

World Health Organization

(WHO)

*Addressing infrastructure
and public trust challenges
in the deployment of
pandemic and childhood
vaccination campaigns in
developing nations.*



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I. INTRODUCTION

The World Health Organization (WHO) was established on April 7, 1948, as a specialized agency of the United Nations. Its headquarters are in Geneva, Switzerland. It was created in response to the need for a global body to coordinate international public health efforts after World War II. The WHO's main purpose is to promote health, keep the world safe, and serve the vulnerable by arranging responses to health emergencies, setting international health standards, and supporting countries in improving health systems. (Britannica, 2021).

The WHO holds significant influence through its ability to provide scientific guidance, declare health emergencies, and coordinate global responses. (Gostin, 2023) However, it does not have the power to enforce policies in member countries and relies on international cooperation and voluntary funding. Its core functions include setting health standards, offering technical support, leading vaccination campaigns and monitoring global health trends. Limitations include political pressure, dependence on each member's contribution, and restricted authority over national decisions.

Notable past actions involving the WHO include leading the global campaign to eradicate smallpox, controlling Ebola in West Africa (2014-2016), and efforts to combat polio and HIV/AIDS. Recently, WHO coordinated the global COVID-19 response and launched the COVAX initiative to promote vaccine equity. (World Health organization, 2020) In developing nations, the World Health Organization addresses challenges such as weak health infrastructure and public distrust by partnering with local governments to improve facilities, train workers and launch educational campaigns to promote childhood and pandemic vaccinations.

In addition to its global initiatives, the WHO plays a vital role in long term development by strengthening local health systems in low income regions. This includes supporting the creation of sustainable vaccine delivery networks, ensuring logistics for proper vaccine storage,

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and improving data systems for tracking immunization progress . (Beech, 2020) By working

closely with community leaders and local healthcare providers, the WHO helps adapt health messages to fit local cultures and languages, which increases public trust and vaccine acceptance. These efforts are essential to overcoming misinformation and logistical problems, ultimately helping to achieve higher vaccination rates and better overall health outcomes in vulnerable populations and groups.

Therefore, in order to achieve its purpose and fight these worldwide challenges, it is crucial to focus on strengthening the infrastructure for pandemic and childhood vaccination campaigns, with a special focus on developing nations. Immunization is one of the most successful global health strategies, saving millions of lives year by year. Vaccines lower the risks of getting a disease by building protection and resistance through the human body's natural defenses. "Immunization is key to primary health care, an indisputable human right, and one of the best health investments money can buy." (World Health Organization: WHO, 2019) Nowadays, more than 30 life-threatening diseases and infections can be prevented by vaccines. As a matter of fact, immunization currently helps prevent between 3.5 million and 5 million deaths every year from diseases like diphtheria, tetanus, influenza, and measles. The success of immunization programmes depends on their ability to be efficient and sustainable in the long term. (Vaccine Access, n.d.)

WHO is working with countries and partners to improve global vaccination coverage, including through these initiatives adopted by the World Health Assembly in August 2020. (Immunization and Vaccine-preventable Communicable Diseases, 2024) However, there is still a significant lack of access not only to immunization but to multiple health services. It is truly important to realize that the communities that miss out on vaccines are mostly children and low income regions. Despite the challenging position they face, their rights and health should not be put at risk; healthcare access must be equal for everybody. The gap in preparedness for preventable diseases and pandemics, unfortunately demonstrated previously, has cost millions of lives and highlighted the urgency of health equity. Despite efforts made, numbers keep increasing and the possibilities to get an accessible vaccine and pandemic plan are still out of reach for many. No child should die from preventable diseases, and nowadays, the ability to do

this has become a privilege, not a right. Hence, the main purpose or aim of this conference is to pinpoint and develop a viable solution that benefits the whole world.

