

# COVID-19: Vaccines, myths and misconceptions in Africa

Experts share their insights

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. At the start of the pandemic, scientists and pharmaceutical companies frantically searched for an effective vaccine.<sup>1-4</sup> Various platforms have employed traditional vaccine development approaches like live attenuated virus, inactivated virus, recombinant-protein based, viral-like particles and explored newer platforms like non-replicating viral vector, replicating viral vector, peptide-based, DNA and RNA based vaccines.<sup>1-8</sup> There are currently over 300 COVID-19 candidate vaccines at different levels of development but about ten are currently being used.<sup>5,7,9</sup>

The most widely used vaccines are Janssen-Ad26. COV 2S, commonly known as Johnson and Johnson and AstraZeneca-Vaxzevria by AstraZeneca. These vector-based COVID-19 vaccines<sup>5</sup> use a harmless virus as a delivery system for the SARS-CoV-2 spike protein genetic material into the human cell to produce the spike protein that triggers the immune system to develop immunity against COVID-19.<sup>9</sup> The other most widely used vaccines are the Pfizer BioNTech-Comirnaty by Pfizer BioNTech and Moderna-mRNA-1273 by Moderna<sup>5</sup> which work by delivering the SARS-CoV-2 spike protein mRNA in an oil emulsion to the host cells, where the mRNA 'blueprint for spike protein' is then read and converted to spike proteins which trigger the immune system to develop immunity against COVID-19.<sup>5</sup>

African countries have received COVID-19 vaccines through the COVAX facility (2), African Union's African Vaccine Acquisition Trust (AVAT), and through bilateral agreements and donations from other countries. Other countries use the Gamaleya-Sputnik V by Gamaleya Research Institute, Sinopharm (Beijing) by Sinopharm and the SII-Covishield by Serum Institute of India.<sup>5,7</sup>

## Myths and misconceptions

Vaccine related myths are a leading cause of sub-optimal vaccine uptake in the African region.<sup>10</sup> In areas with a highly conservative and low-literacy population, leadership and governance are largely hierarchical, with traditional, religious and political leaders being seen

