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

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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.³

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.⁵

Even during this pandemic situation, many institutions are
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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