II. HISTORY OF THE PROBLEM

Throughout history, pandemics such as the Black Death, the 1918 Spanish Flu, and COVID-19 have caused massive loss of life and challenged global health systems. These events have shown the world how fast diseases can spread and how important it is to prevent them. While vaccines did not exist during the Black Death and were not widely available during the Spanish Flu, modern science has made it possible to control preventable diseases like COVID-19 through vaccination. These pandemics and epidemics demonstrate that strong health systems, trust in science, and early prevention are key to protecting people worldwide. (Filip et al, 2022) They also highlighted the importance of international collaboration, reliable public health communication, and the need for equity in health responses, particularly for vulnerable populations.

In 1974 when the World Health Organization introduced the Expanded Programme on Immunization (EPI). Throughout the years, this programme evolved into what is now commonly known as the Essential Programme on Immunization that has successfully raised awareness about the importance and weight that vaccines have on health protection of older children, adolescents, and adults. Today, every country in the world owns a national immunization programme, nevertheless, many developing nations still face difficulties implementing pandemic and vaccination plans. Weak health infrastructure reduces the capacity of equally spreading vaccines. While immunization is one of the most successful public health interventions, coverage has plateaued over the last decade. Not only the lack of knowledge, but vaccine hesitancy makes vaccines more difficult to be deployed. Therefore, addressing these persistent challenges through stronger health systems, targeted education, and global cooperation is essential to ensure that life-saving vaccines reach every individual, regardless of geography or socioeconomic status.

The countries that find themselves struggling to have safe access to vaccines often have

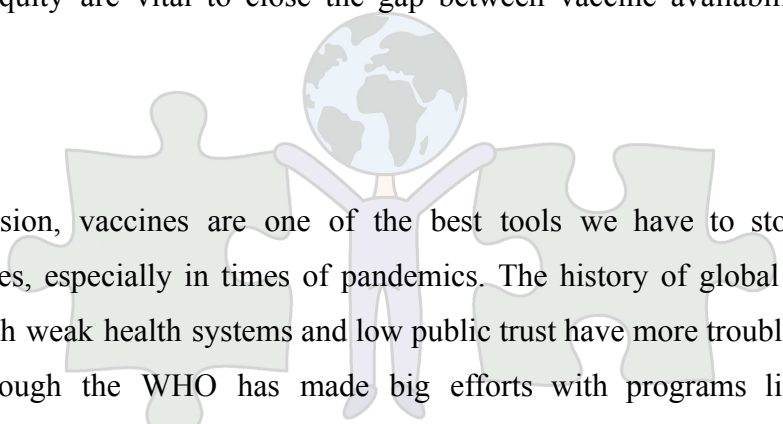
weak health systems, not enough hospitals, and people who do not always trust vaccines. These factors have affected for a long period of time and have become more serious as pandemics and epidemics kept spreading. Consequently, there are now 34 countries that lack vaccination coverage. A big part of the problem started many years ago. Many developing countries were once colonies of powerful countries. When these countries became independent, they had weak health systems. They did not have enough hospitals, doctors, nurses, or money to take care of the people. In rural areas, there were often no clinics at all. This made it hard to give vaccines to everyone, especially children. Another big problem is infrastructure. This means things like roads, electricity, and correct storage for vaccines. Some vaccines must stay cold to work well and this can be a major problem. This is called the “cold chain”. But in many places, there is no electricity or the roads are too bad to travel quickly. Without good roads and cold storage, vaccines can go bad before they reach people.

Public trust is another big challenge. In the past, there were times when foreign doctors or organizations did things that hurt people or did not ask for permission. For example, some groups gave medicine or ran tests on people without explaining why. Because of this, some communities feel afraid or unsure about vaccines. They do not always trust people from outside their country or even their own country. Sometimes, people hear false information about vaccines. Rumors may say that vaccines are dangerous or that they are part of a plan to hurt people. These rumors can spread quickly, especially in places where people do not have good access to education or the internet. When people believe these false stories, they may refuse to take the vaccine or stop their children from getting it.

