

Character and conditions of housing, feeding and toilet management of cats with feline idiopathic cystitis, urolithiasis and urinary tract infection

Parameter	Total (n=86)	FIC (n=52)	Urolithiasis (n=21)	UTI (n=13)	<i>P</i> value
Character					
Character trait, n (%)					
Very shy-shy	24 (27.9%)	12 (23.1%)	9 (42.9%)	3 (23.1%)	0.564
Calm	27 (31.4%)	18 (34.6%)	5 (23.8%)	4 (30.8%)	
Lively-curious	35 (40.7%)	22 (42.3%)	7 (33.3%)	6 (46.1%)	
Housing					
Type of housing, n (%)					
Indoors	18 (20.9%)	10 (19.2%)	5 (23.8%)	3 (23.1%)	0.940
Indoors with restricted access outside	53 (61.6%): balcony (45), garden (3), terrace (4), courtyard (1)	33 (63.5%): balcony (29), garden (2), terrace (2)	13 (61.9%): balcony (10), terrace (2), garden (1)	7 (53.8%): balcony (6), courtyard (1)	
Outdoors	15 (17.4%)	9 (17.3%)	3 (14.3%)	3 (23.1%)	
Space					
Size of unit, median in m ² (range)	76.5 (40–400)	76.5 (40–400)	78 (40–180)	70 (40–100)	0.472
Number of rooms, median (range)	3.5 (1–7)	4 (2–7)	3 (1–7)	3 (2–6)	0.455
Cats with accessibility to all rooms, n (%)	77 (89.5%)	50 (96.2%)	16 (76.2%)	11 (84.6%)	0.022*
Other pets, n (%)					
Cats	61 (70.9%)	37 (71.2%)	17 (81.0%)	7 (53.8%)	0.272
Dogs	13 (15.1%)	9 (17.3%)	3 (14.3%)	1 (7.8%)	0.910
No other pets	22 (25.6%)	12 (23.1%)	4 (19.0%)	6 (46.2%)	0.189
Living together with other pets, n (%)					

Parameter	Total (n=86)	FIC (n=52)	Urolithiasis (n=21)	UTI (n=13)	P value
No quarrelling	32 (50.0%)	20 (50.0%)	9 (52.9%)	3 (42.8%)	0.366
Quarrelling	24 (37.5%): once a day (4), once a week (10), once a month (10)	13 (32.5%): once a day (3), once a week (3), once a month (7)	8 (47.1%): once a week (6), once a month (2)	3 (42.8%): once a day (1), once a week (1), once a month (1)	
Avoiding each other	8 (12.5%)	7 (17.5%)	0 (0%)	1 (14.3%)	
Feeding					
Percentage of dry food, n (%)					
0-33%	21 (24.4%)	14 (26.9%)	1 (4.8%)	6 (46.1%)	0.061
34-66%	35 (40.7%)	23 (44.2%)	9 (42.8%)	3 (23.1%)	
67-100%	30 (34.9%)	15 (28.8%)	11 (52.4%)	4 (30.8%)	
Drinking facilities, n (%)					
Water bowl	85 (98.8%)	52 (100%)	20 (95.2%)	13 (100%)	0.395
Other drinking facilities	29 (33.7%): running water out of the tap (11), drinking fountain (5), watering can (4), flower pots (3), watering of food (3), aquarium (1), bowl with cat milk (1), pool (1)	18 (34.6%): running water out of the tap (7), watering can (4), flower pots (3), watering of food (2), drinking fountain (1), pool (1)	6 (28.6%): running water out of the tap (2), aquarium (1), bowl with cat milk (1), drinking fountain (1), watering of food (1)	5 (38.5%): drinking fountain (3), running water out of the tap (2)	0.905 (running water out of the tap) 0.040* (drinking fountain) 0.345 (watering can) 0.728 (flower pots) 1.000 (watering of food) 0.205 (others)
Number of water bowls, n (%)					
1 bowl	50 (58.8%)	31 (59.6%)	12 (60.0%)	7 (53.8%)	0.587

