

"I have never had a complaint from a dog about a dirty bowl": Following Guidelines for Safe Handling and Preparation of Raw Meat-Based Diets for Pets

Veronika Bulochova^{1*} and Ellen W. Evans¹

¹ZERO2FIVE Food Industry Centre Food and Drink Research Unit, Cardiff Metropolitan University, Cardiff, United Kingdom.

*Corresponding author: vbulochova@cardiffmet.ac.uk

Introduction

Providing raw meat-based diets to companion pets is popular in the UK. The preparation of raw diets does not involve steps to kill pathogens that may be present in raw meat, and if handled improperly, raw meat-based diets for pets may pose a risk to human health. Indeed, in recent years the presence of pathogens in raw meat-based pet diets has been extensively investigated, highlighting the presence of bacteria hazardous to human health (1,3,4,7,8,11,12) and possible sporadic pathogen transmission (2,5).

Therefore, food safety and hygiene practices are vital when handling raw meat products, and failure to implement appropriate food safety practices during raw meat-based pet food preparation may increase the risk of foodborne illness to the pet owner. Safe raw pet food preparation and handling guidelines developed by the UK Government (10) and the Pet Food Manufacturer's Association (9), relate specifically to:

HAND HYGIENE:

- Wash hands with soap and hot water (immediately after handling the pet, pet's food or treats, or raw meat-based food packaging) (9,10).

STORAGE AND DEFROSTING:

- Store raw meat-based diets away from where human foods are stored or prepared (10).
- Defrost raw meat-based diets in a leak-proof air-tight container at the bottom of the fridge away from where human food is stored. Never refreeze (9,10).

CLEANING AND DISINFECTING:

- Wash/clean and disinfect all surfaces, dishes and utensils that have been in contact with raw meat-based pet food (9,10).
- Remove and dispose of any uneaten raw meat-based pet food, as soon as the pet has finished eating (9).
- Clean and disinfect pet's eating area, as soon as the pet has finished eating (9).

However, there is a particular lack of data regarding pet owner food safety practices when preparing raw meat-based diets for pets.

Purpose

The purpose of this study was to explore the raw meat-based pet food preparation practices of pet owners, to compare practices with raw pet feeding guidelines and identify potential malpractices.

Methods

- A netnographic analysis of posts from the "Pet Forums Community" regarding raw food diets for pets and food safety (n=308) was performed.
- An online questionnaire was completed by pet owners providing raw meat-based diets to pets (n=174).
- Qualitative and quantitative findings were compared to raw pet feeding guidelines by Pet Food Manufacturers' Association and by UK Government and are presented according to these three categories.

Ethical approval for the study was obtained from the Cardiff school of Sport and Health Science Ethics Committee (Project References: PGT-1889 and PGT-1008).