These problems were seen clearly during the COVID-19 pandemic. Developed countries got vaccines first, while many developing countries had to wait. This made people feel angry and forgotten. When vaccines did arrive, some people were afraid to take them because of what they had heard online. Some thought the vaccine would make them sick, or that they were being used for experiments.

There are now 13 vaccines (antigens) recommended by WHO for the EPI programme. They are: Bacillus Calmette-Guerin (BCG), diphtheria, pertussis, tetanus, Haemophilus

influenzae type B (Hib), Hepatitis B (HepB), polio, measles, rubella, pneumococcal disease (PNC), rotavirus (Rota), human papillomavirus (HPV), and COVID-19. Yet, there are still multiple challenges faced when distributing them. The identification of diseases in infants, the malfunction of programmes that ensure doses are applied. Still, in 2023, there were 14.5 million children who did not receive a single vaccine dose, so-called zero-dose children, highlighting the ongoing gaps in immunization outreach. (World Health Organization: WHO, 2024) Coverage of the third dose of the diphtheria, tetanus, and pertussis vaccine (DTP3) reached only 84%, while the first dose of measles vaccine coverage stood at 83%, staying below pre-pandemic levels. In yellow fever risk countries, coverage reached only 50%, significantly lower than the WHO-recommended 80%, exposing populations to preventable outbreaks. These figures reveal that while immunization tools exist, sustained efforts in logistics, education, and equity are vital to close the gap between vaccine availability and effective immunization.



In conclusion, vaccines are one of the best tools we have to stop the spread of dangerous diseases, especially in times of pandemics. The history of global health shows us that countries with weak health systems and low public trust have more trouble protecting their people. Even though the WHO has made big efforts with programs like the EPI and recommends 13 important vaccines, many children and adults in developing nations still do not get the help they need. Problems like poor infrastructure, lack of education, and fear or mistrust continue to block progress. To make real change, the world must work together to improve roads, clinics, and health education while building trust in vaccines. Only then can we make sure that no one is left behind and that everyone has a fair chance to live a healthy life.

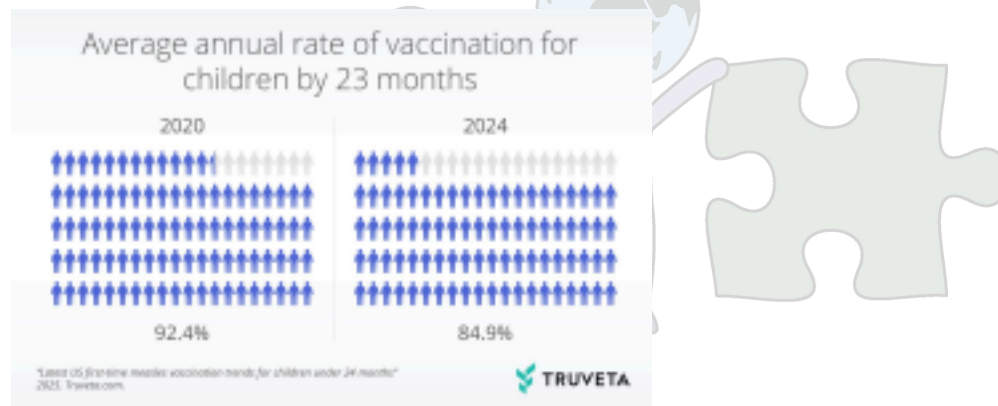
III. CURRENT SITUATION

Nowadays, vaccination is still one of the most effective public health strategies for the prevention of infectious illnesses. However, the poor infrastructure and weak vaccination distribution systems continue to impede successful childhood immunizations. In 2020, due to the COVID-19 pandemic, these issues became more severe. Many factors may have contributed to the decrease in childhood vaccination coverage, such as limited access to

immunization services, disrupted supply, conflict and instability, or misinformation about vaccines.

