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"COWIN: THE DIGITAL BACKBONE FOR THE COVID-19 VACCINATION PROGRAM"

IN

"INDIA"

By

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Post – Graduate Diploma in Hospital and Health Management

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PROJECT

"CoWIN: THE DIGITAL BACKBONE FOR THE COVID-19 VACCINATION PROGRAM"

IN

"INDIA"

EY, NEW DELHI

ACKNOWLEDGEMENT

Summer internship is a once in lifetime chance for learning and self-improvement. I see myself as lucky for having been provided with this opportunity to undergo my summer internship at EY, New Delhi.

I express my deepest thanks to Amit Goyal (Director, Health Consulting Strategy and Transactions at EY), Anima Rawat (Senior Associate at EY) and Medha Kaushik (Associate Consultant at EY) for taking part in useful decision & giving necessary advices and guidance. I choose this moment to acknowledge their contributions gratefully.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way and I will continue to work on their improvement, in order to attain desired career objectives.

I would like to thanks IIHMR Delhi for providing me with this opportunity and Dr. Anandhi Ramachandran (Associate Professor, IIHMR Delhi) for the guidance under her mentorship.

LIST OF ABBREVIATIONS

WHO	: World Health Organization
COWIN	: COVID-19 Vaccine Intelligence Network
SARS	: Severe Acute Respiratory Syndrome
DIVOC	: Digital Infrastructure for Verifiable Open Credentialing
AEFI	: Adverse Immunization Following Immunization
eVIN	: Electronic Vaccine Intelligence Network
API	: Application Programing Interface
SAFE-VAC	: Surveillance and Action for Events Following Vaccination
HCW	: Health Care Worker
FLW	: Front Line Worker
UIP	: Universal Immunization Program
MoHFW	: Ministry of Health and Family Welfare
GoI	: Government of India
ABDM	: Ayushman Bharat Digital Mission

Introduction

Background: The coronavirus pandemic, is a global pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In December 2019, the novel virus was first identified from an outbreak in Wuhan, China. China failed to contain it there and the virus spread to other countries and is spreading till date. WHO declared a Public Health Emergency of International Concern on 30 Jan, 2020 and a pandemic on 11 March 2020.(1). **544 million cases and 6.34 million deaths** has been reported till 18 June, 2022, which makes this pandemic deadliest in the history.(2)

Taking preventive measure is the only panacea for this pandemic. Preventive measures include social distancing, wearing mask, improving ventilation and air filtration, and isolation of those who got infected. So, vaccine for this virus was the need of hour and many countries were in the race to make an effective vaccine against corona virus. Many countries had come with their vaccines which later approved by WHO. Vaccines for COVID-19 have been approved and widely distributed in many countries since December 2020.(1)

The lockdown has been imposed to prevent spreading of novel virus and to manage all the necessary things for future but this caused social and economic disruption globally. Food shortages were caused, educational institutions were closed, misinformation circulated through social media and politically tension intensified (1). To stop the spreading of virus it is necessary to vaccinate all the population so that country can function normally same as before the pandemic i.e., reduce impact of infection, opening of educational institutions, no food shortage, no false info. Circulated etc. Because of India's 130+ crore population it's a huge task for GoI to vaccinate its entire population.

CoWIN: In late 2020, GoI initiated putting efforts for one of the world's largest vaccination programs with the aim to reduce VPDs, ease strain on the health sector and facilitate for a return to normality. The major step in this effort was the formation of the National Expert Group on Vaccine Administration for COVID-19, which has guided all aspects of vaccine introduction in India. The Indian government required an end-to-end solution that captured each step of the vaccination process to optimize resource utilization, maximize efficiency and ensure each person had access to COVID-19 vaccines. **COVID-19 Vaccine Intelligence Network (COWIN) was launched by Prime Minister Narender Modi on January 16, 2021 to achieve this goal.(3)**

