

LETTER TO EDITOR

Coronavirus disease 2019, hand hygiene, and pets

Ana Izabel Passarella Teixeira^{1,2,*}, Aluisio Pereira da Silva Filho¹, Louise Bach Kmetiuk³, Otávio Valério de Carvalho^{3,4}, Luiz Eduardo Ristow⁴, Daniel Friguglietti Brandespim⁵, Christina Pettan-Brewer⁶, Hélio Autran de Moraes⁷, Andrea Pires dos Santos⁸, Rafael Garabet Agopian⁹, Juliana Arena Galhardo¹⁰, Alexander Welker Biondo^{3,11}, David Soeiro Barbosa¹

¹Graduate Program in Parasitology, Institute of Biological Sciences, Federal University of Minas Gerais, Belo Horizonte 30000-000, Minas Gerais, Brazil

²College of Veterinary Medicine, Campus Paranaíba, Federal University of Mato Grosso do Sul, Paranaíba 79500-000, Mato Grosso do Sul, Brazil

³Graduate College of Cellular and Molecular Biology, Federal University of Paraná, Curitiba 80000-000, Paraná, Brazil

⁴Tecsa Laboratories, Belo Horizonte 30000-000, Minas Gerais, Brazil

⁵Department of Veterinary Medicine, College of Veterinary Medicine, Federal Rural University of Pernambuco (UFRPE), Recife 50000-000, Pernambuco, Brazil

⁶Department of Comparative Medicine, School of Medicine, University of Washington, Seattle 98195, Washington, USA

⁷Department of Clinical Sciences, Oregon State University, Corvallis 97331, Oregon, USA

⁸Department of Comparative Pathobiology, College of Veterinary Medicine, Purdue University, West Lafayette 47907, Indiana, USA

⁹Department of Veterinary Medicine, University of Santo Amaro, São Paulo 01231-010, Brazil

¹⁰College of Veterinary Medicine and Animal Science, Federal University of Mato Grosso do Sul (UFMS), Campo Grande 79070-900, Mato Grosso do Sul, Brazil

¹¹Department of Veterinary Medicine, Federal University of Paraná, Curitiba 80060-000, Paraná, Brazil

Dear Editor,

Handwashing is an important protective measure against various communicable diseases. It is one of the main practices to prevent the transmission of zoonotic diseases that happens through physical contact between humans and their pets. Handwashing was also one of the preventive public-health measures suggested to reduce the spread of coronavirus disease 2019 (COVID-19).^[1,2] For this reason, we were surprised to find that in a multicentric study involving severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spillover from owners to their pets, 45.9% (68/148) of owners did not wash their hands after interacting with their pets.

Between October 2020 and June 2021, we conducted a multicentric study (CNPq Conselho Nacional de Desenvolvimento Tecnológico e Científico no. 402341/


2020–1) in Brazil to evaluate whether COVID-19-infected owners were able to transmit SARS-CoV-2 to their pets. The study was approved by the Ethics Committee on Animal Use of UFRPE (CEUA-UFRPE no. 4879280420, ID 000256) and the Committee on Research Ethics of UFMS (CEP-UFMS no. 4.470.448). The study was conducted in five Brazilian capital cities: São Paulo, Campo Grande, Belo Horizonte, Recife, and Curitiba. Mass media were used to recruit participants. Prospective participants were instructed to get in touch with the researchers to arrange a home visit for an animal evaluation only if they had received a COVID-19 diagnosis supported by a laboratory exam within the previous seven days. As part of our research, we described the first case of SARS-CoV-2 in a pet in Belo Horizonte^[3] and we found a different mutation in a sample of SARS-CoV-2 from the pet of a person who had COVID-19.^[4]

***Corresponding Author:**

Ana Izabel Passarella Teixeira, College of Veterinary Medicine, Campus Paranaíba, Federal University of Mato Grosso do Sul, Paranaíba 79500-000, Mato Grosso do Sul, Brazil. E-mail: anaipassarella@gmail.com; <https://orcid.org/0000-0001-9208-4288>

Received: 7 June 2023; Revised: 1 August 2023; Accepted: 28 October 2024

<https://doi.org/10.54844/cai.2023.0413>

 This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License, which allows others to copy and redistribute the material in any medium or format non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Here, we want to highlight some of our findings. All the owners were COVID-19 positive by the time of the research, and 14.8% (22/148) of their pets were SARS-CoV-2 positive; this was detected by RT-qPCR. Although the event of not washing one's hands was not associated with the outcome of one's pet being positive for SARS-CoV-2 (odds ratio: 1.02; 95% confidence interval: 0.41–2.54; *P*-value: 0.960), it is still impressive that of the 148 participants with COVID-19 (confirmed by laboratory tests) who took part in the study, 68 (45.9%) of them neglected to wash their hands after touching their pets. This finding motivated us to write this letter.

