



RAPID COMMUNICATION

Use of fingerprint biometric in the workplace during COVID times: a critical viewpoint

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Recognition of a person based on his or her physiological characteristics is known as Biometrics. Biometric systems have been widely used before the inception of computers in human activities. These systems make use of the physical or biological traits of human beings for recognition and authentication purposes. The most commonly used natural features or characteristics are fingerprints, iris, and face. Before the COVID-19 pandemic, most educational institutions, IT companies, Government and private offices used biometric fingerprint systems to mark attendance or access into restricted areas. Fingerprint recognition is a secure and convenient technology that has become common and widespread, not only in the workplace, smartphones, but also in our daily activities. However, the recent global outbreak of COVID-19 concerns the safety of fingerprint authentication, as touching the sensors can potentially spread viruses. In addition, surfaces in general public places such as supporting handles in buses and trains, elevators buttons, ATMs, door handles, etc., can act as fomites for spreading the virus. In the wake of the COVID-19 outbreak, numerous news articles have claimed the risk of spreading the infection via these commonly touched surfaces. In this paper, we discuss the actual risk of transmission of COVID-19 through fingerprint biometrics and explore alternative biometric methods which can be used during the COVID-19 pandemic.

Keywords: Biometric; fingerprint; COVID-19.

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INTRODUCTION

Fingerprint recognition is a secure and convenient technology that has become common and widespread, not only in smartphones but in our everyday lives as well.¹ Biometric time clocks have become increasingly popular among many organisations as they heighten security and add convenience.² Coronavirus disease 2019 (COVID-19) is a potentially severe acute respiratory infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).³ On March 11, 2020, WHO (World Health Organization) declared the COVID-19 outbreak as a Pandemic.⁴ The clinical presentation is that of a respiratory infection ranging from a mild common cold-like illness to severe viral pneumonia leading to acute respiratory

distress syndrome that is potentially fatal.

The three possible modes of transmission, (as shown in **Figure 1**) of the virus recognised are suspended particles (bioaerosols), droplets, and surface contact.⁵

It can get transmitted through direct or indirect contact of a healthy individual with a COVID-19 infected individual through his secretions like saliva or respiratory droplets released during coughing, sneezing, or talking. The size of respiratory droplets is usually larger than 5 µm, and thus, they tend to settle down after travelling a short distance of 1-2 meters in a short time.⁶

Even during this pandemic situation, many institutions are

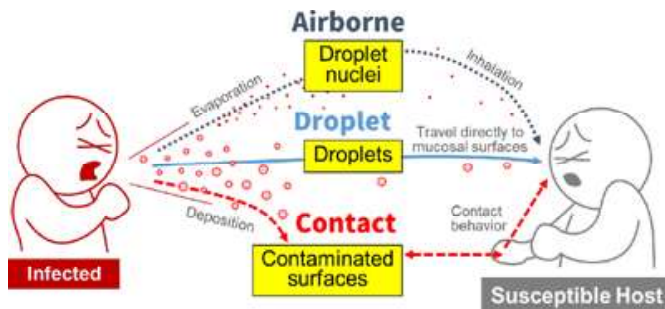


Figure 1 Modes of Transmission from Exhaled Pathogens [Adapted from a leaflet of the Office of the Prime Minister and the Ministry of Health, Labour and Welfare of Japan (2020)]⁵

compelling their employees to use fingerprint biometric for attendance. This process has created panic among the employees as there are reports which say that the virus can be transmitted through this process. The Administration/HR (Human Resource) department is concerned about using the fingerprint biometric system or shifting to any other alternative methods.

This paper discusses the actual risk of transmission of COVID-19 through fingerprint biometrics and explore alternative biometric methods which can be used during the COVID-19 pandemic.

MATERIAL AND METHODS

The present work is done in the Department of Forensic Medicine and Toxicology, AIIMS (All India Institute of Medical Sciences), Bibinagar, Hyderabad. We reviewed the scientific papers published about the transmission of SARS-CoV and SARS-CoV-2 in standard search engines and gathered information regarding the survival period of the virus & other relevant things needed for this paper.

VIABILITY OF THE VIRUS

Van DN et al.,⁷ reports the survival of both SARS-CoV and SARS-CoV-2 of up to 2 days (on surfaces) and three days (in aerosols generated in the laboratory). Many other studies were done in the lab, including Rabenau HF et al.,⁸ (6 days), Duan SM et al.,⁹ (4 days), Warnes SL et al.,¹⁰ (5 days), have similar findings. Dowell SF et al.,¹¹ tried to mimic actual conditions in which a patient might contaminate a surface; no viable SARS-CoV was detected on surfaces.⁷⁻¹¹

The viable virus can be found on contaminated surfaces for periods ranging from hours to days, depending on the environment (including temperature and humidity) and surface type. In experimental studies, at 40% relative humidity and 21-23°C, SARS-CoV-2 was detectable for:

- Up to four hours on copper;
- Up to 24 hours on cardboard;
- Up to two to three days on plastic and stainless steel.