CoWIN was built to serve as the technology backbone of India's COVID-19 Vaccination Program. It serves the function of registration, appointment scheduling, identify verification, vaccination and certification of each vaccinated member – encompassing end-to-end workflows required for universal vaccination coverage. CoWIN application includes five modules: the orchestration module, the vaccination cold chain module, the citizen registration module, the vaccinator module and the certificate, feedback, and adverse event following immunization reporting module. All these modules function independently from the others to minimizes dependencies across the modules and make it easier to fix technical issues. Problems have been arisen in many cases, which were solved by the technical team from time to time. CoWIN is the fastest growing tech platform in the world to amass 200 million registrations in just 4 months of being launched, 400 million in 6 months and 1 billion registrations in 12 months (4). So far, **1.96 billion** doses are administered to residents of India. Across 46,137 vaccination centers are actively engaged in the vaccination drive (5). The ticker is still counting. This mass scale health program became possible due to union of digital health platforms and on-ground service support. Besides CoWIN, **DIVOC, eVIN, DigiLocker, Aarogya Setu and other digital health platforms** were leveraged to make the vaccination drive a success. (3)

Aarogya Setu – this application proved vital for self-monitoring and tracing of COVID-19 positive individuals.

Electronic Vaccine Intelligence Network (eVIN) – which has served as a robust supply chain solution in India since 2015.

Digital Infrastructure for Vaccination Open Credentialling (DIVOC) – to support digitally verifiable certificates

Surveillance and Action for Events Following Vaccination (SAFE-VAC) - to effectively track adverse events after immunization.

What does CoWIN Do – CoWIN is a Scalable, Inclusive and Open Platform for Vaccination Program. It connects various stakeholders that ensures flawless vaccination delivery program including administrators, vaccinators, verifiers and cold storage points; public and private vaccination centers and vaccine recipients. Users can access the platform by mobile, tablet, desktop and they can use CoWIN according to their needs. Portal is now available on 12 languages including Hindi and English.

The citizen registration module enables citizens to register themselves for the vaccination either on CoWIN Portal or through other applications such as Aarogya Setu, UMANG etc. After registration, citizens have the choice to select their preferred date, time and vaccination center. CoWIN allows to register max. 6 members using one user login. People may also walk into vaccination centers, where workers can register them on the platform. Registered users receive automated text message on their registered mobile numbers with vaccination appointment information, second dose reminders and links to digital vaccination certificates. The vaccination module is used by vaccination officers, verifiers and supervisors at the vaccination centers to update the status of vaccinations. Lastly, the certificate, feedback and adverse event following immunization module helps administrators issue proof of vaccination. The module provides feedback mechanism for vaccinated people to report and fix errors. It also enables reporting of adverse events following the vaccination using SAFE-VAC, a surveillance system integrated with CoWIN.(3)

The platform is modular and interoperable. CoWIN meets needs specific to COVID-19, such as the need for portable, user-friendly proof of vaccination. Government task force s and other actors used CoWIN to build support for vaccination campaigns and allay vaccine hesitancy among the public. COWIN's developers raised awareness about the platform and helped shrink the digital divide by establishing a 24/7 toll-free helpline for citizens using the application to register for vaccination and a technical helpline for health care workers and volunteers needing immediate assistance with critical task, such as data entry. Health care workers and frontline workers traveled on foot to remote areas to administer vaccinations, with the vaccine stored in ice boxes. (3)

Objectives

- To know about the evolution of CoWIN Platform.
- To compare existing status of CoWIN with other well established digital platform in the market.
- To analyze the Vaccination status in India: dose-wise, age-wise from the starting of vaccination program to 22 June, 2021.
- To compare the vaccination status of India with global average.
- To find out Repurposing CoWIN in India - enhancing platform for more
- To identify key takeaways from the CoWIN
- To find out major issues these days related to CoWIN on Twitter.