Our initial objective was to evaluate the pets of people with COVID-19. Given the evidence about the lack of hand hygiene among pet owners and the literature on the epidemiological role that pets can play in the transmission of SARS-CoV-2, a worrying scenario emerges. The zoonothonic transmission of SARS-CoV-2 is a common occurrence, with reports of pets getting infected.^[3,4] However, animal-to-human SARS-CoV-2 transmission has seldom been described in the literature.^[5-7] In the studies that have analyzed the role of animals in the transmission of SARS-CoV-2, a dog was described as acting as a passive mechanical carrier.^[8]

As mentioned above, in our study, 68 people with COVID-19 had poor hand hygiene. If these pet owners did not wash their hands after petting their animals, did they do it at all? They may be shedding the virus in their home environments. Hence, the lack of a habit of washing one's hands can endanger the health of family members and animals. Also, it is interesting to note that most participants had college degrees (64.4%; 96/148) and were under quarantine after being diagnosed with COVID-19. These pet owners cared about their animals, and they contacted the research team to test their pets. Hence, it is reasonable to assume that these participants had the means to know the importance of handwashing.

Although it was not the focus of our study, we were surprised by the lack of the habit of washing one's hands after petting animals. This problem is well explored in the literature on health-care workers and nosocomial infections.^[9,10] Therefore, it is correct to say that handwashing is suggested as a measure to avoid important etiological agents that can be acquired through contact with pets.^[11] Experts say that handwashing procedures are crucial after petting animals; their absence can increase risks to human health and disease transmission. However, it is still unknown why handwashing is not a common practice in human society, unless when it is associated with health professionals and/or working in hospitals and health-care clinics. During the pandemic, washing hands became an important practice only after public communications

(*e.g.*, songs and institutional messages) and educational initiatives as part of the measures to control and prevent the spread of COVID-19. As we have noticed, a higher level of education (college) did not increase this habit.

Pet owners should be reminded of the need for handwashing and encouraged to adopt this hygienic practice in their everyday lives. Its absence poses risks to both humans and animals. Handwashing is a simple habit that can stop the spread of infectious diseases, making it one of the most widely advocated COVID-19 control and prevention measures.^[12] The participation of governments and public health authorities at local, national, and global levels is essential for controlling and preventing the spread of zoonotic diseases.

DECLARATIONS

Author contributions

Teixeira AIP, Silva Filho AP, Galhardo JA and Barbosa DS: Conceptualization, Writing—Original draft preparation. Kmetiuk LB, Carvalho OV, Ristow LE, Agopian GR, Brandespim DF, Brewer CP, Morais HA, Santos AP, Galhardo JA and Biondo AW: Writing—Reviewing and Editing. Galhardo JA, Barbosa DS, Kmetiuk LB and Biondo AW: Conceptualization, Supervision, Project administration. All authors have read and approved the final version of the manuscript.

Funding

This study received funding from CNPq Conselho Nacional de Desenvolvimento Tecnológico e Científico no. 402341/2020–1).

Ethics approval

The study was approved by the Ethics Committee on Animal Use of UFRPE (CEUA-UFRPE no. 4879280420, ID 000256) and the Committee on Research Ethics of UFMS (CEP-UFMS no. 4.470.448).

Conflict of interest

The authors declare no competing interest.

Data availability statement

No additional data.

REFERENCES

1. Ma J, Almanza BA, Ge LI, *et al.* Pet Ownership and Pet Type Influence Food Safety in the Home: Evidence from a National Survey. *J Food Prot.* 2020;83(9):1553–1560.
2. Khatib MN, Sinha A, Mishra G, *et al.* WASH to control COVID-19: A rapid review. *Front Public Health.* 2022;10:976423.
3. Silva Filho AP, Kmetiuk LB, Bicalho GC, *et al.* First reported cases of SARS-CoV-2 infection in owned dogs in Belo Horizonte, Brazil. *Arq Bras Med Vet Zootec.* 2023;75(3):531–534.
4. Galhardo JA, Barbosa DS, Kmetiuk LB, *et al.* Molecular detection and

- characterization of SARS-CoV-2 in cats and dogs of positive owners during the first COVID-19 wave in Brazil. *Sci Rep.* 2023;13(1):14418.
5. Oude Munnink BB, Sikkema RS, Nieuwenhuijse DF, *et al.* Transmission of SARS-CoV-2 on mink farms between humans and mink and back to humans. *Science.* 2021;371(6525):172–177.
 6. Sila T, Sunghan J, Laochareonsuk W, *et al.* Suspected Cat-to-Human Transmission of SARS-CoV-2, Thailand, July-September 2021. *Emerg Infect Dis.* 2022;28(7):1485–1488.
 7. Yen HL, Sit THC, Brackman CJ, *et al.* Transmission of SARS-CoV-2 delta variant (AY.127) from pet hamsters to humans, leading to onward human-to-human transmission: a case study. *Lancet.* 2022;399(10329):1070–1078.
 8. Zhou C, Wu A, Ye S, *et al.* Possible transmission of COVID-19 epidemic by a dog as a passive mechanical carrier of SARS-CoV-2, Chongqing, China, 2022. *J Med Virol.* 2023;95(1):e28408.
 9. Katz JD. Hand washing and hand disinfection: more than your mother taught you. *Anesthesiol Clin North Am.* 2004;22(3):457–471.
 10. Boyce JM. Hand Hygiene, an Update. *Infect Dis Clin North Am.* 2021;35(3):553–573.
 11. Krueger WS, Hilborn ED, Dufour AP, Sams EA, Wade TJ. Self-Reported Acute Health Effects and Exposure to Companion Animals. *Zoonoses Public Health.* 2016;63(4):311–319.
 12. Water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19. WHO. Accessed August 5, 2023. <https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-WASH-2020.4>