

# A Systematic Review of Passing Fit Testing of the Respirators/ Masks Used During the COVID-19 Pandemic: Part 1-Quantitative Fit Test Procedures

Anahita Fakherpour<sup>1</sup>, Mehdi Jahangiri<sup>1</sup>, and Janis Jansz<sup>2</sup>

<sup>1</sup>Shiraz University of Medical Sciences

<sup>2</sup>Curtin University

March 2, 2023

## Abstract

**Background:** There has been a strong demand for N95 filtering facepiece respirators and surgical masks during respiratory infection pandemics, particularly for the frontline healthcare workers who are at risk of high exposure to biological hazards and for the patients seeking care who may be potentially transmitting the respiratory viruses through air. Respirators and masks are pivotal to meet the requirements of filtration efficiency and fitting characteristics for the users' protection. **Objective:** The goals of this study were to systematically review the fit testing passing rates and identify the factors influencing the fitting characteristics. **Methods** Potentially relevant studies were identified using PubMed, Scopus, Web of Science, Science Direct, one scientific website (cdc.gov), and one scientific journal (ISRP.com) during the COVID-19 pandemic from February 5, 2020 to January 2, 2023. Meantime, the gray literature search was performed. **Results:** A number of studies conducted regarding the fit testing showed that low proportions of passing quantitative fit testing among the studied masks or respirators. Factors such brand, style, and gender were found to be influenced the respirator fit testing. **Conclusion:** This systematic review supports the importance of optimal fit testing for the healthcare workers with high-risk procedures. Manufacturers supply a variety of the mask/ respirator brands, models, styles, and sizes to ensure the expected respiratory protection for the end-users. The proper donning and doffing and reliable fit testing are other affective strategies for improving fitting. Some modifications / substitutions on components of fit testing procedures could be considered during pandemics of respiratory infections.

## Hosted file

Manuscript File.docx available at <https://authorea.com/users/591416/articles/627356-a-systematic-review-of-passing-fit-testing-of-the-respirators-masks-used-during-the-covid-19-pandemic-part-1-quantitative-fit-test-procedures>

## Hosted file

Tables.docx available at <https://authorea.com/users/591416/articles/627356-a-systematic-review-of-passing-fit-testing-of-the-respirators-masks-used-during-the-covid-19-pandemic-part-1-quantitative-fit-test-procedures>

## Hosted file

Figures.docx available at <https://authorea.com/users/591416/articles/627356-a-systematic-review-of-passing-fit-testing-of-the-respirators-masks-used-during-the-covid-19-pandemic-part-1-quantitative-fit-test-procedures>