Parameter	Total (n=86)	FIC (n=52)	Urolithiasis (n=21)	UTI (n=13)	P value
≥2 bowls	35 (41.2%)	21 (40.4%)	8 (40.0%)	6 (46.2%)	
Toilet management					
Type of litter box, n (%)					
With hood	45 (52.3%)	28 (53.8%)	9 (42.9%)	8 (61.5%)	0.537
Without hood	47 (54.7%)	30 (57.7%)	12 (57.1%)	5 (38.5%)	0.445
Number of litter boxes, n (%)					
1 litter box	54 (62.8%)	34 (65.4%)	12 (57.1%)	8 (61.5%)	0.799
≥2 litter boxes	32 (37.2%)	18 (34.6%)	9 (42.9%)	5 (38.5%)	
Type of cat litter, n (%)					
Clumping litter	62 (72.1%)	40 (76.9%)	17 (81.0%)	5 (38.5%)	0.019*
Other cat litter	26 (30.2%): silica gel litter (8), wooden litter (8), non-clumping litter (7), sand (3)	14 (26.9%): silica gel litter (5), non-clumping litter (4), wooden litter (2), sand (3)	4 (19.0%): silica gel litter (2), non-clumping litter (1), wooden litter (1)	8 (61.5%): wooden litter (5), non-clumping litter (2), silica gel litter (1)	0.629 (non-clumping litter) 0.002† (wooden litter) 1.000 (silica gel litter) 0.728 (sand)
Frequency of removal of urine and faeces, n (%)					
≤1x daily	34 (39.5%)	18 (34.6%)	9 (42.8%)	7 (53.8%)	0.518
2x daily	37 (43.0%)	22 (42.3%)	9 (42.8%)	6 (46.2%)	
≥3x daily	15 (17.4%)	12 (23.1%)	3 (14.3%)	0 (0%)	
Frequency of complete cleaning, n (%)					
≤1x monthly	38 (44.2%)	22 (42.3%)	11 (52.4%)	5 (38.5%)	0.884
1x weekly	40 (46.5%)	26 (50.0%)	8 (38.1%)	6 (46.1%)	
>1x weekly	8 (9.3%)	4 (7.7%)	2 (9.5%)	2 (15.4%)	

Parameter	Total (n=86)	FIC (n=52)	Urolithiasis (n=21)	UTI (n=13)	<i>P</i> value
Location of litter boxes, n (%)					
Bathroom	32 (37.2%)	19 (36.5%)	6 (28.6%)	7 (53.8%)	0.329
Toilet	18 (20.9%)	12 (23.1%)	5 (23.8%)	1 (7.7%)	0.488
Corridor	29 (33.7%)	21 (40.4%)	5 (23.8%)	3 (23.1%)	0.322
Other location	27 (31.4%): balcony (10), living room (5), storeroom (3), guest bathroom (2), hobby room (2), kitchen (2), study (1), bedroom (1), conservatory (1)	15 (28.8%): storeroom (2), balcony (4), guest bathroom (2), hobby room (2), living room (2), conservatory (1), kitchen (1), study (1)	5 (23.8%): storeroom (1), balcony (2), kitchen (1), living room (1)	7 (53.8%): balcony (4), living room (2), bedroom (1)	0.090 (balcony) 0.251 (living room) 1.000 (storeroom) 0.839 (others)
Position of litter boxes, n (%)					
≤2 sides accessible	52 (60.5%)	29 (55.8%)	15 (71.4%)	8 (61.5%)	1.000 (1 side)
≥3 sides accessible	40 (46.5%)	26 (50.0%)	6 (28.6%)	8 (61.5%)	0.354 (2 sides) 0.236 (3 sides) 0.338 (4 sides)
Presence of two litter boxes in the same room, n (%)	15 (46.9%)	7 (36.8%)	6 (66.7%)	2 (40.0%)	0.381

* No significant difference between groups in consideration of the Bonferroni correction with $P \leq 0.017$

† Owners of cats with UTI used significantly more often wooden litter than those of cats with FIC ($P = 0.003$)

