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The face mask-touching behavior during the COVID-19 pandemic: Observational study of public transportation users in the greater Paris region: The French-mask-touch study

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ABSTRACT

Background: To limit the spread of the new coronavirus disease 2019 (COVID-19), the World Health Organization recommends the use of face mask as a part of the pandemic control strategy. It has published also "best practices" in which it advises to avoid touching the mask while wearing it. This might be challenging. The purpose of this study was to investigate the frequency of mask-touching behavior in public transportation.

Methods: Observational study using data collected in real life. This survey was conducted in subways and local trains of the greater Paris region, France, between May 4th and 25th, 2020. Public Transportation users were covertly observed. Demographic characteristics, type of mask and the main activity were collected by the investigator. The duration of observation, the frequency of touching face mask, hair and the uncovered area of the face were also recorded. Frequency of mask-touching per hour was determined.

Results: One hundred eighty two persons were observed. The median of estimated age [1st and 3rd interquartile] was 35 [30;45] years and 87 (48%) were women. One hundred forty three (79%) were wearing surgical mask. The median time of observation was 8 [4;12] minutes. During this period, 87 (48%) persons touched their mask 15 [7.5;30] times per hour of whom only two (8%) have used hydroalcoholic solution to disinfect their hands.

Conclusions: Mask touching is frequent and is rarely followed by hand disinfection. Actions regarding mask use should be taken to improve compliance.

1. Introduction

The World Health Organization (WHO) declared the coronavirus outbreak a pandemic on March 11, 2020 (WHO, 2020). Infection by the SARS-CoV-2 virus, the virus that caused coronavirus disease 2019 (COVID-19), can occur through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions or their respiratory droplets (WHO, 2020). This can cause severe illness and may be fatal, especially in vulnerable populations including the elderly or those with medical

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co-morbidities (Zhu et al., 2020).

So far, there are many aspects of the epidemic that are still mysterious, and there are no available effective vaccine or cures to slow SARS-CoV-2 transmission. The standards and transmission-based precautions such as stay-at-home measures, keeping social distance and washing/disinfecting hands using alcohol-based solutions remain crucial to disease mitigation (Jefferson et al., 2011).

Even though, health care policy makers' recommendations about generalizing mask usage have varied during the outbreak for several reasons (Feng et al., 2020). New available evidence suggests that the use of facial mask by the general population prevents the overall transmission of SARS-CoV-2 (Leung et al., 2020), (Cheng et al., 2020). After a shortage that lasted for weeks, face masks became progressively available in France for public at beginning of May 2020. Like most developed countries, French authorities have encouraged the use of facial mask in closed environments such as stores and supermarkets. It became mandatory in public transportation starting of May 11th, 2020 (Légifrance, 2020). Recently, wearing face masks has been made mandatory in all enclosed publics spaces and shops, and more recently in some outdoor public spaces in some towns and cities.

Facial masks are considered to be efficient in preventing SARS-CoV-2 spread and to avoid further outbreak. It stops virus transmission through respiratory droplets when an infected wearer coughs or sneezes, and by providing physical barrier between the mouth and nose of the wearer and potential contaminants in the surrounding environment (Liang et al., 2020), (Greenhalgh et al., 2020). Thus, their correct use is of particular importance and incorrectly worn masks may not confer effective protection. There are many types of masks, with differences in the effectiveness in terms of particles filtration. However, this effectiveness might be compromised by the discomfort and the itch related to the use of each type in real life. The WHO states that appropriate use and disposal are essential to ensure that they are effective and to avoid any increase in transmission. It recommends also to clean hands using an alcohol-based hand rub or soap and water after removal or whenever a used mask is inadvertently touched (WHO, 2020). However, as for face-touching, mask-touching may be a spontaneous human behavior making the application of these recommendations challenging. In addition, potential discomfort during usage may also affect compliance.

There is no data in the literature on the frequency of mask-touching behavior among users of public transportation. Accordingly, we aimed to describe this behavior in users of public transportation in the greater Paris region.

2. Methods

Our observational cross-sectional study was conducted in the greater Paris region, France. Data were collected over a period of 3 weeks; between May 4th and 25th, 2020.

Public transportation users (subway and local trains) were covertly observed. Five evaluators have been trained and have contributed to collect the data during a total of 30 sessions. A standardized observation sheet was used to collect descriptive characteristics including the following: estimated age, gender, type of mask and if correctly worn, the length of hair, earphones, glasses,

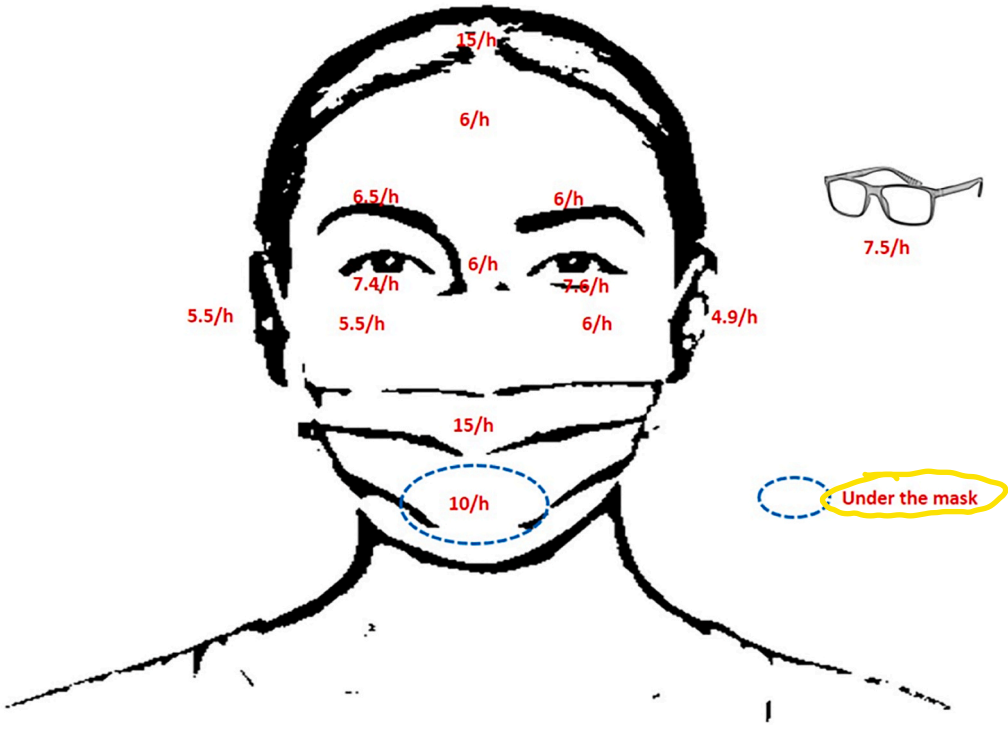

Fig. 1. Frequency per hour of touching mask, covered an uncovered area of the face, hair (head), and glasses.