Abstract

It is well known that masks are nothing new when trying to prevent sickness from spreading from one person to another. In fact, they have been around for centuries and with so many different versions of the same device on the market, people are sure to be confused about which one is best suited for them. This poster displays an array of some of the most popular faces coverings that have become the forefront of covid-19 prevention. We also explore the different guidelines about who should and shouldn’t wear masks while researching the possible health risks of long-term wear. Statistics are used to display whether masks are being effectively used in public and final thoughts on how masks should be used concludes this presentation of how to best protect yourself against the coronavirus.

Background & History

• First creation and use of masks is believed to be for the bubonic plague during the “Black” of the middle ages (around the 1370s).
• However, the first officially recorded use of surgical masks being used in operating rooms was in the early 1920s.
• While the 1918 influenza pandemic helped encourage the general public that masks were vital to stop the spread of sickness between people.
• Some common masks used during the Spanish flu included mesh face coverings as well as homemade cloth masks.
• Mask mandates have been common in many states since the beginning of the pandemic.
• Particularly in Ohio, there has been a statewide mask order and travel advisory in place since late July of 2020.

• This order is still in place currently, with masks being required for people 10 years or older when at indoor locations, outdoors (and not able to maintain a six-foot distance), and when using public transportation services.

What is Covid-19?

• Formally known by the World Health Organization as Coronavirus Disease 2019 (COVID-19) (1).
• Respiratory illness that affects the lungs and chest.
• Symptoms include fever, coughing, tiredness, body aches, headaches, loss of taste/smell, and shortness of breath.
• Commonly spread through inhalation of infectious particles (of about 5m and smaller) or by touching infectious particles and then eyes/mouth.

Types of Masks

• Types of masks include cloth, surgical, and N95.
• Most popular has proved to be cloth masks (both purchased and homemade).
• All 3 share a similar purpose of protecting its wearer from sharing and receiving particles while breathing.

Differences mainly lie in how effective they are at blocking these particles from entering.
• Face Shields have become an alternative to face masks.

Some masks contain a valve while others don’t. Masks with the front opening valve may not offer much protection when a wearer exhales because it gets released freely and suffocated.
• Not intended or recommended for general public use because of the large demand in medical settings and high disposal rate.
• Has been some experimentation in disinfecting and reusing old masks to be able to use them more than once.
• Some ways this process can be achieved is through mask rotation (every 72 hours), hydrogen-peroxide vaporization, UV treatment, and moist or dry heat cleaning methods to sanitize them between use and kill coronavirus particles.
• Electretic charge also exists in N95 masks to block unknown particles from entering the mouth.

Face Shields

• Made of a clear plastic sheet that reaches around the forehead to the chin of a person to cover the entire face.
• Primarily used for eye protection
• Primarily worn to protect the wearers as well as the people around them.
• Face shields are made of a clear plastic sheet that reaches around the forehead to the chin and can be made of any type of material or plastic.
• Face shields are attached to the face with an elastic band or a headband that is adjustable.

Surgical Masks

• A surgical (medical) mask is a loose-fitting disposable mask that protects the wearers nose and mouth from contact with droplets, splashes, and sprays that may contain blood or other body fluids.
• Made of non-woven fabric like polypropylene and carbonized using a non-blowing process to make them effective yet breathable.
• Those made of polypropylene may exhibit an electrostatic charge which is used to boost efficiency from about 35% to 90%.
• According to N95 Respirators, Surgical Masks, and Face Masks, surgical masks are at very good at filtering or blocking small particles in the air that may be transmitted by coughs, sneezes, or other contaminating particles because of the multi-layered filtering Cloth masks.
• Large price range between $0.15-2 dollars for a box of 50.

• The box cloth mask achieved 98% of filtration capacity (62-68%) in a peer-reviewed study indicating that double layer cloth masks are more effective that surgical masks or single layer cloth masks.

How Masks Work

• Primarily worn to protect the wearer as well as the people around them.
• Done by preventing particles from spreading by either blocking the airway from having the person mouth directly or filtering them and presenting them from entering another person’s airway.
• N95 masks were the most effective, while face shields and single layer cloth masks could be considered the least effective.
• Due to the size for people is generally considered to be 65 microns because if it’s smaller it can be breathed regularly.
• In some lab experiments, multilayer cloth masks were found to be more effective than single layer masks. Hacking anywhere from 96-70% of exhaled droplets.

Health Risks of Long-Term Wear

• According to CDC calls on Americans to wear masks to prevent Covid-19 spread, the CDC recommends all people 2-years of age and older to wear masks in public settings and when around others who do not live in your household.
• Some exceptions include people with pre-existing conditions and anyone who cannot effectively take off a mask without help from another person.

• Some states have implemented different mask mandates, travel orders, and orders to help slow the spread of infection.
• According to the CDC, “m Blocking masks were directly associated with a decrease in daily Covid-19 case and death growth rates within at least 20 days of implementation.”
• Supports the idea that universal mask usage helps reduce the spread of covid-19 by stopping transmission between a population.
• “Mask mandates were associated with a 0.5%-point decrease in daily Covid-19 case growth rates 1-20 days after implementation and a generally 1.8%-decrease 21-100 days after implementation.”

Important Statistics

• More than 10000 people in the UK have died because of COVID-19 in 2020.
• There are approximately 6000 new cases of COVID-19 are reported every day.
• In the United States, 200,000 people have died of COVID-19 and 10,000,000 cases are reported every day.

Conclusion

Masks are one of our greatest assets when it comes to preventing the spread of covid-19. They have been around since the turn of the 20th century, and have improved to become not only an effective medial device but an asset to the different ways of everyday living. There are many different face coverings available for people to use including cloth masks, surgical masks, N95 masks, and face shields. N95 masks are the most effective while face shields and single layer cloth masks are the least effective. Mask work by preventing the spread of droplets from one person to another through the covering of the mouth and nose, and it is recommended that all healthy people over the age of 2 utilize them. There are not currently any adverse health risks associated with the use of masks and studies prove the effectiveness of being masked being mandated to slow the spread of coronaviruses. Because there has been evidence provided to support the idea that mandating masks helps slow the spread of covid-19 it is in our best interest to continue these practices and make masks required in areas of high public use where social distancing is not possible.

References

5. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7309199