter temperatures and summer heat and humidity. Due to its yearly temperature range of 21.3°C and precipitation range of 1201 mm, the city has a moderate environment. Islamabad's weather has a distinct seasonal pattern, with spring lasting from March to May, summer beginning in June and lasting until August, autumn, which runs from September to November, and frigid winter, which runs from December to February (Köppen et al., 2011).

Data Collection

Data collection included 02 phases, in the first phase we collected data regarding prevalence of feline calicivirus in cats, in which veterinary clinics were visited in the study area to collect epidemiological (age, gender, breed and color etc.), pathological and diagnostic data. Both private and government veterinary clinics (Hope Pet Clinics, Dr. Rana's pet clinic, Pet Point clinic and the Pets and Vets clinic.) were visited. While in the second phase, the survey was conducted among 298 cat owners in Islamabad and Rawalpindi. Since cats are mainly owned in urban areas, these areas were the focus of the study. Information was collected from cat owners and veterinary clinics about the prevalence of feline calicivirus for the past two years. The survey was conducted from July to December, 2021.

Diagnostic Methods

Physiological and blood tests were carried out to diagnose feline calicivirus (Allison and Little, 2013). Physiological assessments were done by the veterinary doctors, physically examining the felines and looking for symptoms, such as mouth ulcers (the most common symptoms), watery eyes and runny nose. The blood tests involved assessment of a sample for viral identification. Elevated white blood cells in the CBC reports alongside the physical symptoms confirm the diagnosis of feline calicivirus in the specimens.

Study Design and Instruments

A questionnaire was designed to collect data on sociodemographic characteristics as well as knowledge, attitude and practices about feline calicivirus (Mindekem et al., 2018; Potter et al., 2016; Zöldi et al., 2017). A sample size of 385 pet owners was obtained from Islamabad and Rawalpindi. The sample size was determined using the Sample Size Calculator by Raosoft, Inc. The pet owners filled out an online survey and face to face interviews were conducted with a detailed questionnaire. This community-based survey was

conducted to study the KAPs. A contrast to be conducted between the different categories of cats as well as their genders and the role vaccinations play in preventing the prevalence of the disease. A questionnaire survey was designed that outlined the important perspectives of the study (Ma et al., 2017). The questionnaire included 48 questions split into four sections: sociodemographic (n = 11), knowledge (n = 12), attitude (n = 9) and practices (n = 22). In this study, the dependent variables were the knowledge, attitude and practices of the pet owners; and the independent variables were their sociodemographic data.

Ethical Approval

The study was approved by the Institutional Review Board (IRB) of the Department of Biosciences, COMSATS University Islamabad, Pakistan.

Data Analysis

Strict data cleaning protocols were used before analysis to guarantee the dataset's completeness and correctness. A database was created by entering data into Microsoft Excel. To prevent bias in the results, duplicate and incomplete data were eliminated. Spreadsheets in Microsoft Excel were updated with the data. The statistical SPSS was used to import, analyze, and arrange the data once it had been gathered in an Excel sheet. Basic frequencies were derived, and the Chi-square method was used to study the correlation between different variables, such as age, gender, vaccination status and domestication status (Maazi et al., 2016). The complete collection of data is shown in tables and narrative form based on responses that were marked as binary (yes/no).

RESULTS

The results of the present study were classified into two sections. The first section has prevalence of feline calicivirus and their risk factors, and the second section has the assessment of knowledge attitudes, and practices of cat owners regarding Ffeline calicivirus**.**

Prevalence of Feline Calicivirus and Risk Factors

In the study area, the overall prevalence of feline calicivirus was 27.7% (101/364). The gender-based analysis was not statistically significant and male cats (27.45%) had slightly higher (26.09%) FCV prevalence than female. Based on coat color, the most prevalent group was the white (37.04%), followed by black white (31.25%), black brown (33.33%) and other (18.18%), but there was no statistically significant difference observed. Age-wise analysis showed that cats of age range >3–5 years had the highest prevalence (38.89%), followed by 1–3 years old (35.14%) and 0–1 year old. Age was highest in adult cats. Furthermore, breed-wise prevalence had varying levels of infectivity. Stray cats and stray mixed cats had the highest prevalence (33.33%), followed by Persian mixed (22.22%), Persian (20.0%), mix breed (14.29%), but no statistically significant difference was observed. Vaccination status did not vary significantly. Unvaccinated cats had higher(33.33%) prevalence than vaccinated cats (29.41%) (Table 1).

Table 1 Demographics and epidemiological characteristics; pet visited veterinary clinics

Variables	Characteristics	Frequency (N)	Frequency (%)
Species	Feline	74	57.4
	Canine	55	42.6
Gender	Male	63	48.9
	Female	30	23.3
	Not Available	36	27.9
Color	Black	12	9.4
	White	27	20.9
	Black/White	16	12.4
	Black/Brown	9	7.0
	Black/Tan	7	5.4
	Brown	7	5.4
	Grey	10	7.8
	Fawn	4	3.1
	Other	37	27.9

Variables	Characteristics	Frequency (N)	Frequency (%)
Age	0-1yrs	19	14.8
	1-3yrs	18	14
	>3-5yrs	6	4.8
	Not Available	86	66.7
Breed	German Shepherd	23	17.8
	Husky	8	6.2
	Labrador	5	1
	Persian	43	33.3
	Stray	9	7
	Mix Breed	9	7
	Persian Mixed	9	7
	Stray Mixed	3	2.3
	Other	29	22.6
Vaccination	Yes	77	59.7
	No	5	3.9
Diseases	Feline Calicivirus	22	17.1
	Diarrhea	7	4.5
	Infection	17	13.2
	Jaundice	5	3.9
	Parvovirus	12	9.3
	Distemper	3	2.3
	Maggots	7	5.6
	Other	55	44
Diagnostic Method	CBC	16	12.4
	Pathology	78	80.5
	Other	35	27.1
Recovery	Yes	130	100
	No	0	0
Clinics	Private	130	100
	Government	0	0