Methodology

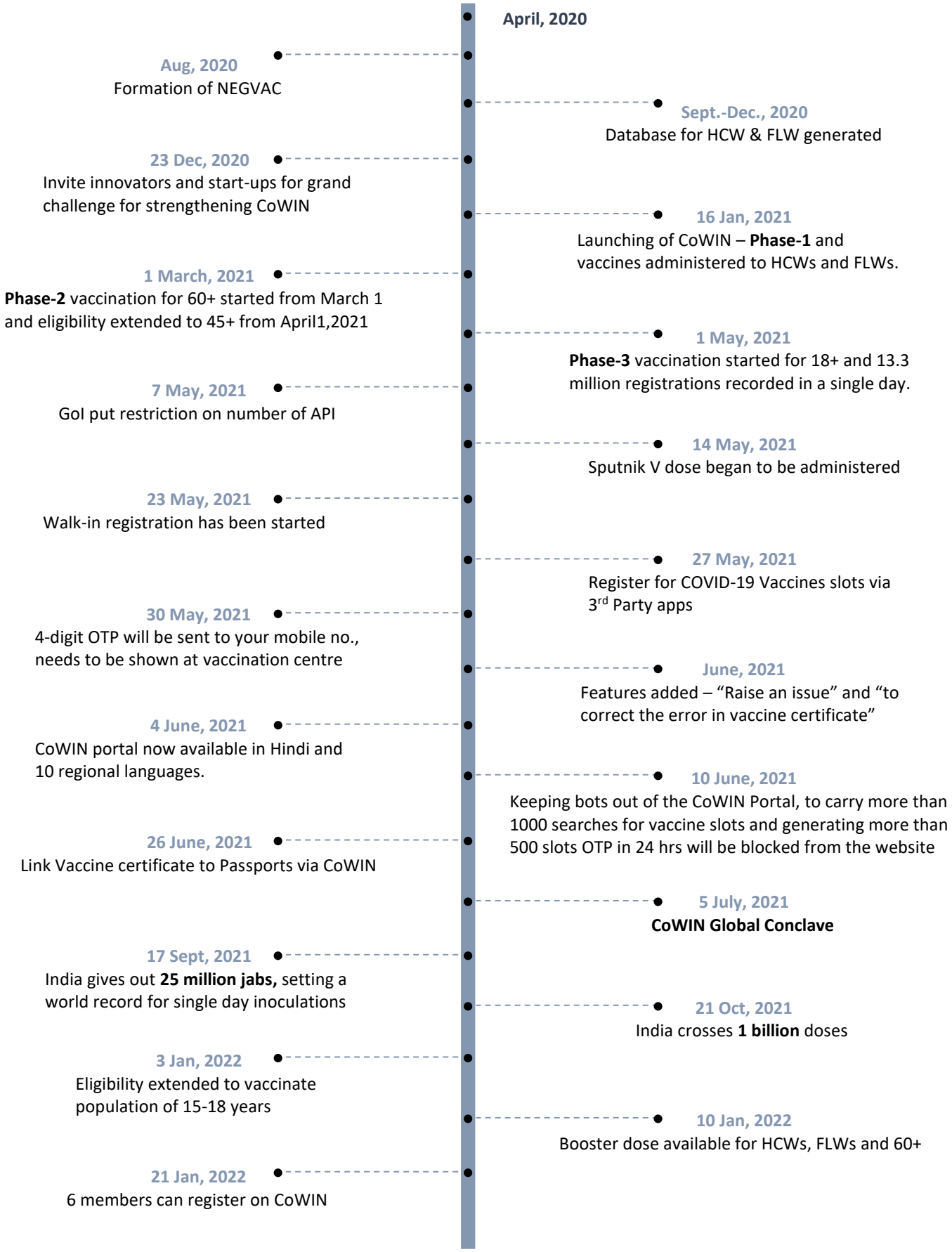
This study used the data from the Dashboard of CoWIN Platform and from Ministry of Health and Family Welfare (MoHFW) portal from 16 Jan, 2021 to 22 June, 2022. The CoWIN dashboard is publicly available on the online portal https://dashboard.cowin.gov.in/ (5) and also the MoHFW provides data publicly on https://www.mohfw.gov.in/ (6). All the data has been updated regularly on CoWIN under the stewardship of National Health Authority (NHA), Government of India (GoI), with the Ministry of Health and Family Welfare (MoHFW).