During the last 3 years, WHO has recollected data from 195 different countries, giving concise information such as improvements and decreases. “Data from 195 countries show that 131 countries have consistently reached at least 90% of children with the first dose of DTP vaccine since 2019, but there has been no significant movement in expanding this group.” (World Health Organization: WHO, 2025) Not only this, but it has been a big challenge to increase the coverage rates, with only 17 countries actually achieving it. This data shows how quickly the vaccination progress can erode.

“Concerningly, in half of these countries the number of unvaccinated children has expanded rapidly from 3.6 million in 2019 to 5.4 million in 2024, underscoring the need for humanitarian responses to include immunization.” (World Health Organization: WHO, 2025)



(Research, 2025)

This actively demonstrates that the humanitarian crises, fragility and conflict has affected in a stronger way. In spite of the fact that numbers are of concern, the Gavi alliance has improved the number of under-vaccinated children by almost 650 000. Results have proven that all 57 low-income countries, upper-middle and high income countries supported by Gavi, have either increased vaccination rates or maintained at least 90% coverage.

“Despite these challenges, countries – especially those supported by Gavi – continue to introduce and scale up vaccines, including against human papillomavirus (HPV), meningitis, pneumococcal disease, polio, and rotavirus.” (World Health Organization: WHO, 2025)

Focusing on specific and more targeted vaccines, there have been significant scale-ups on both measles and HPV vaccines. The HPV vaccine global coverage has boosted globally by 4% and 31% of adolescent girls globally received at least 1 dose. On the other hand, 84% of children received the first dose against measles and 76% received the second dose. An estimated 2 million more children were reached in 2024. However, there are still more than 30 million children remaining unprotected.

“Although the community demand for childhood vaccination remains high and protection against more diseases is expanding, the latest estimates highlight a concerning trajectory.” (World Health Organization: WHO, 2025) WHO and UNICEF call on governments and relevant authorities to follow certain steps, but above all, it is important to follow Gavi's next strategic cycle (2026-2030) that protects millions of children in lower-income countries and overall health security.

In spite of the fact that numbers have been uneven and difficult to collect, it has been, and will continue to be, crucial to increase them. “Even small declines in immunization coverage can dramatically raise the risk of disease outbreaks and place additional strain on already overstretched health systems.” (World Health Organization: WHO, 2025) Vaccination is by far the safest way to protect individuals and communities from life-threatening diseases. With poor vaccination systems, illness, disability and death rates increase and vulnerable populations such as babies, the elderly and those with compromised immune systems are at risk.

Perspectives and challenges:

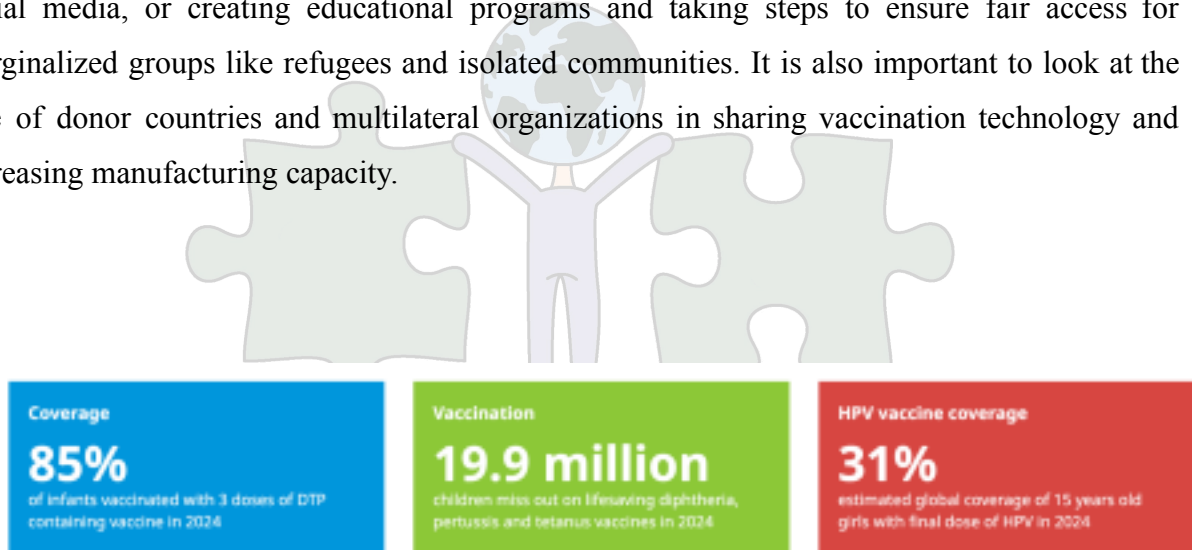
Some think that the main challenge is logistical; insufficient support needs greater international financial and technical support. Defenders focus on upgrading cold chain technologies, rural healthcare facilities, and local health staff capabilities. They emphasize the effectiveness of initiatives like Gavi's vaccine alliance programs, which have considerably raised immunization rates through infrastructure assistance and collaboration. The goal is to