References

- Ahmed, F., M. G. Cappai, S. Morrone, L. Cavallo, F. Berlinguer, G. Dessi, C. Tamponi, A. Scala, and A. Varcasia. 2021. Raw meat based diet (RMBD) for household pets as potential door opener to parasitic load of domestic and urban environment. Revival of understated zoonotic hazards? A review. *One Heal*. Elsevier B.V. 13:100327.
- Cammack, N. R., R. M. Yamka, and V. J. Adams. 2021. Low Number of Owner-Reported Suspected Transmission of Foodborne Pathogens From Raw Meat-Based Diets Fed to Dogs and/or Cats. *Front. Vet. Sci.* 8:1-16.
- Chengappa, M.M., Staats, J., Oberst, R.D., Gabbert, N.H., McVey, S., 1993. Prevalence of *Salmonella* in Raw Meat used in Diets of Racing Greyhounds. *Journal of Veterinary Diagnostic Investigation*, 5, 372-377.
- Davies, R. H., J. R. Lawes, and A. D. Wales. 2019. Raw diets for dogs and cats: a review, with particular reference to microbiological hazards. *J. Small Anim. Pract.* 60:329-339.
- Hoelzer, K., A. L. M. Switt, and M. Wiedmann. 2011. Animal contact as a source of human non-typhoidal salmonellosis. *Vet. Res. BioMed Central Ltd* 42:34.
- Mylius, S. D., M. J. Nauta, and A. H. Havelaar. 2007. Cross-contamination during food preparation: A mechanistic model applied to chicken-borne *Campylobacter*. *Risk Anal.* 27:803-813.
- Nemser, S. M., T. Doran, M. Grabenstein, T. McConnell, T. McGrath, R. Pamboukian, A. C. Smith, M. Achen, G. Danzeisen, S. Kim, Y. Liu, S. Robeson, G. Rosario, K. McWilliams Wilson, and R. Reimschuessel. 2014. Investigation of *Listeria*, *Salmonella*, and *Toxigenic Escherichia coli* in various pet foods. *Foodborne Pathog. Dis.* 11:706-709.
- Nüesch-Inderbilen, M., A. Treier, K. Zurfuh, and R. Stephan. 2019. Raw meat-based diets for companion animals: A potential source of transmission of pathogenic and antimicrobial-resistant Enterobacteriaceae. *R. Soc. Open Sci.* 6.
- Pet Food Manufacturers Association (PFMA). 2019. Responsible Raw Feeding for Cats and Dogs.
- Public Health England (PHE); Animal and Plant Health Agency. 2018. Raw pet foods: handling and preventing infection.
- van Bree, F. P. J., G. C. A. M. Bokken, R. Mineur, F. Franssen, M. Opsteegh, J. W. B. van der Giessen, L. J. A. Lipman, and P. A. M. Overgaauw. 2018. Zoonotic bacteria and parasites found in raw meat-based diets for cats and dogs. *Vet. Rec.* 182:50.
- Weese, J. S., J. Rousseau, and L. Arroyo. 2005. Bacteriological evaluation of commercial canine and feline raw diets. *Can. Vet. J.* 46:513-516.

Results

The results of this study have determined that although the guidelines on appropriate food safety practices for pet owners preparing raw meat-based diets for their pets is provided by the UK Government and Pet Food Manufacturers' Association, it is unknown whether pet owners are aware of, can access and use this information. In this study pet owners reported awareness of appropriate hygiene and food safety, however confusion regarding appropriate food safety practices to minimise the risks of foodborne illness was also reported. Moreover, potential malpractices, that may increase food safety risks, were also described by the participants of the online forum.

Survey of pet owner self-reported food safety practices (n=174)

HAND HYGIENE:

- Majority of respondents reported 'always' washing their hands before (60%) and after (94%) preparing raw meat (Figure 1).
- This indicates that a small number of pet owners do not wash their hands after handling meat-based pet diets.
- It has to be considered that pet owner responses may be subject to social-desirability bias, and the proportion of pet owners not performing appropriate handwashing may be higher.