Other experiments suggest that increasing temperature and relative humidity accelerates virus inactivation on surfaces. For example, the rising temperature to 35°C reduces the virus's half-life on non-porous surfaces to 1.0 to 8.9 hours from 6.3 to 18.6 hours at 24°C.¹² Thus, while SARS-CoV-2 can be very stable in favourable environments of lower temperatures (4°C) and humidity, it is highly susceptible to standard disinfection methods.¹³

HOW SAFE THE FINGERPRINT AMID COVID PANDEMIC

The Global outbreak of COVID-19 has raised questions about the safety of using fingerprint authentication, as touching the sensors can potentially spread viruses. Various studies have shown very little chance of SARS-CoV-2 getting transmitted through contact, as many factors are involved. Though studies conducted in laboratories claim that the virus can remain viable over the surfaces for 2 days to 6 days,⁷⁻¹⁰ the study done in real-life scenarios did not support this.¹¹

Respiratory secretions or droplets expelled by infected individuals can contaminate surfaces like the fingerprint scanner, ATM sensors, door handles in buses, parks, etc. Thus, there is a possibility that a person can get COVID infection by touching a surface or an object that has the infectious virus on it and then touching their mouth, nose, or possibly their eyes. Transmission risk then depends on several factors, including the concentration of viable virus deposited and its viability on a specific surface for a given period. It should be noted that people who come into contact with potentially infectious surfaces often also have close contact with the contagious person, making the distinction between the respiratory droplet and fomite transmission challenging to discern.

On March 5, 2020, Delhi Government announced the suspension of biometric attendance in its offices. The Government of India, too, announced a similar measure where Biometric attendance was suspended in all its offices. Soon SAI (Sports Authority of India), NGT (National Green Tribunal), Goa, Maharashtra, Punjab, and many other state governments switched off biometric attendance systems.¹⁴ Even though most Government-run Institutions have suspended the use of fingerprint biometric in their offices, many private Institutions still insist their employees give their attendance through fingerprint biometric.

CONCLUSION

After going through all the information and scientific data, we conclude that it is better to avoid using Fingerprint biometric system in the workplace during the COVID pandemic. Amongst the other alternative options available, the best option is Iris Scan. However, in places where fingerprint biometrics cannot be avoided, the sanitisation of hands before and after use can be advocated.

Author contribution: We declare that this work was done

by the authors named in this article. The authors will bear all liabilities about claims relating to the content of this article.

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REFERENCES

- Diksha D. Covid-19 to give rise to non-contact biometric attendance [Online]. 2020 April 27 [Cited 2021 April 10]; Available from: URL:<https://www.biometricupdate.com/202004/using-fingerprint-recognition-under-covid-19>
- Yasmeen Q. Fingerprint scanners are risky amid coronavirus pandemic [Online]. 2020 March 20 [Cited 2021 April 11]; Available from: URL:<https://www.workforce.com/news/fingerprint-biometrics-poses-risk-to-employees-amid-coronavirus-pandemic-its-a-touchy-subject>
- Ren LL, Wang YM, Wu ZQ, et al. Identification of a novel coronavirus causing severe pneumonia in human: a descriptive study. *Chin Med J (Engl)* 2020 May 1;133(9):1015-24.
- WHO Director-General's opening remarks at the media briefing on COVID19 -March 2020.
- Prime Minister's Office," Let's Avoid These Three Conditions When We G Out!" Flyer (in Japanese), <https://www.kantei.go.jp/jp/content/000061234.pdf> (retrieved March 21, 2020).
- Virus in the air: preventive measures [Online]. 2020 [Cited 2021 April 10]; Available from: URL:<https://www.ccmb.res.in/docs/Advisory-air-sample-study.pdf>
- Van DN, Bushmaker T, Morris DH, et al. Aerosol and surface stability of SARS-CoV-2 compared with SARS-CoV-1. *N Engl J Med* 2020;382:1564–67.
- Rabenau HF, Cinatl J, Morgenstern B, Bauer G, Preiser W, Doerr HW. Stability and inactivation of SARS coronavirus. *Med Microbiol Immunol* 2005;194:1–6.
- Duan SM, Zhao XS, Wen RF, Huang JJ, Pi GH, Zhang SX. Stability of SARS coronavirus in human specimens and environment and its sensitivity to heating and UV irradiation. *Biomed Environ Sci* 2003;16:246–55.
- Warnes SL, Little ZR, Keevil CW. Human coronavirus 229E remains infectious on common touch surface materials. *mBio* 2015;6:e01697–15.
- Dowell SF, Simmerman JM, Erdman DD, et al. Severe acute respiratory syndrome coronavirus on hospital surfaces. *Clin Infect Dis* 2004;39:652–57.
- Biryukov J, Boydston JA, Dunning RA, Yeager JJ, Wood S, Reese AL, et al. 2020. Increasing temperature and relative humidity accelerate the inactivation of SARS-CoV-2 on surfaces [serial online]. 2020 [cited 2021 April 11] *mSphere* 5:e00441-20. Available from URL:<https://doi.org/10.1128/mSphere.00441-20>
- Alex W H Chin, Julie T S Chu, Mahen R A Perera, Kenrie P Y Hui, Hui-Ling Yen, Michael C W Chan, Malik Peiris, Leo L M Poon. Stability of SARS-CoV-2 in different environmental conditions. *The Lancet Microbe* 2020 May;1(1):e10.
- Diksha D. Say No to the biometric attendance system to prevent Coronavirus [Online]. 2020 [Cited 2021 April 10]; Available from: URL:<https://cio.economicstimes.indiatimes.com/news/corporate-news/say-no-to-the-biometric-attendance-system-to-prevent-coronavirus/74767213>