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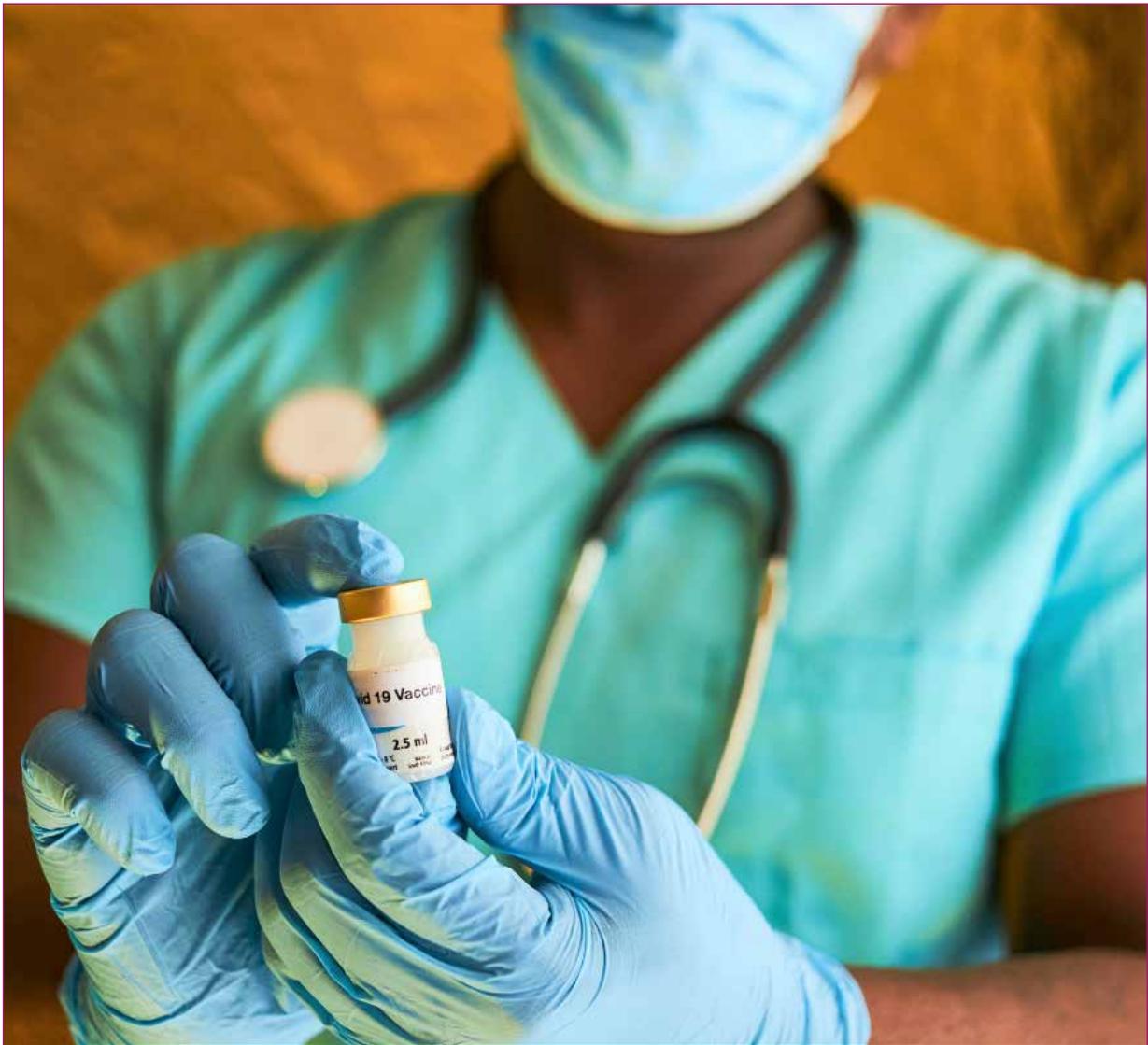
as the unquestionable custodians of decision-making in the society.<sup>11</sup> Scientific advice on health matters is usually accepted after being sanctioned by these community leaders and effects linger on for many years and continue to re-emerge and evolve with every new vaccine initiative.<sup>12</sup>

The myths related to COVID-19 differ in content largely depending on four interconnected factors: socioeconomic status, literacy levels and religious affiliations of a population and general mistrust of novel therapies.<sup>12</sup>

One of the most widespread and strongly held beliefs especially among the low income and literacy levels is that the COVID-19 vaccines are laced with harmful substances, including antifertility agents as a method to control the African population as well as HIV and cancer-causing elements to ensure that mortality from these diseases also contributes to reducing the population growth rate.<sup>12</sup>

In the age of technology, literate and younger people have the belief that receiving the COVID19 vaccine will introduce a microchip into the body that will transmit personal data to interested parties who may later use this data for harm is a popular myth. Another common myth is the alteration of the recipient's genetic makeup by the mRNA vaccines to develop a chimeric breed of humans.<sup>4,12</sup> The third category of myths is prevalent in people with strongly held religious beliefs. Sections of the religious faithful have linked the COVID-19 vaccine to the apocalyptic events where vaccination is likened to receiving the mark of the beast and turning away from the faith with subsequent eternal damnation.

One conspiracy theory suggests that the World Health Organization (WHO) wants to prove that African countries cannot be self-reliant and find their own cure for Covid-19. Such rumours were spread to promote a herbal tonic in Madagascar. A mix of conflicting



information and outright misinformation circulated in South Sudan as a result of photos of prominent leaders wearing so-called 'protective' badges that claimed to repel viruses.