Assessment of Knowledge, Attitude and Practices Among Cat Owners

Sociodemographic Characteristics of Cat Owners

The current study analyzed the sociodemographic background of the population of Pakistan (sample size=298). Gender-wise, most participants among the surveyed population were female (82.9%) and the male was 17.1%. Age-wise, age range > 30 years wasthe most prevalent (60.7%), followed by 26–30 years (18.5%), 21–25 years (12.4%), and 15–20 years (8.4). With regard to occupation, diverse classes of professions were reported. Among participants, most prevalent were students (60.1%), followed by the employed (31.9%), freelancers (16.1%), medical professionals or healthcare sector workers (15.8%), private business (13.1%), unemployed (7.7%) and workers in the government sectors (6.4%). Additionally, 37% reported were belonging to 'other' occupational category.

Educational qualifications were highly varied,most prevalent were undergraduates (50.3%) in this study, followed by graduates (22.8%), postgraduates (13.4%), and higher secondary education (13.1%). Among the ethnicities, Punjabis were the highest group (63.1%) in the current study, followed by Urdu speaking (17.1%), Pakhtoon (5.7%), Sindhi (4.7%), Balochi (1.3%), and Hazargi (1%). Also, the analysis of residential duration showed 88.9% of participants were living in their residence longer than a year, and 2.7% had moved within the last month. Religion-wise, most prevalent

were Muslim cat owners (96.6%), followed by non-religious (2%), Christian (1%), and other religions (0.3%). The household size distribution showed that a majority of the participants (60.1%) lived in houses serviced by 2–5 persons, 31.2% in a house with 6–9 members, 5.4% were in a single member household and 3.4% of more than 10 members. Households containing children showed that 90.3% had 1–3 children, 7.4% had 4–6 children and 2.0% had 7–9 children (Table 2).

Table 2 Prevalence of feline calicivirus with respect to variables

Variables	Characteristics	Frequency (N)	Positive (N)	Prevalence (%)
Gender	Male	51	14	63.63
	Female	23	6	27.27
Color	White	27	10	45
	Black/White	16	5	22.72
	Black/Brown	9	3	13.63
	Others	22	4	18.18
Age	0-1yrs	19	2	9
	1-3yrs	37	13	59
	>3-5yrs	18	7	31
Breed	Stray	9	3	13.6
	Persian	40	8	36
	Mix Breed	5	7	3
	Persian Mixed	9	2	9.0
	Stray Mixed	3	2	9.0
Vaccination	Yes	68	20	99.9
	No	6	2	9.0

Knowledge

The survey showed that 66.1% (n = 197) of respondents gave their cats vaccinations but 25.1% (n = 74) chose not to vaccinate them. The respondents revealed that 6.4% (n=19) among them had vaccinated certain cats, while 1.7% (n=5) were uncertain about their vaccination status. The study revealed that 34.6% (103 respondents) had identified feline calicivirus (FCV) existing previously but 59.4% (177 respondents) were unaware of it, and 5.7% (17 respondents) expressed uncertainty about this virus. Among study participants who owned cats these were distributed as follows: 54% (n = 161) purchased purebred cats, while 21.1% (n = 63) were responsible for stray cats and 23.5% (n = 70) chose mixed-breed cats.

The majority of participants raising cats had 1–3 male cats (42.3%, n=126) along with 1–3 female cats (30.2% total 90), whereas just 6.4% (n = 19) and 4% (n = 12) owned more than three males or females, respectively. Most of the cats in the study belonged to the 1–4 years age group (34.6%, n = 103), whereas 7–12 months and 0–6 months followed closely behind with proportions of 30.9% (n = 92) and 17.4% (n = 52), respectively. With respect to body weight most cats fell within the 2–4 kg range (41.3%, n = 123), while the other categories included 1–2 kg (33.9%, n = 101) and >4 kg (12.1%, n = 36). Research shows that 47.7% (n = 142) of respondents did not perform neutering or spaying procedures on their cats and 36.2% (n = 108) had already done it. The remaining group of 10.7% (n = 32) was uncertain about neutering.

A large proportion of 64.1% (n = 191) kept their cats indoors but 25.2% (n = 75) allowed both indoor and outdoor access, while 9.7% (n = 29) kept them entirely outdoors. Among the respondents 39.9% (n = 119) maintained their cats confined indoors, whereas 34.2% (n = 102) let their cats roam free.

The survey showed that 61.1% of respondents (n = 182) permitted their cats to sleep with family members but 34.6% (n = 103) chose not to grant this freedom. During

the research period 37.9% (n = 113) of cat owners who kept their pets inside permitted them to go outside rarely but 34.5% (n = 104) brought their cats outdoors frequently.

Monitoring cat hunting behavior showed 68.1% (n = 206) of respondents did not observe hunting while 27.2% (n = 81) witnessed hunting behavior. The main transmission route for FCV was direct contact transmission which accounted for 57.04% of cases (n = 170), relative to airborne transmission which revealed 21.47% of cases (n = 64), and feces-related transmission which comprised 14.7% of cases (n = 44). The poll results demonstrated that 73% (n = 220) of respondents thought vaccinated cats could not get FCV yet another 22.48% (n = 67) respondents believed they could (Table 3).