Data is regularly updated on the CoWIN platform either by users by registering themselves on CoWIN or by Health Professionals present at healthcare facilities (PHCs, CHCs etc.) Data on total registration(age-wise), total vaccinations (age-wise, dose-wise) were collected. Comparative analysis CoWIN with other digital [platforms and India's vaccination status with global average was done and data is presented as graphs and tables.

Analysis also have been done to find out repurposing CoWIN in India, to identify key takeaways from the CoWIN and to find out major issues related the CoWIN portal posted by citizens on Twitter.

Results

Evolution of CoWIN –



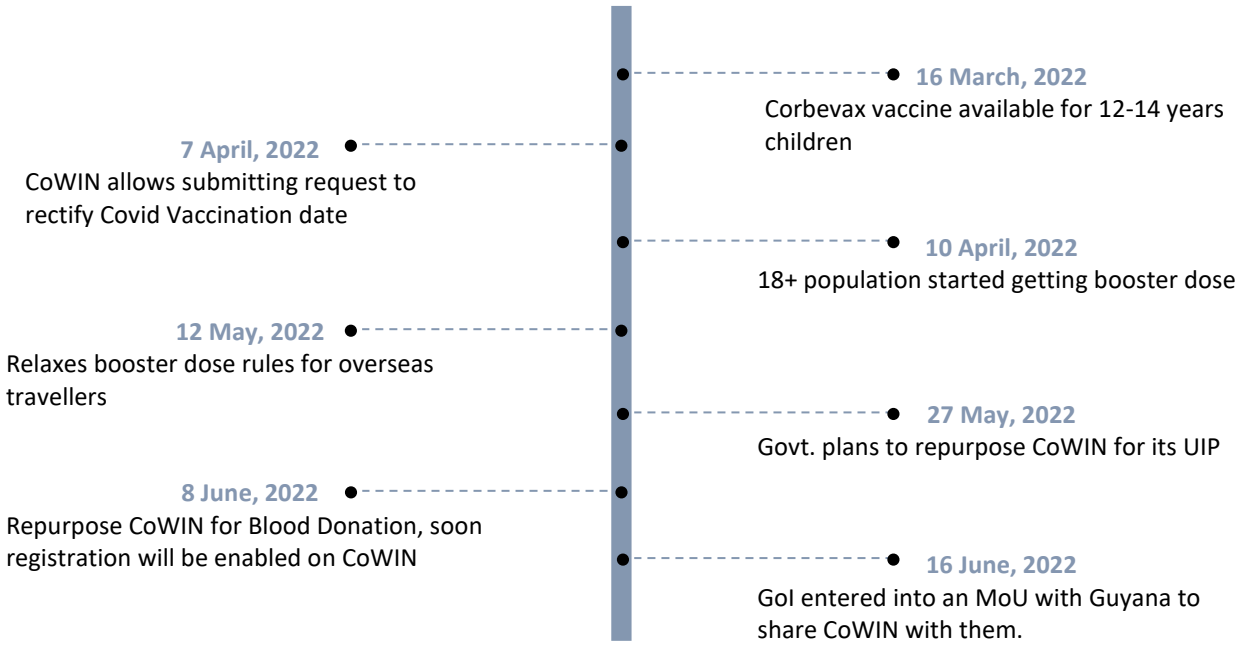


Figure 1 *Evolution of CoWIN Platform*

CoWIN Platform has been built prudently by the team, so that in future whenever it is required to add a feature, to remove a feature, to amend any feature and to fix any technical issue then tech team would be able to do all these functions effortlessly. Here, figure 1 represents the flexibility of the platform from the day of launching to till date. Figure 1 also represents journey of CoWIN to serve Indian citizens with its features, here we can see at the time of launching it seems to be very basic platform having very less features, less ways to tackle any problem but in today's date it become an advance platform which is ready for any kind of hindrance. Gradually it becomes an incredible platform. Figure 1 shows step-wise evolution of the CoWIN which is not yet stopped.

