Journal of Transport & Health 21 (2021) 101078

Contents lists available at ScienceDirect

Journal of Transport & Health

journal homepage: www.elsevier.com/locate/jth

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

Aziz Guellich [a,b,*], Emilie Tella [a], Molka Ariane [a], Camille Grodner [a], Hoai-Nam Nguyen-Chi [a], Emmanuel Mahé [a]

[a] Dermatology Department, Hôpital Victor Dupouy Argenteuil, Argenteuil, France
[b] Primary Care Department, Université Paris-Est Créteil (UPEC), School of Medicine, Créteil, France

ARTICLE INFO

Keywords:
Face mask
COVID-19
Face touch
Hand hygiene
Public transportation

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

* Corresponding author. Université Paris-Est Créteil (UPEC), School of Medicine, Primary Care Department, 8 Rue du Gal Sarrail 94000 Créteil, France.
E-mail address: aziz.guellich@etu.u-pec.fr (A. Guellich).

https://doi.org/10.1016/j.jth.2021.101078
Received 24 June 2020; Received in revised form 26 April 2021; Accepted 26 April 2021
Available online 3 May 2021
2214-1405/

results between these studies may be explained by the fact that wearing mask in daily life is a common phenomenon in Asian countries. In addition to that, the main activities and settings were different. We have also included touching of the ears. To note, we have observed all touching behaviors including those with no itching (adjustment of the mask, touching or removing to talk on the phone … etc). In our study, persons who were on the phone were those who touched their mask the most. Difficulty in communication and speech intelligibility may explain this result as previously suggested (Suen et al., 2020). In contrast to an old observation (Dimond and Harries, 1984), we did not see any lateralization preference of face touching.

Increased tendency to touch the face while wearing a face mask might increase the risk of transmission and self-contamination. Also, use of face masks, avoiding touching the face, nose, eyes and mouth, and hand hygiene should be considered as complementary to other preventive measures that are recommended to reduce transmission of COVID-19, including physical distancing, staying home when ill, and cleaning and disinfecting frequently touched surfaces. Meanwhile, the potential SARS-CoV-2 infection because of direct contact with a potentially contaminated mask can be mitigated by hand disinfection performed immediately after each touching. Our study, however, revealed low hand hygiene compliance. This might be improved by increasing visibility and accessibility of dispensers and sanitizer location (Cure and Van Enk, 2015).

4.1. Limitations of the study

This study has several limitations as we could not have a comparator group with no mask wearers. Persons with dry skin or some facial dermatoses are vulnerable to develop skin reactions to masks resulting in more itching. We could not investigate this point as we didn't had access to medical history of the transport users. A case of allergic contact dermatitis caused by elastic bands from FFP2 masks have been also reported (Navarro-Trivino et al., 2020). Face mask frequently causes discomfort on ear lobe. This may increase touching of this area. We could not confirm this hypothesis as we did not have a comparator group with no mask wearers. The limited number of the non-surgical masks users did not allow us to determine if there is an effect of the type of mask on the frequency of touching. The frequency of itch might vary with the duration of face mask wearing. We could not determine for how long the observed person was wearing his mask. The observations sessions were performed during peak-hours which are known to be concomitant with elevated concentrations of air pollution. We can hypothesize that this might cause more itching and thus higher frequency of mask touching compared to off-peak hours. Other limitations of this study are the small number of individuals observed, the limited observation time, and the human observational error that may bias the results.. The study was performed in subways and trains in Paris area. Thus, the results cannot be generalized without cautions to other populations and other different settings.

5. Conclusions

The findings of this study demonstrate that the use of face mask is not optimal in the general population. Many individuals touched their mask with a frequency as high as 15 times per hour. Hand hygiene with an alcohol-based hand rub is rarely performed after mask touching. Consequently, further effort should be exerted to improve general public awareness regarding the proper use of face mask. Messages and recommendations regarding face masks use, with avoiding touching them when possible, and hand disinfection, along with barrier measures, should be widely diffused. This could be reached through instruction sheets in public transportation and public areas, broadcast audio messages diffused in the subway and train stations … etc. Other available resources such as media platforms as well as social networks should be used as they might be helpful to communicate with the general population. Other actions such as making hydroalcoholic gel available for sale in train and stations (shops, automatic dispensers) would help in slowing the spread of COVID-19. Our study could be relevant to other settings such as public transportations in other cities and countries, but also other crowding conditions such as markets, airports, schools, universities, …etc. Further large studies in other public transportation systems around the world and other sittings are warranted. Future studies after implementation of the suggested interventions would determine their effectiveness on changing the mask touching behavior and the frequency of hydroalcoholic gel use.

Authorship and contributors

AG and EM contributed to the study conceptualization and design. AG, ET, AM, CG and HNNC contributed to data collection. AG and EM contributed to data analysis, data interpretation and manuscript preparation. All authors read and approved the final version. AG warrants that the final manuscript and authorships accurately reflect the contributions of all individuals who participated substantially in the study.

Financial disclosure

The Authors did not receive any specific funding for this work.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.