Table 3 Sociodemographic backgrounds from general population of Pakistan

Variables	Characteristics	Frequency (N)	Frequency (%)
Gender	Male	51	17.1
	Female	247	82.9
Status	Student	179	60.1
	Unemployed	23	7.7
	Employed	95	31.9
Age	15-20	55	18.5
	21-25	181	60.7
	26-30	37	12.4
	>30	25	8.4
Occupation	Private Business	39	13.1
	Medical or healthcare professional	47	15.8
	Teacher	14	4.7
	Freelancer	48	16.1
	Digital Marketing	18	6
	Farmer	2	0.7
	Government employees	19	6.4
	Others	111	37
Qualification	Higher Secondary	39	13.1
	Undergraduate	150	50.3
	Graduate	68	22.8
	Post-graduate	40	13.4
	Others	1	0.3
Ethnicity	Punjabi	188	63.1
	Sindhi	14	4.7
	Pakhtoon	17	5.7
	Balochi	4	1.3
	Hazargi	3	1
	Urdu Speaking	51	17.1
How long have you been living in this residence	Less than a month	8	2.7
	Less than 6 months	13	3
	7-12 months	12	4
	Over a year	265	88.9
Religion	Islam	288	96.6
	Christianity	3	1
	No religion	6	2
	Other	1	0.3

Variables	Characteristics	Frequency (N)	Frequency (%)
How many people living in your house?	0-1	16	5.4
	2-5	179	60.1
	6-9	93	31.2
	>10	10	3.4
How many children are present in your house	1-3	269	90.3
	4-6	22	7.4
	7-9	6	2

Attitude

Records from this survey revealed that 30.9% of respondents brought their cats to vets regularly but 20.5% sought care rarely, whereas 45% took their cats to the veterinarian only after disease symptoms emerged. A minority (3.7%) indicated alternative practices. Every third person who visited veterinarians infrequently gave time constraints (28.5%), and geographic distance from veterinary services (18.8%) or the unavailability of veterinary hospitals (20.4%) and financial inability to afford care (15.4%) as their primary reasons. Main deterrents to veterinary visits consisted of misunderstandings regarding care needs (11.1%) combined with cats' discomfort (0.3%) and unnecessary vet visits (0.3%).

Survey participants indicated that 72.1% of their cats used the indoor areas for defecation rather than 26.8% who excreted outside facilities, while 1% chose alternative locations. Veterinary service satisfaction was noted by 65.8 percent of respondents but 12.8 percent were dissatisfied and 21.5 percent stayed undecided. The survey revealed different antihelmintic administration schedules where 34.9% dewormed their cats every six months and 29.9% did it yearly while 7.7% used it biennially and 4.4% used it three to four times per year. Only one out of one hundred respondents (0.7%) conducted deworming procedures for their cats every two months.

The survey results showed that 18.8% of respondents never dewormed their cats while 3% provided different answers apart from 0.7% who found deworming unimportant. Assessment of social interactions of cats: responses from 52.3% reported that their cats were in regular contact with other cats and 44.6% did not have such contact. However, a small proportion of 1.3%, 0.7%, or other (1%) of respondents reported occasional, or uncertainty, or other. And 80.2 percent of owners checked infrequent illness in their cats as contrasted with 10.1 percent who felt that their cats were frequently ill, 8.7 percent who were undecided and 1 percent who answered other. One hundred and thirty seven out of 196 respondents (69.5%) sought veterinary intervention when their cats appeared to have become ill, while, respectively, contacted a veterinary service within a week (13.1%), within a month (4%), and only when their cat's condition had become severe (12.4%).

The dietary habits were also examined in which 29.2% of the respondents stated that their cats had eaten raw meat inside or outside the household, whereas 59.7% informed that their cats did not eat raw meat. Another large percentage, 10.1%, were uncertain and 1% voted for other responses. There were differences in hygiene practice: 75.1% used to clean their cat's litter box daily, 18.4 every three days and 6.3 weekly. Likewise, daily cleaning of a cat's' feeding bowl was done by 73.8%, 19.7% – 3 days later, and 4.6% weekly. About 91.6 % of the participants stated that they had cats in their households, 3.7 % did not own cats, and 4.3 % had cats occasionally. Cat owners who reported exposure of their animal to environmental toxins were 94 percent and 1 percent, respectively. In addition, 3.3 % were included in the occasional exposure group, 0.6 % responded as other. These findings are in turn valuable for understanding feline management, public attitudes towards veterinary care, hygiene and possible zoonotic risks (Table 4).

Table 4 Knowledge of participants from general population of Pakistan

Variables	Characteristics	Frequency(N)	Frequency(%)
Did you vaccinate your cats?	Yes	199	66.8
	No	68	22.8
	Some	19	6.4
	Maybe	5	1.7
	Other	7	2.3
Have you heard of feline calicivirus before?	Yes	103	34.6
	No	177	59.4
	Maybe	17	5.7
Is your cat a breed or stray?	Breed	161	54
	Stray	63	21.1
	Mix	70	23.5
	Others	4	1.3
Please specify the gender(s) of your cat(s)	1 male, 1 female	15	5
	1 male and 2 female	3	1
	1 male and 3 females	2	0.7
	1-3 females	90	30.2
	1-3 males	126	42.3
	2 male and 1 female	15	5
	5 males and 5 females	5	1.7
	>3 females	12	4
	>3 males	19	6.4
	Other	11	3.7
Age of (all) of your cat(s)	0-6months	52	17.4
	7-12months	92	30.9
	1-4years	103	34.6
	5-7years	24	8.1
	8-10years	4	1.3
	>10	9	3
	Different ages	5	1.7
	Others	9	3
What is the average weight of your cat(s)? Please specify all if applicable.	1-2kg	101	33.9
	2-4kg	123	41.3
	5-6kg	1	0.3
	<1kg	21	7
	>4kg	36	12.1
	Others	16	5.4
Are you cat(s) neutered/spayed?	Yes	108	36.2
	No	142	47.7
	Maybe	32	10.7
	Some	16	5.3
Where do you keep your cat(s)?	Indoors	191	64.1
	Outdoors	29	9.7
	Both	75	25.2
	Others	3	1