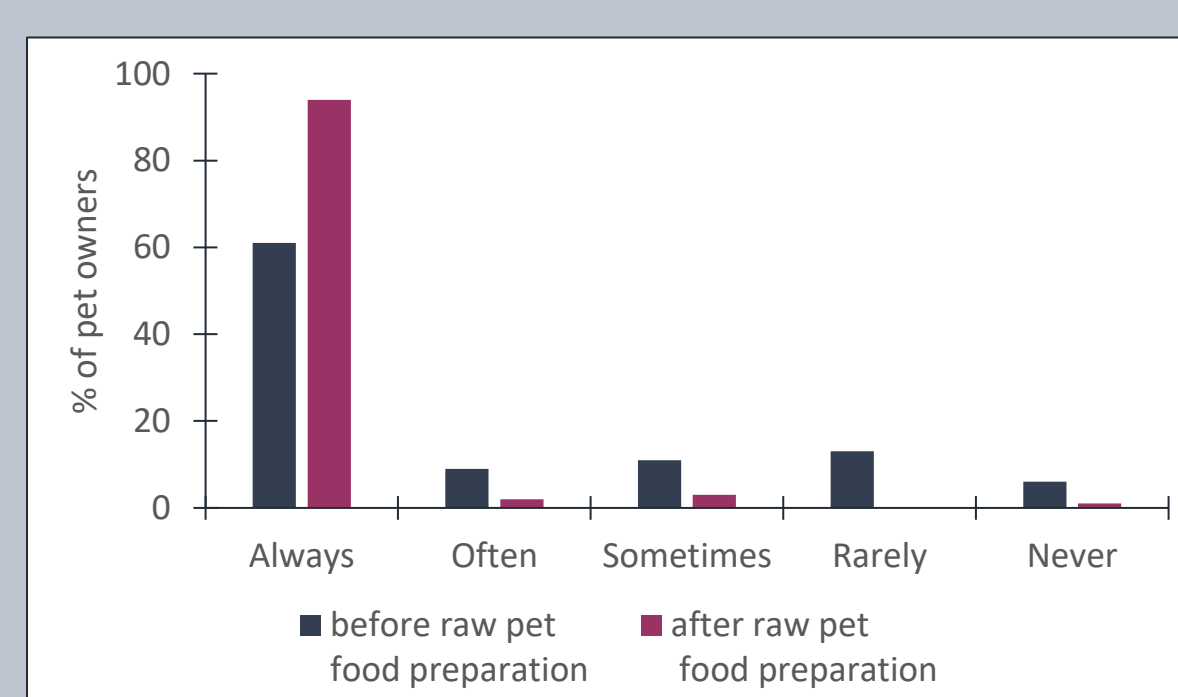


Figure 1. Self-reported frequency of implementing handwashing practices among pet owners before and after providing raw meat-based diets to pets (n=174).

DEFROSTING:

- 43% of participants reported 'always' defrosting the meat or meat-diet intended for their pet in the fridge (Figure 2).
- This indicates that a little more than a half (57%) were not thawing raw meat products correctly, or not implementing the correct practice consistently.