The main public health concern around vaccine misinformation and has caused confusion subsequently leading people to decline vaccines and challenge/reject the health policies and interventions of the government/non-government officials and international health agencies.<sup>13-18</sup>

Myths can lead to either direct harm or distract the public from abiding by containment measures and vaccine uptake. The following are additional common myths and misconceptions that promote misunderstanding about COVID-19 and COVID vaccines.<sup>17,19,20</sup>

**MYTH: You can protect yourself from COVID-19 by swallowing, injecting, bathing in or rubbing onto your body disinfectants, bleach or rubbing alcohols.** Spraying and introducing bleach or another disinfectant into your body WILL NOT protect you against COVID-19 and can be dangerous.<sup>5,9</sup>

**MYTH: The new coronavirus was deliberately created or released by people.**

This is false. Occasionally, a disease outbreak happens when a virus that is common in an animal such as a pig, bat or bird undergoes changes and passes to humans.<sup>5,9</sup>

**FACT: Most people who get COVID-19 recover from it**

Most people who suffer from COVID-19 experience mild or moderate symptoms and can recover fully if given good and adequate supportive care.<sup>5,9</sup>

**MYTH: Adding pepper to your soup or other meals prevents or cures COVID-19**

Hot peppers can be used to flavor or make food tasty but cannot prevent or cure COVID-19.<sup>5,9</sup>

**MYTH: 5G mobile networks spread COVID-19**

No virus can spread on radio waves/mobile networks. COVID-19 is spread through respiratory droplets when an infected person coughs, sneezes or speaks.<sup>5,9</sup>

**MYTH: Being able to hold your breath for 10 seconds or more without coughing or feeling discomfort means**

**you are free from COVID-19**

Most COVID patients have no symptoms, and the most common symptoms of COVID-19 are dry cough, tiredness and fever. You cannot confirm it with this breathing exercise.<sup>5,9</sup>

**MYTH: Vaccines against pneumonia protect against the COVID-19 virus**

Bacterial vaccines against pneumonia, such as pneumococcal vaccine and Haemophilus influenza type B (Hib) vaccine, do not protect against the new coronavirus.<sup>5</sup>

**MYTH: Rinsing your nose with saline prevents COVID-19**

There is no evidence that regularly rinsing the nose with saline has protected people from infection with the new coronavirus.<sup>5,9</sup>

**FACT: Antibiotics CANNOT prevent or treat COVID-19**

Antibiotics work only against secondary bacterial infection if it occurs in COVID-19. Antibiotics do not work against viruses.<sup>5,9</sup>

**MISCONCEPTION: There are medicines that prevent or treat the new coronavirus**

To date, there is no specific medicine recommended to prevent or treat the new coronavirus.<sup>5,9</sup>

**MISCONCEPTION: If I have had the COVID-19 virus and am now recovered, I am immune**

Yes, but you can get re-infected or contract COVID-19 from a different variant. So, you need the vaccine and continue observing other containment measures.<sup>5,9</sup>

**MYTH: COVID-19 vaccines are not safe**

Like all vaccines, the COVID-19 vaccines followed rigorous safety testing process and showed no major safety concerns in trials.<sup>5,8,9,20</sup> The FDA sets rigorous safety standards for vaccines to meet before they are approved, which include four phases. Similarly, in-country regulators securitise safety data before authorisation.<sup>5,8,9,20</sup>

**MYTH: You don't need the vaccine if you've already had the virus**

Natural immunity does not last forever, and you can catch COVID-19 again.<sup>5,8,9,20</sup> For those who have recovered from COVID-19, new research shows that immunity to the virus can last at least eight months. However, just because your body builds up natural immunity for a period after infection, you can get re-infected again. But a person who recovered from COVID develops immunity protection that is up to 7 times more robust than a person who never suffered COVID but got two doses of vaccine. The vaccine is the safest, fastest way to eliminate the virus.<sup>5,8,9,20</sup>

**MYTH: The COVID vaccine affects and can change a person's DNA**

The mRNA of COVID-19 vaccines enters cells, but not the nucleus of the cells where DNA resides.<sup>5,8,9,20</sup> The mRNA does its job to cause the cell to make protein to

stimulate the immune system, and then it quickly breaks down – without affecting your DNA.<sup>5,8,9,20</sup>

**MYTH: COVID Vaccines will cause infertility**

This is false. No vaccine causes infertility.<sup>5,8,9,20</sup>

**MYTH: Kids can't spread the virus**

This is false. Children can both catch and spread the virus, a risk that goes up as the children get older.<sup>5,8,9,20</sup>