Variables	Characteristics	Frequency(N)	Frequency(%)
How often do your cat(s) leave the premises of your house?	Once or twice a day	5	1.7
	Once or twice a week	69	23.2
	Whenever they please	102	34.2
	Never	119	39.9
	Other	3	1
Do your cat(s) sleep with any household member?	Yes	182	61.1
	No	103	34.6
	Maybe	3	1
	Sometimes	5	1.7
	Other	5	1.7
If your cat(s) live indoors, how many times do you take your cat(s) out yourself?	Rarely	113	37.9
	Often	104	34.5
	All the time	30	10.1
	Never	48	16.1
	Others	3	1
Does your cat(s) hunt?	Yes	81	27.2
	No	206	68.1
	Some of them	8	2.7
	Others	3	1
Have you heard of feline calicivirus before?	Yes	103	34.6
	No	177	59.4
	Maybe	17	5.7
	Other	1	0.3
What, in your opinion, is the mode of transmission of the disease?	Through contact	170	57.04
	Through air	64	21.47
	Through the touch of faeces	44	14.7
	Through bite	20	6.7
Do you think vaccinated cats can get feline calicivirus?	Yes	67	22.48
	No	220	73
	Maybe	8	2.6
	I don't know	3	1

Practices

The practices of participants to the general population of Pakistan as to feline calicivirus (FCV) information is presented in Table 5. When asked about the mode of transmission of the disease, majority (56%) believed the disease was spread by respiratory mode, followed by other modes of transmission (24.49%) and blood borne (19.5%). Regarding previous diagnoses of their cats for FCV, 74.8% believed their cats were diagnosed with FCV, 11.8% stated no, 13.1% were unsure and 1.3% chose other responses. Among infected cats their age distribution also indicated that 32.2% were 0–6 months, followed by7–12 months (13.8%), 1–3 years (10.1%), 4–7 years (3%), and 8–10 years (0.7%). The method of FCV diagnosis was varied. Among them, pathologically diagnosed were (41%), PCR (11.4%), ELISA (4.7%), and other methods (9.1%), while 33.2% didn't have any records.

In infected cats, conjunction with at least one other symptom was themajority of cases (18.1%), fever (9.1%), lethargy (8.7%), lack of appetite (5.7%), ulcers of the mouth (4.0%), runny eyes (2.3%), and respiratory distress (8.7%). A major portion of respondents chose not applicable and other symptoms (21.1%). Differential symptoms used for diagnosis include fever (22.5%), lethargy(18.8%), ulcers to the mouth (17.4%), and diarrhea (0.3%), while vomiting and bloody stool (0.3%) were least. With respect to upper respiratory symptoms, 19.5% of cats did have such symptoms, 41.3% did not have any, and 31.9% of owner could not know.

Prevalence of feline calicivirus (FCV) was assessed in surveyed cats. Most cases were (79.2%) not diagnosed, (5.7%) diagnosed, (12.8%) uncertain and (2.3%) untreated responses. Of the respondents, 18.1% reported

that they were told by their veterinarian of possible FCV infections on examining them, and (55%) said that their veterinarian did not suspect FCV, (20.8%) were unsure, (1.3%) said that they didn't apply and (5.7%) responded 'other'. Of the cat owners, (79.5%) preferred using private veterinary services, (12.1%) used government-provided services, (2.7%) used both and (5.7%) did not have responses. The efficacy of home remedies was also tested and deemed successful (13.8%), (60.7%) identified as ineffective, (22.5%) unsure, and (3%) chose other.

Regarding the time taken to get to the veterinarian after a symptom, the incidence of 24.8% was reportedfor within a day, 1.7%, within a 2–4-day interval, 21.8% within five days, 8.1% two weeks, 4% a month, and 0.3% after three months. The responses for never sought veterinary care were 17.1%, not applicable 8.1% and unavailable 14.4%. In 22.5% of cases the affected cats had to be hospitalized, 58.4% did not, and 16.4% were uncertain. Patient waiting time to confirm FCV diagnosis depended on how long it took, 27.2% was confirmed within a day, 16.4% within five days, 12.1% within a week, 2.7% within two weeks, and 5.4% within a month. Of the total number of the respondents, 11.1% chose not applicable, and 25.2% provided other response. Results from recovery outcome also reported that 31.2% of cats recovered, 18.5% of cats did not, 14.4% stated most of the cats recovered, and 7.4% of the cats stated not most of the cats recovered. In addition, not applicable was chosen by 25.5%, and 10.84% were unavailable.

Antivirals were the 1st choice of treatment which included 46.6%, 12.1% home remedies, 2% antibiotics, 1.7% antipyretics and 15.4% chose 'not applicable'. Finally, 1.3% selected 'do not know' and 20.8% gave other responses. As for the improvement after treatment, 35.2% said they were better, 17.4% said unchanged, 17.3% were unsure, 10% chose not applicable and 19.5% other. Veterinary knowledge was assessed (35.2% agreed with a vet having adequate knowledge, 17.4% disagreed with a vet's FCV knowledge, 17.8% did not know, 19.5% not available, 1.3% not applicable, and 8.7% had never had their cat checked for FCV). FCV diagnosis temporally to symptom onset was also explored and FCV was diagnosed within one week in 27.5%, within two weeks in 16.4%, within a month in 6.7%, and within two months in 2.7%. An overall total of 19.5% said 'never,' 7.3% did not apply, and 18.8% other. 33% of respondents reported that the virus was transmitted by their cat to others (23.5%), did not (26.2%), couldn't say (4%), not applicable (7%), or other (16.8%) (Table 5).