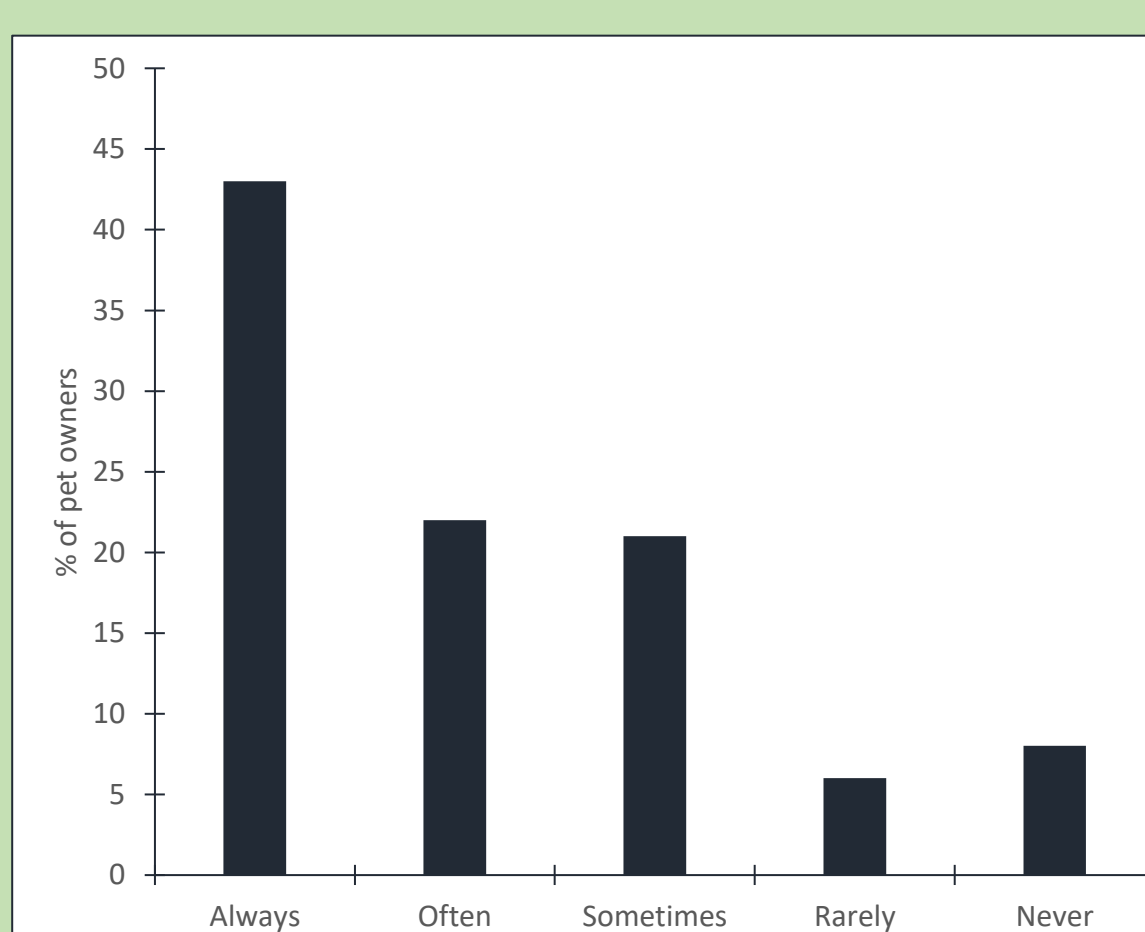


Figure 2. Self-reported frequency of thawing meat and meat-based pet diets in the fridge among pet owners providing raw meat-based diets to pets (n=174).

CLEANING AND DISINFECTING:

- Only 59% of pet owners reported washing their pet's bowl after every feeding (Figure 3).
- Pet owners may lack awareness about the possible proliferation of the pathogenic organisms potentially present in raw meat, when the bowls and feeding areas are left uncleaned.