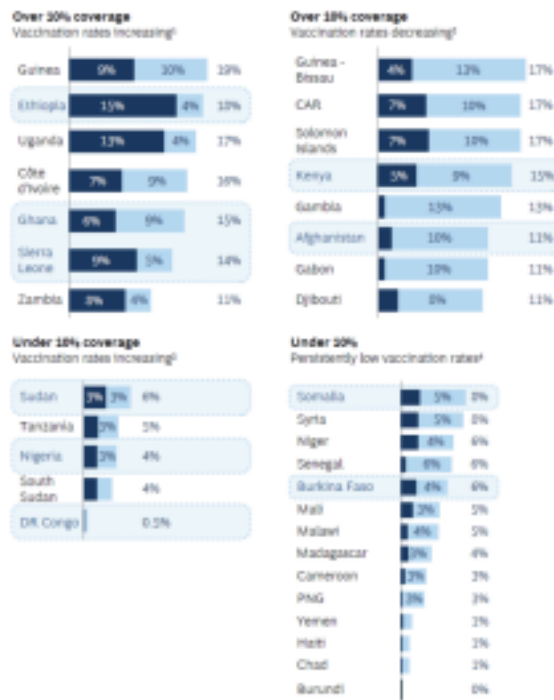
spend funds effectively and sustainably while minimizing reliance and corruption.

Others feel that even the strongest infrastructure would fail if populations refuse immunizations. They believe that misinformation and cultural barriers must be solved through open communication, leadership involvement, and education programs. This method focuses on behavioral and social solutions that are adapted to local situations. The argument focuses on how to balance respect for local beliefs with public health rules.

Key aspects in the discussion

Key aspects in this discussion include finding ways to make sure international funds reach primary health services in an effective and transparent way, deciding which methods work best to increase vaccine acceptance such as working with community leaders, regulating social media, or creating educational programs and taking steps to ensure fair access for marginalized groups like refugees and isolated communities. It is also important to look at the role of donor countries and multilateral organizations in sharing vaccination technology and increasing manufacturing capacity.