Table 5 Attitude of participants from general population of Pakistan

Variables	Characteristics	Frequency(N)	Frequency (%)
How often do get your cat(s) checked up?	Often	92	30.9
	Rarely	61	20.5
	Upon Distress	134	45
	Other	11	3.7
If you rarely take them to the vet, what is the reason?	Cat panics	1	0.3
	Cost	46	15.4
	Distance	56	18.8
	Lack of knowledge	33	11.1
	Lack of need	1	0.3
	Lack of proper veterinary hospital	3	1
	Time	85	28.5
	Upon Distress	12	4
	Not Available	61	20.4
Where does your cat(s) defecate?	Indoors	215	72.1
	Outdoors	80	26.8
	Other	3	1

Variables	Characteristics	Frequency(N)	Frequency (%)
Are you satisfied with the veterinary center that you go to?	Yes	196	65.8
	No	38	12.8
	Maybe	64	21.5
How often do you deworm your cat(s)>	Every 2 months	2	0.7
	Every 3-4 months	13	4.4
	Every 6 months	104	34.9
	Once a year	89	29.9
	Once every two years	23	7.7
	Never	56	18.8
	Not applicable	2	0.7
	Other	9	3
Does your cat(s) get in contact with other cats?	Yes	156	52.3
	No	133	44.6
	Maybe	2	0.7
	Sometimes	4	1.3
	Other	3	1
Does your cat(s) get sick often?	Yes	30	10.1
	No	239	80.2
	Maybe	26	8.7
	Other	3	1
When do you seek veterinary help when your cat(s) is sick?	Immediately	207	69.5
	In a week	39	13.1
	In a month	12	4
	When it gets crucial	37	12.4
	Other	3	1
Does your cat(s) eat raw meat inside/outside of the house?	Yes	87	29.2
	No	178	59.7
	Maybe	30	10.1
	Other	3	1
How often do you clean your cat's litter box?	Every day	224	75.1
	Every 3 days	55	18.4
	Every week	19	6.3
How often do you clean your cat's eating bowl?	Every day	220	73.8
	Every 3 days	59	19.7
	Every week	14	4.69
Do you have cats over at your house?	Yes	273	91.6
	No	11	3.7
	Sometimes	13	4.3
	Others	1	0.3
Are you cats ever exposed to toxins such as pesticides?	Yes	3	1
	No	283	94
	Sometimes	10	3.3
	Other	2	0.6

Association of knowledge, attitude, and practices with sociodemographic factors

The current study had an analysis of the association between various risk factors and knowledge, attitude, and practices (KAP) status, with P-values indicating statistical significance. For gender, there was no significant association with knowledge or attitude. However, a significant association existed between

gender and practices, with females having better practices compared to males. Employment status was significantly associated with knowledge and practices, but not with attitude. Students demonstrated better knowledge and practices compared to unemployed individuals and employed individuals. Education level showed a strong association with both knowledge and practices, but not with attitude. Graduates had the highest levels of knowledge and practices, while individuals with primary education show the lowest levels (Table 6).

Table 6 Practices of participants from general population of Pakistan

Variables	Characteristics	Frequency(N)	Frequency (%)
What, in your opinion, is the mode of transmission of the disease?	Blood Borne	58	19.5
	Respiratory	167	56
	Other	73	24.49
Did your cat(s) ever get diagnosed with the feline calicivirus?	Yes	32	10.7
	No	223	74.8
	Maybe	39	13.1
	Other	4	1.3
How many of your cats have ever gotten infected with the virus?	0-1	251	84.2
	2-4	30	10.1
	>4	11	3.7
	Other	6	2
What was the age of your cat(s) that got infected? (Please answer in the other if the number is more than and for each)	0-6months	96	32.2
	7-12months	41	13.8
	1-3years	30	10.1
	4-7years	9	3
	8-10years	2	0.7
	Not applicable	71	23.8
	Other	49	16.4
What was the method of diagnosis?	ELISA	14	4.7
	PCR	34	11.4
	Pathologically	124	41
	Not recorded	99	33.2
	Other	27	9.1
If your cat(s) was ever diagnosed with calicivirus, what were the symptoms?	Ulcers in the mouth	12	4
	Runny eyes	7	2.3
	Respiratory distress	26	8.7
	Laziness	26	8.7
	Lack of consumption of food	17	5.7
	Fever	27	9.1
	All of the above	54	18.1
	Not applicable	66	22.1
	Other	63	21.1
If your cat was diagnosed with calicivirus, what was the differential symptom on which you or the vet based the diagnoses? (Add the test name in other if applies)	Bloody stool	1	0.3
	Diarrhea and vomiting	1	0.3
	Fever	67	22.5
	Laziness	56	18.8
	Ulcers in the mouth	52	17.4
	Not applicable	47	15.8
	Other	74	24.8

Variables	Characteristics	Frequency(N)	Frequency (%)
Did your cat(s) have upper respiratory symptoms or a respiratory disorder?	Yes	58	19.5
	No	123	41.3
	I don't know	95	31.9
	Not applicable	8	2.7
	Others	14	4.7
Has your cat(s) ever been diagnosed with feline herpes virus (FHV)?	Yes	17	5.7
	No	236	79.2
	Maybe	38	12.8
	Not available	7	2.3
Did your vet ever suggest the possibility of your cat having calicivirus upon observation?	Yes	54	18.1
	No	164	55
	I don't know	59	19.8
	Not applicable	4	1.3
	Others	17	5.7
Do you take your cat(s) to a private or government veterinarian?	Government	36	12.1
	Private	237	79.5
	Both	8	2.7
	Not available	17	5.7
If your cat was ever diagnosed with the virus, did home remedies work in treating it?	Yes	41	13.8
	No	181	60.7
	Maybe	67	22.5
	Other	9	3
How long after the symptoms did you take your cat(s) to the vet?	A day	74	24.8
	2-4 days	5	1.7
	<5 days	64	21.8
	After two weeks	24	8.1
	After a month	12	4
	After 3 months	1	0.3
	Never	51	17.1
	Not applicable	24	8.1
	Not available	43	14.4
If your cat was diagnosed with the virus, did you have to hospitalize your cat(s)?	Yes	67	22.5
	No	174	58.4
	Maybe	49	16.4
	Not available	8	2.7
If your cat(s) was diagnosed with the virus, how long did it take to confirm the diagnosis?	A day	81	27.2
	< 5 days	49	16.4
	< a week	36	12.1
	<Two weeks	8	2.7
	A month	16	5.4
	Not applicable	33	11.1
	Other	75	25.2
If your cat(s) had the virus, did your cat(s) ever recover?	Yes	93	31.2
	No	55	18.5
	Most of them	43	14.4
	Not most of them	22	7.4
	Not applicable	76	25.5
	Not available	32	10.84