**MYTH: We can achieve herd immunity by letting the virus spread in the community**

Herd immunity through natural infection is not possible. Herd immunity occurs when enough people in a community contract and recover from a virus that they develop the natural immunity to protect them from the disease in future exposure; re-infections have been reported after initial recovery.<sup>5,8,9,20</sup>

**MYTH: We know COVID-19 doesn't cause long-term damage**

Studies have reported cases of very long road to recovery with many residual effects. Some show insomnia, tiredness, shortness of breath, persistent loss of sense of smell, and damage to the heart, lungs, kidneys, and brain.<sup>5,8,9,20</sup>

**MYTH: Only the elderly or those with underlying health conditions will get seriously ill and require hospitalisation for COVID-19**

People of all ages can contract COVID-19 and are being hospitalised with severe disease.<sup>5,8,9,20</sup>

**MYTH: Vitamin D supplements can prevent or even treat COVID-19**

No study has proven that vitamin D supplementation prevents or treats COVID-19.<sup>8,9</sup>

**MYTH: Drinking water will flush COVID-19 from my system**

Drinking water keeps your body functioning properly and feeling healthy. BUT this does not prevent the virus from entering your lungs.<sup>8,9</sup>

**MYTH: I tested negative for COVID-19 so I don't need to quarantine.**

If you have been to exposed to COVID-19, quarantine time helps to ensure that you have not contracted the virus.<sup>8,9</sup>

**MISCONCEPTION: The COVID vaccine contains chemicals that harm the person who gets the vaccine**

The truth is that the COVID vaccine contains active material(s) called antigens.<sup>8,9</sup>

The vaccines also contain inactive materials that include:

1. Adjuvants like aluminium salts to enhance immune responses
2. Preservatives (phenoxyethanol, formaldehyde, thiomersal / thimerosal, or antibiotics) prevent bacterial growth especially in multi-dose vaccines
3. Stabilisers (proteins or other compounds) extend the shelf-life of the vaccine

4. Salts and acidic solutions (Na hydroxide, Na chloride, sodium borate and acetic acid) maintain pH
5. Diluents for reconstituting lyophilised or freeze-dried vaccines

**MYTH: Getting the COVID-19 vaccine means I can stop wearing my mask and taking coronavirus precautions**

Vaccines only prevent you from developing severe COVID-19. A vaccinated individual can still contract COVID especially new strains (8, 9). Vaccinated individuals still need to practice infection prevention precautions.<sup>8,9</sup>

**MYTH: Getting the COVID-19 vaccine gives you COVID-19.**

This is false. The COVID-19 vaccine does not contain the SARS-Co-2 virus, so you cannot get COVID-19 from the vaccine. The protein that helps your immune system recognise and fight the virus does not cause infection of any sort.<sup>8,9</sup>

**MYTH: If I'm pregnant or breastfeeding, I definitely shouldn't get vaccinated**

This is False. It is fine for pregnant women to get the vaccine. Breastfeeding mothers who get vaccinated can pass protective antibodies to their babies through breast milk.<sup>8,9</sup>

**Management of vaccine misinformation**

Most studies mainly focus on two aspects, the psychological attitude connected to vaccination choice<sup>21-23</sup> and the role of the internet and in particular social media.<sup>24,25</sup> Public health authorities, social media companies and other organisations have attempted to address (counter) the spread of vaccine misinformation through various strategies, including moderation of vaccine misinformation on social media platforms, ensuring the public have access to accurate and reliable information, and providing education and guidance to people on how to address misinformation.<sup>14</sup> Some of the initiatives to tackle vaccine misinformation and encourage vaccine uptake are aimed at specific minority ethnic groups and experts have emphasised the importance of ensuring factual information about COVID-19 vaccines is available in multiple different languages.<sup>26</sup> Credible information is the key to fight vaccine misinformation. We thus encourage the use of nationally approved information channels and websites of credible multinational organisations like the WHO and UNICEF.

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