Many times, CoWIN's team made changes in the platform for the convenience of Indian citizens like – walk in registration has been started, citizens can register themselves via third party app, now citizens directly raise any question on the portal, can correct their details on the credentials, made portal available on 12 languages including Hindi and English, and many more changes have been made when they were required. Some changes have also been made by the team for their convenience and for goodness of nation. These include – introducing CoWIN globally in CoWIN Global Conclave, repurposing CoWIN to UIP, Blood Donation and other services, entered into an MoU with Guyana to share CoWIN etc. In future we can also expect other countries to accept CoWIN as many countries have shown their interest in it.

Comparing CoWIN with other Digital Platforms –

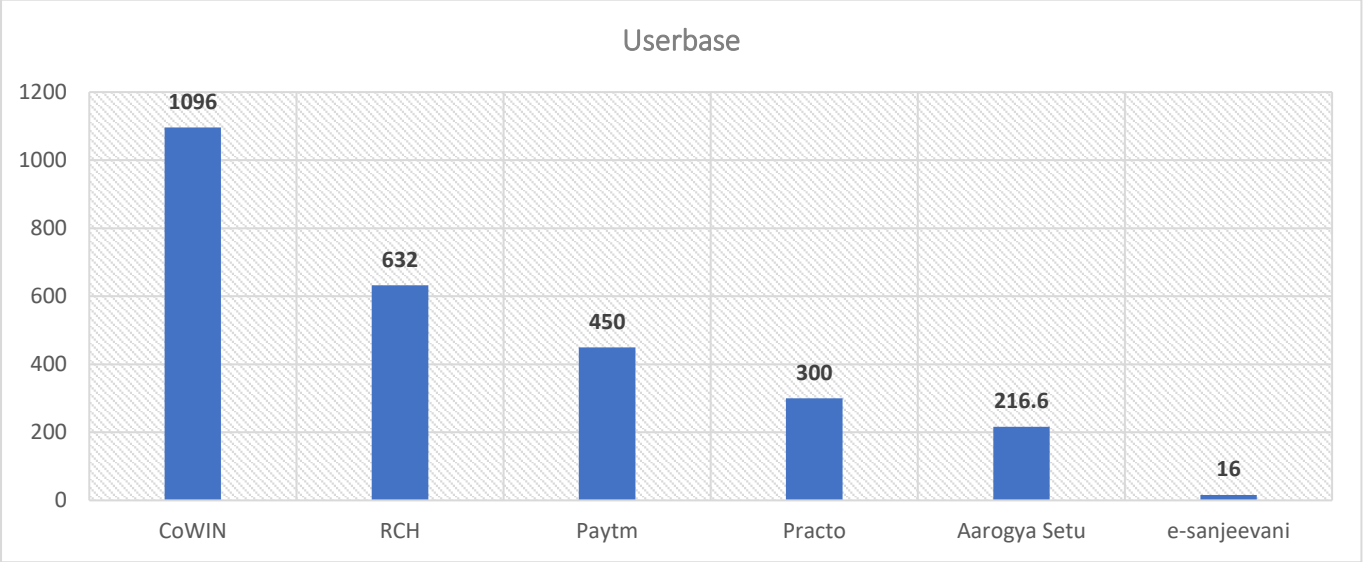


Figure 2 *Comparing Userbases of different digital platform*

Figure 2 shows that instead of new in the market, CoWIN stands at top in no. of userbase as compare to other platforms. In a short period of 1.5-year CoWIN shows an unbelievable result with 1096 million userbase (as of June 18, 2022) (5). After CoWIN, RCH has a userbase of 632 million users (7), then Paytm has a userbase of 450 million (8) which shows India has taken some steps towards digitalization. Other Health care related platforms – Practo has 300 million users (9) , Aarogya Setu which also was launched after the COVID-19 pandemic shows notable growth with 216.6 users (10) and at last Telemedicine e-sanjeevani has least no. of users i.e. 16 million (11) , these no. can be seen increasing rapidly in future after proper implementation of ABDM.