Questions and response options of the questionnaire

Question	Response options
1. General information	
1.1. Breed	1.1. DSH; Persian; Maine Coon; etc
1.2. Age	1.2. 1 year; 2 years; 3 years; etc
1.3. Sex	1.3. Male; female
1.4. Castration status	1.4. Neutered; intact
2. Character	
Which character trait applies best to your cat?	Very shy; shy; calm; lively; curious
3. Housing	
3.1. Which type of housing is your cat kept in?	3.1. Indoors; indoors with access to the balcony; indoors with restricted access outside (eg, garden, terrace); outdoors
3.2. How much space does your home offer to your cat?	3.2. Please specify number of rooms, number of rooms being accessible for the cat, number of m ²
3.3. Are there other pets living in your home? How does the living together of your cat with the other pets work?	3.3. No; yes; if yes, please specify which other pets No quarrelling; once a day quarrelling; once a week quarrelling; once a month quarrelling; avoiding each other
3.4. Has a modification of housing been performed because of urination problems?	3.4. No; yes; if yes, please specify which modification
4. Feeding	
4.1. Which type of food does your cat get?	4.1. Canned food; dry food; both; if both, please specify which percentages
4.2. How many drinking facilities are available for your cat?	4.2. Please specify number of water bowls, number of drinking fountains, other drinking facilities; if other drinking facilities, please specify which ones
4.3. Has a modification of feeding been performed because of urination problems?	4.3. No; yes; if yes, please specify modification of feeding, feeding of a diet, modification of drinking facilities
5. Toilet management	
5.1. How many litter boxes are available for your cat?	5.1. Please specify number of litter boxes with hood, number of litter boxes without hood
5.2. Which cat litter do you use?	5.2. Clumping litter; wooden litter; silica gel litter; sand; other litter; if other litter, please specify which one
5.3. How often do you clean the litter box/es?	5.3. Please specify frequency of daily removal of faeces and urine, frequency

Question	Response options
5.4. Where is/are the litter box/es positioned?	of weekly or monthly complete cleaning 5.4. Please specify room, position in the room, accessibility of the litter box/es
5.5. Has a modification of toilet management been performed because of urination problems?	5.5. No; yes; if yes, please specify which modification
6. Disease process	
6.1. How many times did your cat have to be treated by a veterinarian due to urination problems?	6.1. Once; twice; third time; etc
6.2. How many times did your cat have to be treated as an inpatient due to urination problems?	6.2. Once; twice; third time; etc
6.3. When was your cat treated respectively due to urination problems?	6.3. Please specify month and year of presentation to the veterinarian
6.4. Which kind of urination problems did your cat show?	6.4. Pain during the act of urination; bloody urine; increasing urination of little amounts; pressing during the act of urination; urination outside the litter box; lack of urination Yes; no; if no, please specify which clinical signs during which episode
Did your cat show each time the same urination problems?	
6.5. Which diagnosis did the veterinarian make?	6.5. Idiopathic inflammation of the bladder; uroliths; bacterial urinary tract infection; inflammatory plug in the urethra; severe crystalluria; bladder tumour; no specific diagnosis Yes; no; if no, please specify which other diagnoses
Was the diagnosis each time the same?	
6.6. Which treatment did your cat get?	6.6. Fluid therapy; pain reliever; drugs for relaxing the urethra; antibiotics; glycosaminoglycans; replacement of urinary catheter; amputation of the penis; other treatment; if other treatment, please specify which one Yes; no; if no, please specify which treatment during which episode
Was the treatment each time the same?	
7. Other clinical signs	
7.1. Have you noticed other health-related problems of your cat?	7.1. No other clinical signs; sickness; diarrhoea; increasing grooming; conspicuous behaviour; skin irritation; other clinical signs; if other clinical signs, please specify which ones
7.2. Did these problems recede without	7.2. Yes; no

Question	Response options
any treatment?	
8. Other diseases	
Has your cat been diagnosed with other diseases?	No other known diseases; thyroid hyperfunction; diabetes mellitus; kidney disease; other diseases; if other diseases, please specify which ones
9. Death	
9.1. Did your cat die or had to be euthanased?	9.1. No; death or euthanasia due to FLUTD; death or euthanasia due to another reason; if due to another reason, please specify which reason
9.2. When did your cat die?	9.2. Please specify month and year of death
10. Permission to contact the private veterinarian	
Do you agree with contacting your private veterinarian?	Yes; no; if yes, please specify contact information of the veterinarian

DSH = domestic shorthair