Variables	Characteristics	Frequency(N)	Frequency (%)
In case of your cat being diagnosed with the calicivirus, what were the treatment methodologies?	Antibiotics	6	2
	Antipretics	5	1.7
	Antivirals	139	46.6
	Home remedies	36	12.1
	Not applicable	46	15.4
	Do not know	4	1.3
	Other	62	20.8
If your cat was diagnosed with the virus, how long did it take for your cat(s) to show signs of improvement?	Yes	125	35.2
	No	52	17.4
	Maybe	53	17.3
	Not Applicable	30	10
	Other	58	19.5
If your cat(s) has been diagnosed with the virus, did the vet seem to have the proper knowledge to treat it?	Yes	105	35.2
	No	52	17.4
	Maybe	53	17.8
	Not Available	58	19.5
	Not applicable	4	1.3
	Never got them checked for calicivirus	26	8.7
If your cat has ever been diagnosed with the virus, how long after the symptoms started showing?	Within a week	82	27.5
	Within two weeks	52	16.4
	Within a month	20	6.7
	Within two months	8	2.7
	Never	58	19.5
	Not applicable	22	7.3
	Other	56	18.8
If your cat(s) ever had the virus, was the virus contagious to other cats?	Yes	70	23.5
	No	78	26.2
	Maybe	67	22.5
	Can't say	12	4
	Not applicable	21	7
	Other	50	16.8

DISCUSSION AND CONCLUSION

This study characterizes the first evaluation of knowledges, attitudes and practices of cat owners about feline calicivirus and feline management in general in Pakistan. Of the 298 participants, 82.9% were females, having a higher percentage among the participants of the age group 21–25. Due to the distribution of questionnaire among university students, 50.3% of the participants were recorded as undergraduate students but mostly having jobs with good income. Similar sociodemographics were observed in other related studies (Alrukban et al., 2022).

Over half of the pet owners did not have any knowledge about the disease. 57.4% of the pet owners responded with contact being the primary source of transmission of virus, which was consistent with a previous study (Tamiru et al., 2022). The owners make efforts to improve their knowledge of the hygiene of their pets, which includes being aware of the diseases their pets can catch, which is consistent with the previous studies, as the participants had some knowledge of the proper hygiene and care of their pets even if they had little knowledge of feline calicivirus (San Jose et al., 2020). 45% of the respondents brought their cats right away to the veterinarian, and always dewormed their cats, and mentioned their cats as healthy; and majority of the respondents had an indoor litter box for their cats to defecate. More than half of the cats were in contact with other feline companions, a finding that is consistent with the results from a previous study on the attitudes of the pet owners (San Jose et al., 2020), which talked

about the knowledge, attitude, and practices with pets in the Philippines. The pet owners had a similar attitude towards the care of their pets and not having adequate knowledge and attitude towards the proper care of their pets.

Most of the respondents used private clinics, where 41% of the cats were diagnosed mainly based on the oral ulceration, which is typical of feline calicivirus infection. However, many owners felt that veterinarians did not have adequate knowledge of FCV. Approximately half of the affected cats were treated with antiviral therapy, which was linked to high recovery rates and low mortality rates, and 35.2% of cats fully recovered, while the rest showed mixed results. Our investigation finds an important rarity of antiviral data, i.e., the individual agents, the dosage regimen, and the duration of therapy involved in the compiled data. The observed prevalence of antiviral utilization can be taken as an affirmative indication of deliberate therapeutic deployment and predilection towards proactive viral disease control, as opposed to a sole reliance on antibacterial agents or traditional home remedies. This can be an issue in contexts where limited resource availability is the rule, and the term "antivirals" may be used in its widest sense to include all modalities of action towards viral inhibition and immune modulation. Accordingly, the current observation is likely to be more of a reflection of local linguistic conventions and perceptions of therapy, rather than an example of clinical hyper-utilization of a specific treatment. For these reasons, we recommend the elaboration and stratification of drug treatment schemes as well as the establishment of robust drug classification systems to be included in future epidemiological research.

While there is a lack of direct empirical data from Pakistan at present, a synthesis of the existing literature from around the world and regional surveillance reports suggest that many small animal veterinary clinics working in low-resource settings are primarily using clinical necropsy observations (such as the characteristic oral ulcerations, repetitive sneezing, and nasal exudates) as provisional diagnostic criteria used for feline calicivirus, rather than using rigorous molecular diagnostics (Vijay et al., 2021). Consequently, there is a dire need for future research efforts to be conducted in Pakistan to carry out a comprehensive evaluation of the diagnostic infrastructure, specifically to map the existence and functioning of polymerase chain reaction assays and virus isolation facilities in veterinary practices and to guide the creation of diagnostic procedures based on available evidence.