Vaccination Status in India (5) **–**

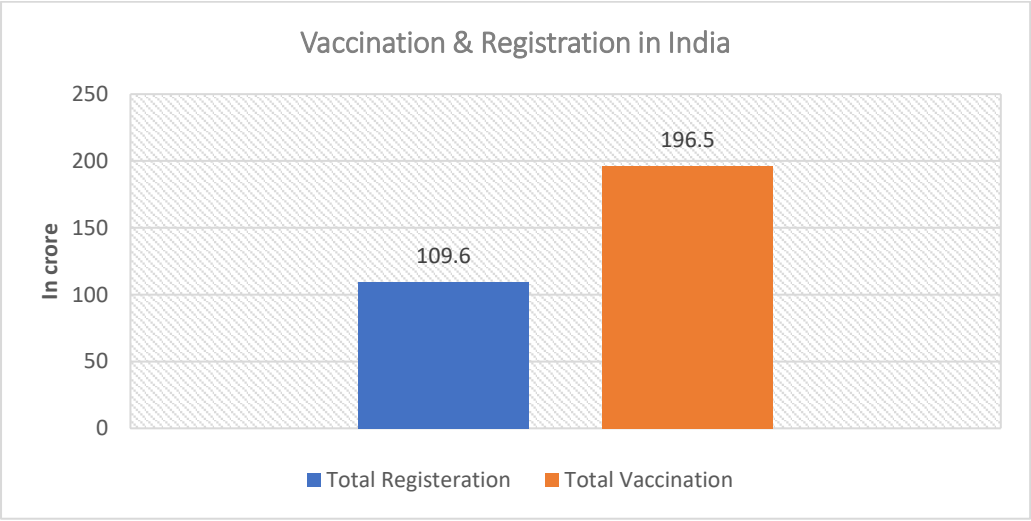


Figure 3 *Total Registration & Vaccination in India (As of 22 June, 2022)*

With the help of CoWIN, India has come as a world leader for this COVID-19 Vaccination Program. In India, 109.6 crore (fig.3) people registered themselves on CoWIN Portal for their vaccination which shows the competence of the platform. CoWIN was made user friendly by keeping in mind that everyone can use it either in rural area or in urban

area, either in English or in their regional language (12 regional languages available), register themselves either by oneself or by walk-in registration where registration is done by health professionals present at the health care facility, one can register 6 members from one user login/mobile no. which make easy registration for those who don't have smartphone in the family or known person(4). According to CoWIN Dashboard, 196.5 crore vaccines has been administered already in India, which itself is a great achievement for India. This milestone has been achieved only because of CoWIN platform. With the help of CoWIN India administered 25 million vaccines in just one day (Tweeter), this no. is the highest no. of vaccinations recorded in a day across the world in one Nation (global milestone).