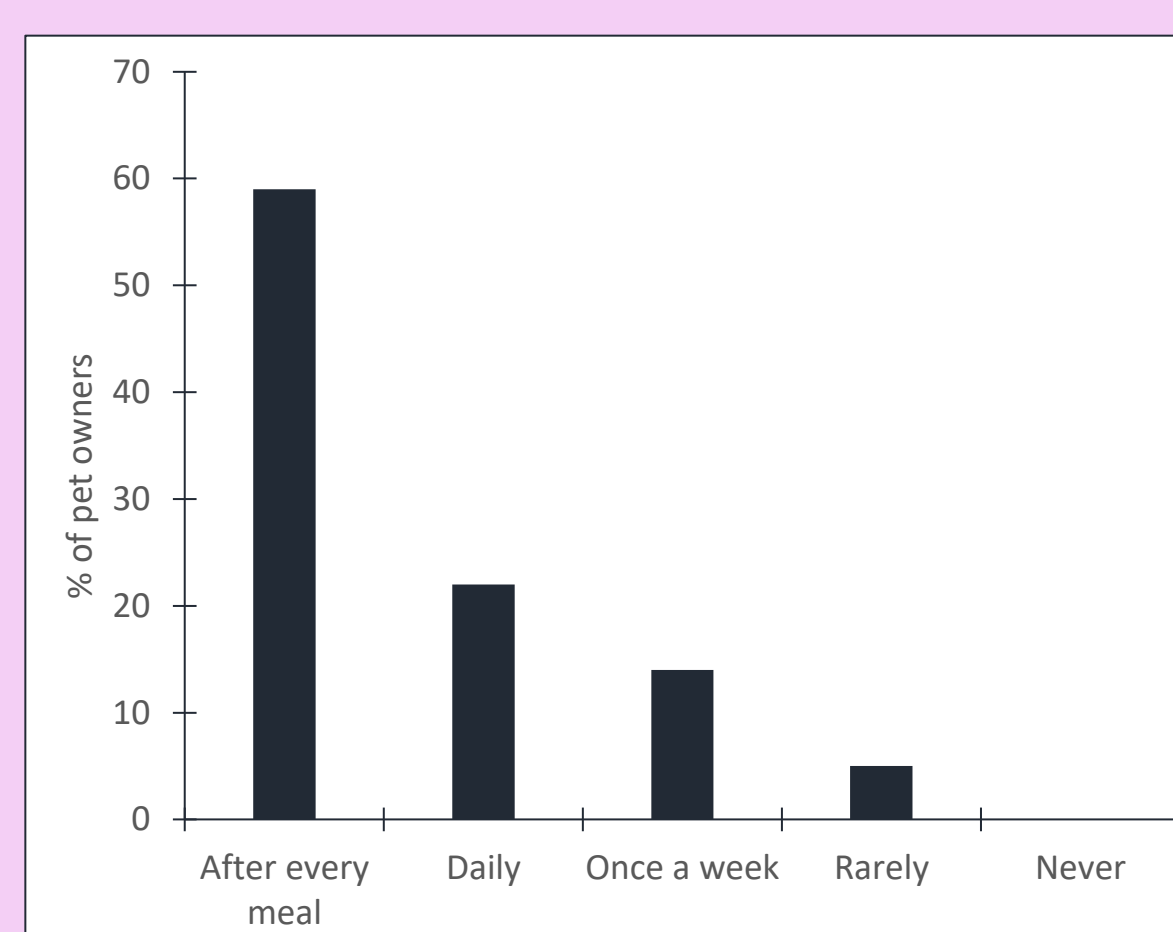


Figure 3. Self-reported frequency of washing pet's bowls after feeding among pet owners providing raw meat-based diets to pets (n=174).

Netnography study of pet owner online comments (n=308) indicating potential malpractices

HAND HYGIENE:

- Some pet owners reported perceiving consistent hand hygiene as practice that may negatively impact their health (Comment 22).
- Moreover, a belief that not washing your hands may help build resistance to pathogens was also expressed, indicating potential optimistic bias (Comment 108).

"What I will say is that basic hygiene is essential but I don't go overboard with it as I feel that's as bad in the long run." (Comment 22)

"I do think you can be too clean. Exposure to germs builds up resistance to them." (Comment 108)

DEFROSTING:

- Online comments demonstrate pet owners' lack of awareness regarding refreezing of previously frozen products (Comment 11). It is suggested that because the meat is not intended for human consumption, pet owners are less likely to follow appropriate thawing method.

"Freeze the meat the same day you buy it, and partially defrost it in the fridge when you come to batch it up into portions. Get it back in the freezer before it has fully defrosted." (Comment 11)

CLEANING AND DISINFECTING:

- Some comments reflect a negative attitude towards washing pet's bowls after feeding (Comment 79). This may be associated with the belief that pets will not get ill if their bowl is not washed. However, this indicates lack of awareness regarding cross-contamination (6).
- Pet owners indicated a lack of dedicated raw feeding zone in their home, instead relying on other arrangements, such as covering the floor (Comment 113). Insufficient understanding of the food safety practices helping prevent cross-contamination is evident.

"If it's sticky, stinky, or visibly gross it gets washed. Never had a complaint from a dog about a dirty bowl!" (Comment 79)

"I've got a few old quilt covers that I put down over the rugs/floors while they eat raw stuff, they can then go in the washing machine as and when necessary." (Comment 113)

Additional survey and netnography study findings indicating potential food safety malpractices.

