**Vaccine Scarcity and Hesitancy: How Are They Linked?**

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English 112 – Writing & Research in the Disciplines

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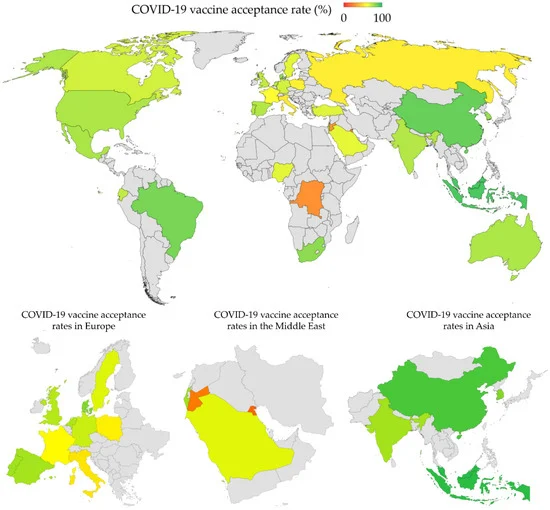
October 14, 2022

Ever since COVID-19 struck in 2020, many aspects of a daily routine have been altered; some subtly and some drastically. For example, masks were required for the longest time, and even now that they are coming off, some people choose to keep them on. However, even though this sickness has been around for two and a half years, cases still are at an all-time high. The main cause seems to be because people are not getting vaccinated, whether there is a vaccine scarcity or unwillingness to receive it. Additionally, there are new and improved viruses to be faced, such as monkeypox. Unfortunately, this is not a problem we face locally, but globally; COVID-19 originated in China, and monkeypox has been reported in at least twenty-four countries. It is important to know the facts and statistics about COVID-19, its strains, monkeypox, and other viruses. It is also important to note their vaccines and the creation of their vaccines, mainly the COVID-19 vaccine, as well as their risky beginnings versus the end results. It is a pharmacist’s responsibility to note the facts and essential information on vaccines. Overall, vaccine scarcity and hesitancy are growing, especially with our COVID-19 situation as well as the revival of the extinct monkeypox, even though the vaccines are tested and proven to be innocuous. A good portion of the hesitancy and scarcity comes from the recent – too recent - COVID-19 vaccine.

COVID-19 has been plaguing the global population for approximately two and a half years, and the vaccine was first introduced a year ago. The race to create a vaccine was stressful for all, and people were continuously updated about this race up until the finish. After the creation of the vaccine, the new stories became debates about people getting vaccinated and people putting down the vaccine, and, at this point, people only care about if you are vaccinated or not. At first, the vaccine was not as scarce as it is now due to how widely skepticism spread. That skepticism is still present today but has become less prevalent as the vaccine is still proven to be safe as more people receive it. However, the world has reached a point where there is not enough available, creating a vaccine deficit. To achieve full global immunity, another 12 billion doses are needed (Pereira et al., 2021). Although there seems to be a deficit, a lot of people are hesitant to receive the vaccine, and there are two main reasons why: People either are afraid it may be unreliable and unsafe, or they believe that someone that is less fortunate than they should be receiving the vaccine instead – it is important to receive vaccinations, especially when COVID-19 is so prevalent and diseases like monkeypox are resurfacing.

Hesitancy and skepticism are similar, but skepticism is more common in the people that refuse to be vaccinated, and the hesitant receive vaccines but not as confidently or later. Pereira and her colleagues state, “Although often used interchangeably, hesitancy differs from vaccine skepticism, which involves distrust in vaccines in general. Those hesitant demonstrate different attitudes, cognitions, and behaviors than ‘anti-vaxxers' and often still accept vaccinations” (Pereira et al., 2021). The trend is showing that when it comes to “COVID-19 vaccines, a sizable portion of the population is taking a ‘wait and see’ approach” (Pereira et al., 2021). This embodies the skepticism that is currently circulating because many people believe that it may be unreliable or could contain some unsafe substance. A vaccine usually takes about ten years to perfect, but the COVID-19 vaccine was created about six or seven times faster, which could explain some of the skepticism. Another interesting theory that some other skeptics believe is that the government has put a microchip in the vaccine, and the vaccine may be a conspiracy just for the government to take complete control (Sriskandarajah, 2021). There is little to no evidence to support this claim, so the likelihood of this being the case is low. Some others are hesitant because they believe that those living in third-world countries or living in poverty should be receiving the vaccine instead of others who are of higher income. Additionally, others of lower income believe the vaccine is safer and those of a higher income believe it may not be as safe (Sallam, 2021). Hesitancy combined with scarcity ultimately leads to rejection of the vaccine for the moment because it gives those who are hesitant a chance to think and research more, and it gives another vaccine to someone living a less luxurious life who needs it more.

