

## EDITORIAL

# Science versus myths: the case of COVID-19 vaccine hesitancy

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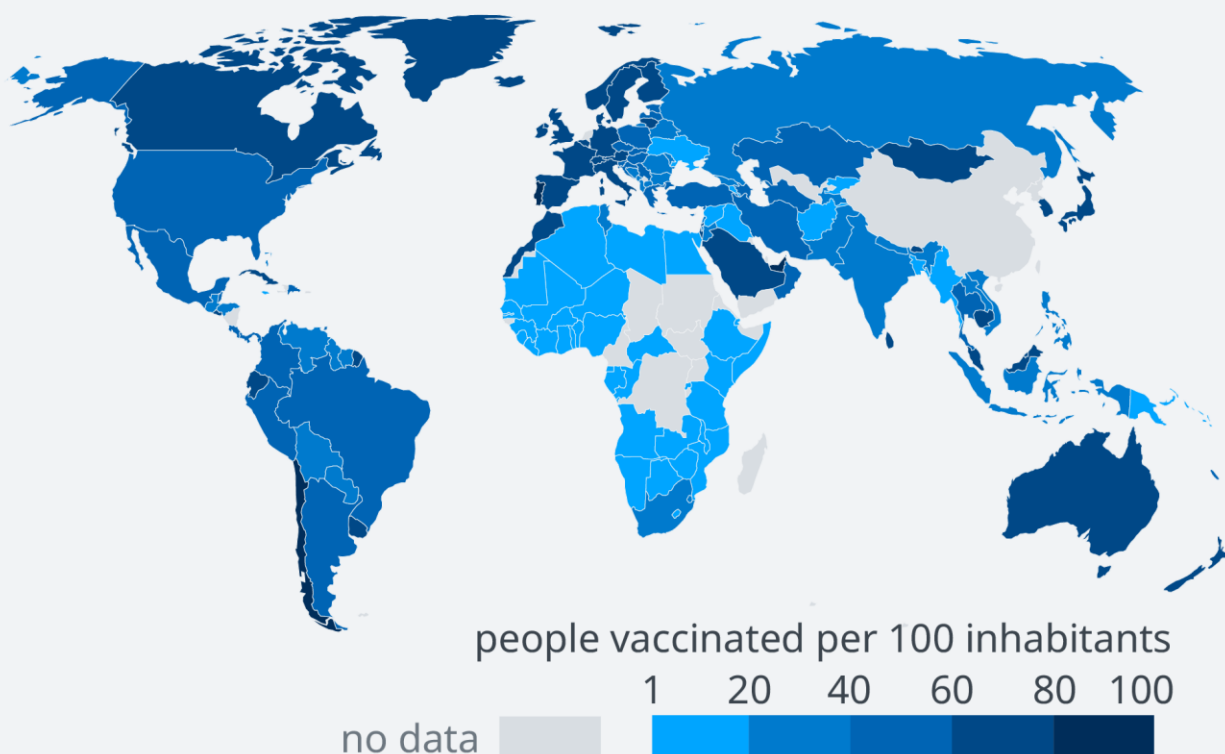
The coronavirus disease 2019 (COVID-19), caused by a new strain of Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-COV-2) was first reported to the World Health Organization (WHO) from the first case in Wuhan, China on December 31, 2019. The WHO declared the disease a pandemic on March 10, 2020 due to the fast pace of its progression throughout the world. Given the high number of deaths and severe socio-economic consequences associated with the disease, and because of the limited uptake of public health measures designed to prevent the spread of the virus, it became evident that only the discovery of a vaccine would help prevent the community spread of the virus. In May 2020, the 73<sup>rd</sup> World Health Assembly issued a resolution recognizing the role of extensive immunization as a global public-health goal for preventing the transmission of SARS-COV-2 (WHO, 2020). Consequently, several scientific groups in various parts of the world began to work on developing vaccines against the virus. The first vaccines were introduced in September 2020, and since then the WHO has approved seven vaccines for use against COVID-19. These include 1) Biotech BBV152 COVAXIN vaccine, 2) Sinova-coronavac COVID-19 vaccine, 3) Pfizer BioNTech (BN T162 b2) COVID-19 vaccine, 4) Sinopharm COVID-19 vaccine, 5) Janssen Ad26.cov2.S COVID-19 vaccine, 6) the Oxford/AstraZeneca COVID-19 vaccine, and 7) the Moderna COVID-19 (mRNA-1273) vaccine.