A statistically significant relationship was found between the female respondents aged between 21-24 and high knowledge levels. While formal education, overall, did not have a statistically significant impact, the subset of undergraduates had superior awareness. In urban areas, the respondents showed comparatively unfavorable attitude towards preventive measures for FCV, while as other sociodemographic variables, they showed no significant effect. The domain of practices showed a marginal but statistically significant relationship between women 21-24 years of age living in urban milieus, especially those who were employed undergraduates, who displayed their more regular hygiene practices and showed greater responsibility in relation to care. The results highlight positive trends which were consistent with the previous studies (Bordicchia et al., 2021; Radford et al., 2009). However, the virus can spread more quickly in places with poor immunization rates (Radford et al., 2021).The danger of feline calicivirus transmission increases with the number of cats living close to one another. This is due to the fact that the virus is mainly transmitted by contact with the saliva or respiratory secretions of infected cats (Wang and Lin, 2024). Management techniques, including sharing food and water dishes or litter boxes, can help feline calicivirus spread. The regularity with which cats' environments are cleaned and sanitized can also affect the likelihood of transmission (Möstl et al., 2013).

Although feline calicivirus is not zoonotic, the practices that have been described (feeding raw meat, poor disinfection, and close human-cat contact) are indirect zoonotic risks. These practices highlight the need for the integration of feline health into the broader One Health framework. Improving the cooperation between veterinary experts, public health agencies and local governmental bodies is necessary to reduce the risks of disease at the human-animal-environment interface (Mohammed and Ahmed, 2024).The limitations of the study include reliance on self-reported information, which may introduce recall bias, both of veterinary experts and owners, and an urban skewed sampling frame, which may fail to adequately reflect rural populations. Future studies should include on-site clinical verification, sampling in rural areas, genomic screening of FCV strains to test molecular epidemiology and vaccine coverage gaps.

In conclusion, the prevalence of feline calicivirus was

low and cat owners did not have proper or adequate knowledge of feline calicivirus. They also showed poor practices and a relatively poor attitude towards the proper hygiene and care of their cats. The study mostly targeted university students and an urban population. In consequence, their literacy rate and age mean they are aware of feline calicivirus practices and inclined towards adopting a positive attitude and having good knowledge. Female students showed more positive results compared with other populations, although there could have been a bias here due to more females filling in the survey. In conclusion, people did not have significant knowledge regarding feline calicivirus and also showed a lack of knowledge and implementation of proper hygiene practices for the health of their pets.

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CONFLICTS OF INTEREST

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CONTRIBUTIONS

Conception: MH, MSA; Design: MH; Supervision: JC; Materials: KI, ED; Data Collection and/or Processing: MAG, MH; Analysis and/or Interpretation of the Data: HA, JC; Literature Review: NAS, AA, HA, JC; Writing: JZ,JC, HA; Critical Review: HA, ED

REFERENCES

Afonso MM, Pinchbeck GL, Smith SL, Daly JM, Gaskell RM, Dawson S, et al. 2017. A multi-national European cross-sectional study of feline calicivirus epidemiology, diversity and vaccine cross-reactivity. Vaccine, 35(20), 2753-60, doi: 10.1016/j.vaccine.2017.03.030

Allison RW, Little SE. 2013. Diagnosis of rickettsial diseases in dogs and cats. Vet Clin Pathol, 42(2), 127-44, doi:10.1111/vcp.12040

Alrukban MO, Alekrish YA, Alshehri MH, Bajeaifer YA, Alhamad MH, Sambas FA, et al. 2022. Awareness of pet owners in Riyadh regarding pet-related health risks and their associated preventative measures. Vector-Borne Zoo Dis, 22(8), 419-24, doi: 10.1089/vbz.2022.0017

Bordicchia M, Fumian TM, Van Brussel K, Russo AG, Le S-J, Pesavento PA, et al. 2021. Feline calicivirus virulent systemic disease: Clinical epidemiology, analysis of viral isolates and in vitro efficacy of novel antivirals in Australian outbreaks. Viruses, 13(10), 2040. doi:10.3390/v13102040

Coyne JA, Elwyn S. 2006. Desaturase-2, environmental adaptation, and sexual isolation in Drosophila melanogaster. Evolution, 60(3), 626-7. doi: 10.1554/CR06-02.1

Fumian TM, Tuipulotu DE, Netzler NE, Lun JH, Russo AG, Yan GJ, et al. 2018. Potential therapeutic agents for feline calicivirus infection. Viruses, 10(8), 433, doi: 10.3390/v10080433

Gao J, Li Y, Xie Q, Al-Zaban MI, Al-Saeed FA, Shati AA, et al. 2023. Epidemiological investigation of feline upper respiratory tract infection encourages a geographically specific FCV vaccine. Vet Sci, 10(1), 46. doi: 10.3390/vetsci10010046

Hofmann-Lehmann R, Hosie MJ, Hartmann K, Egberink H, Truyen U, Tasker S, et al. 2022. Calicivirus infection in cats. Viruses, 14(5), 937, doi: 10.3390/v14050937

Köppen W, Volken E, BrönnimannS.2011. The thermal zones of the earth according to the duration of hot, moderate and cold periods and to the impact of heat on the organic world. Meteorol Z, 20(3), 351-60. doi: 10.1127/0941-2948/2011/105

Ma XX, Li YW, Gong PJ, Cai GB, Ming ZP, Dong HF. 2017. A survey of students studying at a university in Wuhan, China: knowledge, attitudes, and practices (KAP) regarding food-borne parasitic diseases. CABI Databases, 12, 4, 353-358 ref. 16. DOI: 10.5555/20173198779

Maazi N, Jamshidi S, Kayhani P, Momtaz H.2016. Occurrence of Chlamydophila felis, feline herpesvirus 1 and calicivirus in domestic cats of Iran. Iran J Microbiol, 8(5), 312.

Maria SI, Imran M. 2006. Planning of Islamabad and Rawalpindi: What went wrong. Proc 42nd ISoCaRPCongr, Istanbul, Turkey.