IV. UN ACTIONS

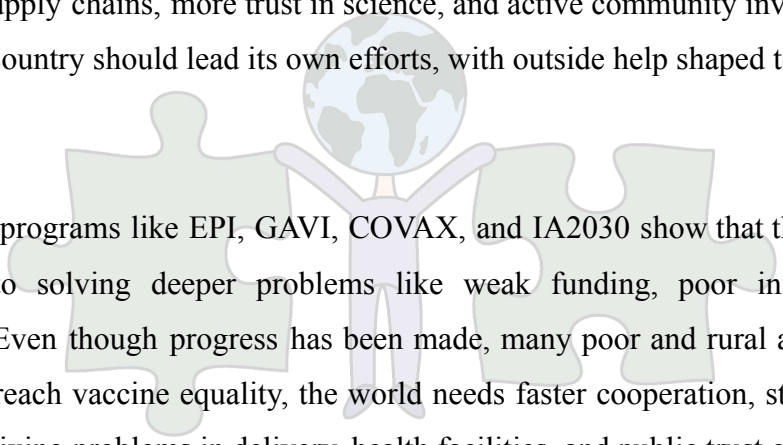
The United Nations, mainly through the World Health Organization (WHO), has long supported worldwide vaccination as a key part of public health, especially in countries with weak systems and few resources. A big step was the Expanded Programme on Immunization (EPI) in 1974, which helped countries create national vaccine programs for six diseases: measles, diphtheria, whooping cough, tetanus, tuberculosis, and polio. At that time, many poor countries had only very basic vaccine services. EPI not only brought vaccines but also encouraged governments to vaccinate health workers, build basic cold storage, and begin routine vaccination. As a result, child vaccination rates grew a lot. For example, coverage for DTP3 (diphtheria, tetanus, and whooping cough) went from under 5% in the 1970s to over 80% in the 2000s.

In 2000, with WHO's help, the Global Alliance for Vaccines and Immunization (GAVI) was created along with UNICEF, the World Bank, the Gates Foundation, and donor countries. GAVI's first goal was to support the world's poorest nations by improving delivery systems, lowering costs, and helping buy vaccines. Unlike older aid programs, GAVI focused on long-term growth, helping countries slowly become more self-reliant. It also lowered vaccine

prices and supported new ones like pneumococcal, HPV, and rotavirus. By 2024, GAVI had vaccinated over 1 billion children and saved about 17.3 million lives.

In 2020, WHO, CEPI, and GAVI launched COVAX during COVID-19 to give all countries fair access to vaccines. COVAX reached 146 economies and delivered over 2 billion doses. Still, the pandemic showed weaknesses: many countries did not get enough doses, and global cooperation was too slow. This showed the need for stronger emergency supplies, faster coordination, and more local vaccine production.

In 2023, the Immunization Agenda 2030 (IA2030) was approved. Its goal is to make sure everyone everywhere gets the full benefits of vaccines. It focuses on stronger health systems, better supply chains, more trust in science, and active community involvement. A key idea is that each country should lead its own efforts, with outside help shaped to its needs.



Together, programs like EPI, GAVI, COVAX, and IA2030 show that the UN and WHO are committed to solving deeper problems like weak funding, poor infrastructure, and misinformation. Even though progress has been made, many poor and rural areas are still left behind. To truly reach vaccine equality, the world needs faster cooperation, steady investment, and innovation. Fixing problems in delivery, health facilities, and public trust can prevent future crises and save millions of lives.

V. POSSIBLE SOLUTIONS

1. Invest in Local Health Workforce Development.

- Train local vaccine providers and educators: Provide WHO-certified training for local health workers to deliver vaccines and lead educational programs in their native languages.

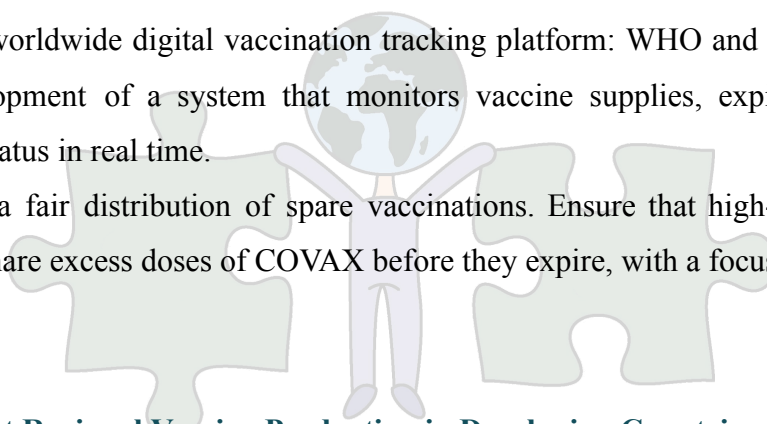
- Provide opportunities for rural deployment: Introduce financial or career incentives to attract trained health workers to serve in disadvantaged and far away regions.