The first dose of any COVID-19 vaccine was given in the United States in December 2020, with the goal to achieve widespread immunization against the disease within the shortest possible period. This was with the recognition that for a vaccine to effectively control the spread of COVID-19, herd immunity has to be reached with at least 67% of the global population vaccinated (Randolph et al 2020).

Consequently, several countries around the world have begun massive immunization of their citizens; however, with different levels of coverage. By December 2021, while countries such as the United States have attained 61% coverage with COVID-19 vaccination (CDC, 2021), a country like Nigeria has only succeeded in vaccinating less than 5% of its citizens (NCDC, 2021) (See figure).

While it is logical to suggest that the low level of vaccination in some low- and middle-income countries (LIMCs) may be due to paucity of vaccines, but the available evidence indicate that this may not be the case. To date, vaccines are being donated to LIMCs at no or limited costs, while the distribution chain has improved considerably as compared to those available to previously available vaccines.

# COVID-19 vaccination rates



*At a rate of 85 – 95 vaccinated people per 100 inhabitants, researchers expect herd immunity to protect also unvaccinated people.*



Source: Local governments via Our World in Data | Data from Nov. 2021  
Number of people vaccinated captures only those who are fully vaccinated.

**Figure 1: Worldwide COVID-19 vaccination rates – November 2021**

The true reasons for the low COVID-19 vaccination rates in LMICs, especially sub-Saharan African countries appear to be vaccine hesitancy, the reluctance of individuals to accept the vaccination. The WHO defines “vaccine hesitancy” as “delay in acceptance or refusal of vaccines despite availability of vaccination services” (MacDonald et al, 2015). Although the reasons for vaccine hesitancy have not been systematically investigated, the emerging evidence suggests that this may be due to myths and make-believe doctrines that counter the evidence provided by scientific facts and research.

Interestingly, COVID-19 itself has been characterized by myths and folklores as to its origin, especially within the context of LMICs (Okunlola et al, 2020). Even the originally proposed treatment methods for COVID-19 in these countries were based on unfounded herbal medicines and allegories (Nugraha et al, 2020), which tended to counter the scientific recommendations on prevention and treatment. Some even proposed that the virus was manipulated to change the origin of humankind, and to alter genetic codes to favour a particular human species.

Therefore, it is not altogether unexpected that the vaccines designed to prevent the disease would be opposed with the same temerity with which the origin of the virus was debated. To date, COVID-19 vaccination appears to be the one single intervention that has reduced the incidence, severity, and death rates from the virus. While new variants of the virus such as Omicron have emerged (WHO, 2021), it is being argued that these may have developed from non-vaccinated individuals, while the possibly reduced severity of the new viral strain as compared to previous variants, may be due to the presence of herd immunity from extensive vaccination in several countries.

Given that vaccination holds the key to preventing, curtailing, and eliminating the virus on a sustainable basis, the relevant question is: how vaccine hesitancy can be managed in ways to promote the rational use of vaccines to prevent COVID-19 and possibly other future epidemics. In our view, the answer lies in the way and manner new vaccines are introduced, and how public oppositions to the vaccine are managed. In Nigeria, official response to non-acceptance of the vaccine has included threats of restrictions of movement to key places, removal of rights to access services, and public disagreement with opponents of the vaccine. By contrast, internationally accepted methods for managing vaccine hesitancy include health education (based on the provision of scientific facts), building community trust and transparency about the vaccine side effects, and addressing pain attributable to the vaccines (Arede et al, 2018). We believe strongly that the use of rights-based methods of vaccine introduction, while explaining the benefits and side effects of the vaccine in an easily understandable and scientific manner holds the key to vaccine acceptance in LMICs. Indeed, we recommend the same intensive scientific method used in discovering the vaccine, to be used in introducing the vaccine to communities, based on active community participation and ownership of the process.

We conclude that vaccine hesitancy is one of the most serious challenges that the elimination of COVID-19 currently faces in LMICs. The use of a rational and scientific process of introducing the vaccine rather than that based on the blame game will help sieve science from myths and facilitate the process of uptake of the COVID-19 vaccine and the eventual elimination of the virus.

**Conflicts of Interest:** None

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