It is important that some of the third-world countries are receiving these vaccines because they are trying to control COVID-19. In the figure, a map is showing varying acceptance rates of the COVID-19 vaccine; In Europe and the Middle East, there is less acceptance than Asia, which shows high acceptance rates in many parts. Additionally, in the United Kingdom and France, the rates are going up and down consistently, and in Italy, the rate continued to fall from month to month (Sallam, 2021). Overall, the benefits of the COVID-19 vaccine outweigh any potential risks and the conspiracy theories due to the immunity that is being built up, and thanks to those who have received their vaccines. The only risky aspect of the vaccine is how new it is, and how little time it took to create it as well as the pressure to create it. This could potentially mean that there was not enough effort put into it, and it could be underdeveloped. However, this may not the case because of how many people have already received their vaccines with little to no side effects. The vaccine has proven to be reliable, to the millions who have already had their injections. At some point in the future, the hesitancy and skepticism currently present could recede, and more people may receive their vaccinations in the future.



Figure

Another virus that has resurfaced, though, is monkeypox, and there are similar yet different circumstances for this virus in comparison to COVID-19.

Just recently, Monkeypox began to find its way back into hosts, after it was thought to be gone in the 1980s. The first recent case was diagnosed in a Nigerian patient who had arrived shortly before, in the United Kingdom on the seventh of May 2022, and shortly after that, more cases began to appear scattered throughout the United Kingdom. Currently, at least twenty-four countries have reported cases of monkeypox, including the Americas (Cohen, 2022). Although it does not seem to be as prevalent as COVID-19, it can still be a threat to public health, especially since it is now sexually transmitted through homosexuals. This disease was not originally transmitted sexually, but there could have been a mutation or a new strand that now transmits differently. Although this does not seem to be the original strand of monkeypox, but a cousin of monkeypox, it could evolve to become more lethal, similarly to the original monkeypox. Scientists found the monkeypox gene to be changing spontaneously, with genomes duplicating or disappearing. However, they change at a sluggish pace, so that means it could take time for some unprecedented changes to occur (Kupferschmidt, 2022). However, it is still necessary to be cautious of this cousin to monkeypox because it is causing scientists to re-evaluate what they already know about monkeypox and apply it to this cousin of monkeypox. Unfortunately, much larger outbreaks could be approaching in the future. However, there is a vaccine for monkeypox already, but there seems to be a problem with this common monkeypox vaccine.

As cases began to decline in number when the virus was originally eradicated, people began to stop using the monkeypox vaccine because it contained a virus called vaccinia. This virus was a natural pox virus cultured in labs, and it is said to have had severe side effects and killed about one in one million individuals (Cohen, 2022). There are now other more efficient vaccines that can be used to avoid less severe side effects and without the virus vaccinia. Cohen (2022) also states, “Drugs exist as well. One, tecovirimat, in 2018 became the first ever approved by FDA to treat monkeypox after it proved safe in human trials and effective in animals” (Cohen, 2022). There is also a shortage of monkeypox vaccines as well, with the sudden revival of the vaccine and no time to produce them quick enough. Eventually production will create enough to eradicate this cousin to monkeypox. Monkeypox may have resurfaced but luckily vaccines and medications already exist – the only thing to combat is the hesitancy, and there does not seem to be much since this vaccine has been around since this vaccine has been around since the 1970s – so the community may be putting in the effort with this virus to contain it, in contrast to COVID-19.

Overall, COVID-19 and the monkeypox outbreak are good examples, similar yet different, that show the utilization of our vaccines and the hesitancy with COVID-19 vaccines in contrast to the trusted monkeypox vaccine. This is mainly due to the time difference – one has been present for decades, and the other has been present for only one and a half years. However, both are similar in that they are effective in preventing severe symptoms and mostly preventing deaths from the viruses. Obviously, not all deaths can be prevented, but the majority can. Since this is a global effort to contain lethal viruses, everyone should play their part in controlling these viruses and, hopefully, shrink them down through global immunization. Hesitancy should be minimized in the future as the vaccine continues to be proven effective. In the end, this virus is nothing that cannot be controlled if global immunization is possible. As a pharmacist, it is important to keep these facts in mind and to understand the situation with this vaccine, as hesitancy and scarcity eventually end.

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