Mindekem R, Lechenne M, Daugla MD, Zinsstag J, Ouedraogo LT, Sahidou S. 2018. Rabies knowledge, attitudes, and practices of human and animal healthcare providers in Chad. SantePublique, 30(3), 418-28.

Mohammed A, Ahmed M. 2024. Evidence-Based Veterinary Medicine in Developing Countries: Challenges and Opportunities. Acta Vet Eurasia, 50(1), 83-6.

Möstl K, Egberink H, Addie D, Frymus T, Boucraut-Baralon C, Truyen U, et al. 2013. Prevention of infectious diseases in cat shelters: ABCD guidelines. J Feline Med Surg, 15(7), 546-54,doi: 10.1177/1098612X13489210

Najafi H, Madadgar O, Jamshidi S, Langeroudi AG, Lemraski MD. 2014. Molecular and clinical study on prevalence of feline herpesvirus type 1 and calicivirus in correlation with feline leukemia and immunodeficiency viruses. Vet Res Forum, 5(4), 255.

Pesavento PA, Mac Lachlan N, Dillard-Telm L, Grant C, Hurley K. 2004. Pathologic, immunohistochemical, and electron microscopic findings in naturally occurring virulent systemic feline calicivirus infection in cats. Vet Pathol, 41(3), 257-63. doi:10.1354/vp.41-3-257

Potter A, Jardine A, Neville PJ. 2016. A survey of knowledge, attitudes, and practices in relation to mosquitoes and mosquito-borne disease in Western Australia. Front Public Health, 4, 32. doi: 10.3389/fpubh.2016.00032

Radford A, Afonso M, Sykes JE.2021. Feline Calicivirus Infections. Greene's Infect Dis Dog and Cat, Elsevier,443-54. doi: 10.1016/B978-0-323-50934-3.00035-5

Radford AD, Addie D, Belák S, Boucraut-Baralon C, Egberink H, Frymus T, et al. 2009. Feline calicivirus infection. ABCD guidelines on prevention and management. J Feline Med Surg, 11(7), 556-64.doi: 10.1016/j.jfms.2009.05.004

San Jose RD, Magsino PJP, Bundalian RD. 2020. Factors affecting the knowledge, attitude, and practices of pet owners on responsible pet ownership in Magalang, Pampanga, Philippines: A cross-sectional study. Philipp J Vet Med, 57(2).

Stone AE, Brummet GO, Carozza EM, Kass PH, Petersen EP, Sykes J, et al. 2020. AAHA/AAFP feline vaccination guidelines. J Feline Med Surg, 22(9), 813-30. doi:10.5326/JAAHA-MS-7123

Tamiru Y, Abdeta D, Amante M. 2022. Knowledge, attitude, and practice toward pet contact associated zoonosis in Western Ethiopia. Vet Med Res Rep, 47-58. doi: 10.2147/VMRR.S346806

Vijay D, Bedi JS, Dhaka P, Singh R, Singh J, Arora AK, et al. 2021. Knowledge, attitude, and practices (KAP) survey among veterinarians, and risk factors relating to antimicrobial use and treatment failure in dairy herds of India. Antibiotics, 10(2), 216, doi: 10.3390/antibiotics10020216

Wang Z, Lin X. 2024. Long-Term Impact of Feline Calicivirus (FCV): From Transmission Dynamics to Disease Management. Int J Mol Vet Res, 14, doi:10.5376/ijmvr.2024.14.0003

Wardley R, Povey R. 1977. The pathology and sites of persistence associated with three different strains of feline calicivirus. Res Vet Sci, 23(1), 15-9.

Zöldi V, Turunen T, Lyytikäinen O, Sane J.2017. Knowledge, attitudes, and practices regarding ticks and tick-borne diseases, Finland. Ticks Tick Borne Dis, 8(6), 872-7, doi: 10.1016/j.ttbdis.2017.07.004

Prevalenca i rizični faktori mačjeg kalicivirusa i procjena znanja, stavova i praksi vlasnika mačaka u Pakistanu

SAŽETAK

Mačji kalicivirus predstavlja infekciju gornjeg respiratornog trakta koju karakteriziraju ulceracije usne šupljine i iscjedak iz očiju, a jedna je od najčešćih virusnih infekcija mačaka. Cilj ovog istraživanja jeste određivanje prevalence mačjeg kalicivirusa i identifikacija znanja, rizičnih faktora, stavova i praksi vezanih za kalicivirus, kao i opće brige za mačke u Pakistanu. Prevalenca je određena na osnovu dijagnostičkih podataka (patološki nalazi i serološki testovi, npr. KKS) prikupljenih na veterinarskim klinikama u području istraživanja u 2021. godini. Kreirali smo upitnik kojim smo procijenili sociodemografiju, znanja, stavove i prakse vezane za mačji kalicivirus kod 298 vlasnika mačaka. Ukupna prevalenca mačjeg felicivirusa je iznosila 27.5%. Većina (62.75%) vlasnika kućnih ljubimaca je pokazala slabo opće znanje o prenosu virusa i njegovoj infektivnosti. Kod 52.68% anketiranih su uočeni neadekvatni stavovi o prevenciji mačjeg kalicivirusa. Većina vlasnika kućnih ljubimaca (62.75%) su slabo održavali čistoću svojih mačaka. Obzirom da većina ispitanika živi u urbanim područjima, mali broj mačaka je bio izložen toksinima poput pesticida. Uprkos nedovoljnom poznavanju samog virusa, ispitanici su bili voljni održavati svoje mačke zdravim, u dobrim higijenskim uvjetima, ali je samo mali broj to postigao.

Ključne riječi: Islamabad, prevalenca, rizični faktori, ulceracije usne šupljine, znanje