2. Launch culturally suitable public trust campaigns.

- Engage with religious and community leaders. Engage trustworthy people to promote public messaging and address vaccine skepticism through culturally relevant language and tactics.
- Use local media and mobile technology: Distribute correct information via radio, SMS, and WhatsApp, particularly in places with limited literacy or internet access.

3. Improve international coordination of vaccine distribution.

- Create a worldwide digital vaccination tracking platform: WHO and UNICEF can lead the development of a system that monitors vaccine supplies, expiration dates, and delivery status in real time.
- Prioritize a fair distribution of spare vaccinations. Ensure that high-income countries agree to share excess doses of COVAX before they expire, with a focus on low-coverage areas.



4. Support Regional Vaccine Production in Developing Countries.

- Encourage technological transfer and capacity building. Facilitate collaboration between large vaccine manufacturers and underdeveloped countries to share manufacturing knowledge and enhance local capabilities.
- Offer financial and technical assistance. Use international health funding to subsidize new production facilities, assure quality control, and provide regulatory training for long-term sustainability.

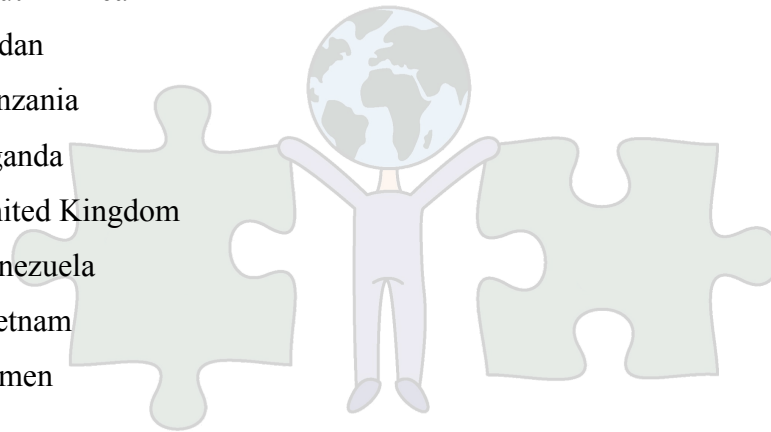
VI. Countries involved

1. Federal republic of Nigeria: has a large population and many rural areas with poor access to vaccines. It has a high numbers of unvaccinated children and works with WHO through programs like EPI and Gavi to fight diseases like polio and measles. (Centers for Disease Control and Prevention, 2023)
2. Republic of India: makes many of the world's vaccines, including for COVID-19. (Gavi, the Vaccine Alliance, n.d.) While coverage has improved, rural access and misinformation are still challenges. India is important as both a vaccine producer and user.
3. Democratic Republic of the Congo: has a weak health system and poor infrastructure. It depends on WHO support and has been a focus in campaigns against Ebola and measles.(Johns Hopkins Bloomberg School of Public Health, n.d.) It shows how conflict and logistics affect vaccines.
4. Federative republic of Brazil: produces vaccines and supports WHO efforts in South America. (The Lancet Global Health, n.d.) It still faces trust issues, especially after COVID-19 misinformation. It plays a key role in regional vaccine distribution.
5. United States of america: a major WHO and Gavi donor and has economically supported COVID-19 vaccines through COVAX. Its funding and influence help shape global health actions

Other relevant countries

6. Afghanistan
7. Bangladesh
8. Canada
9. Chad
10. China
11. Egypt

12. Ethiopia
13. France
14. Germany
15. Haiti
16. Indonesia
17. Kenya
18. Mexico
19. Nepal
20. Pakistan
21. Philippines
22. Rwanda
23. South Africa
24. Sudan
25. Tanzania
26. Uganda
27. United Kingdom
28. Venezuela
29. Vietnam
30. Yemen



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