RINSING RAW MEAT:

Although current guidelines (9, 10) do not refer to rinsing raw meat before preparation, the findings of this study suggest that there is a need for guidelines to discourage the practice among pet owners as the practice can cause cross-contamination of the kitchen:

- 27% of questionnaire respondents reported rinsing raw meat and meat-products when preparing food for their pet (Figure 4).
- This was reiterated in the netnography study, where pet owners advised others to rinse raw meat for their pet (Comment 27).

"You can rinse off the meat before giving it to your dog." (Comment 27)

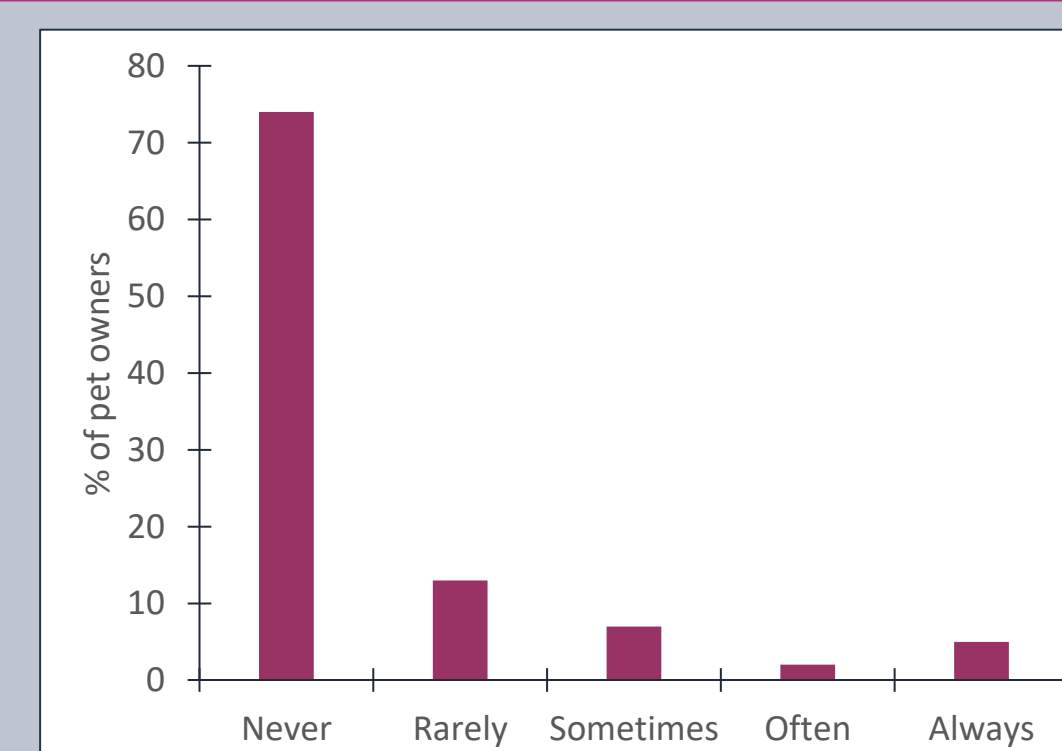


Figure 4. Self-reported frequency of rinsing raw meat among pet owners providing raw meat-based diets to pets (n=174).

Significance of study

Findings indicate that pet owners may not be aware of or may not follow practices specified in the food safety guidelines. Malpractices, which may increase the risk of foodborne illness were reported among pet owners, such as: rinsing meat, incorrect thawing and not washing pet's bowl after each raw feeding. To improve pet owner food safety practices, further actions are suggested:

- Awareness of guidelines, informing pet owners of appropriate handling and preparation of raw meat-based pet diets needs to be raised to help pet owners reduce potential risks of foodborne illness in their household.
- Social media resources and product labels should be utilised for dissemination of pet owner food safety information.
- Future observational studies are necessary to determine the actual practices that pet owners implement when providing raw meat-based diets to pets. Such data could help understand pet owner food safety behaviour and help develop more effective targeted educational approaches.