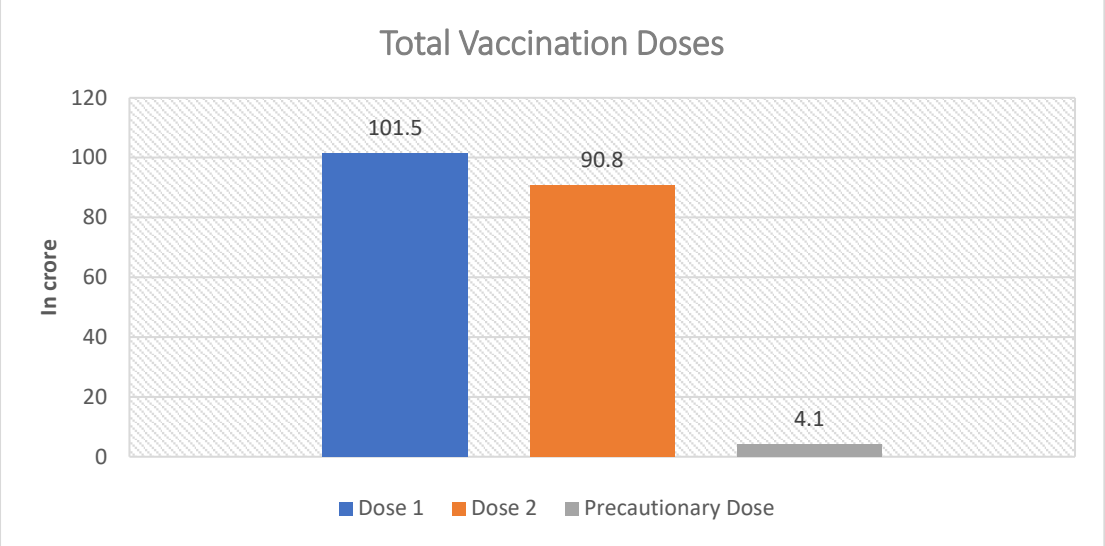


Figure 4 *Total Vaccination in India Dose-wise (As of 22 June, 2022)*

Fig. 4 shows 101.5 crore Dose-1 and 90.8 crore Dose-2 have been administered to citizens in response to the COVID-19 infection (5). Those who have taken dose-2 successfully became fully vaccinated and also get a combined certificate for both the doses as a proof which is asked at many places like – travelling overseas, in govt. office etc. (4) Government started to administering booster dose in Jan, 2022 and administered 4.1 crore till date and this no. will increase in future because no. of eligible population for booster dose will increase with time (9 months gaps is mandatory between dose-2 and precautionary dose)

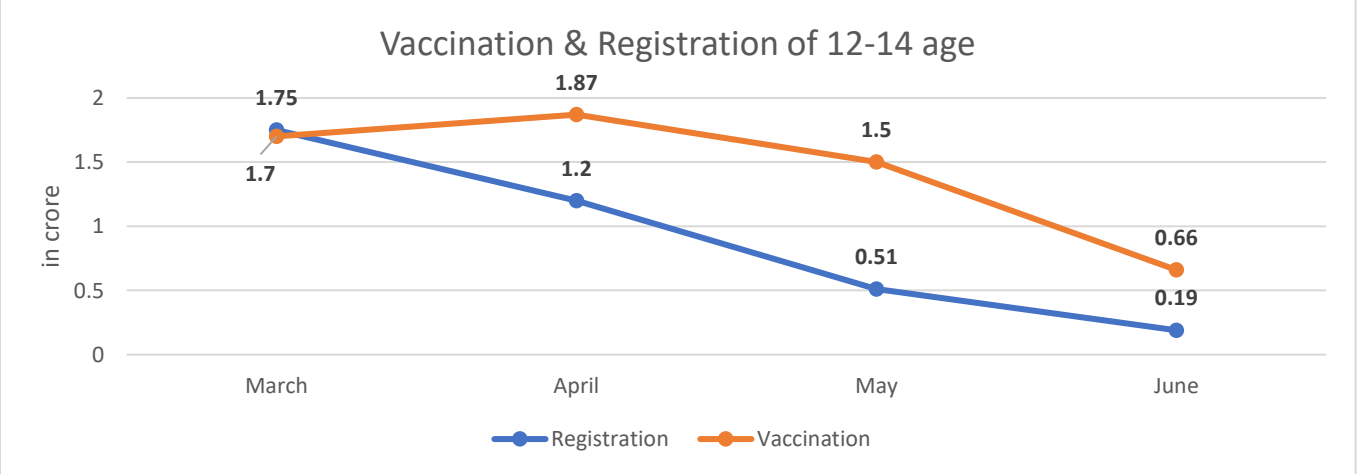


Figure 5 *Vaccination and Registration of 12-14 age group excel sheet*

Vaccination for12-14 age group has been started on 16 March, 2022 with Corbevax vaccine. Graph (fig.5) shows less no. of vaccine administered in March as compared to April, this is because in March vaccines administered only on 16 days (16 March – 31 March, 2022) while in April the same administered on whole month (30 days). Vaccine administered/day was highest in the month of March, then it started decreasing at an increasing rate from 10.9 to 6.2 lakh vaccine per day in April. 3.6 crore children (12-14 age group) got their 1st dose of vaccine till date and 2.15 crore children in same age group got their 2nd dose means got fully vaccinated. 78% children (12-14 age) got their 1st dose while 22% are remaining of this group and is need to vaccinate yet. Only 47% children (12-14 age) are fully vaccinated at present.(12)

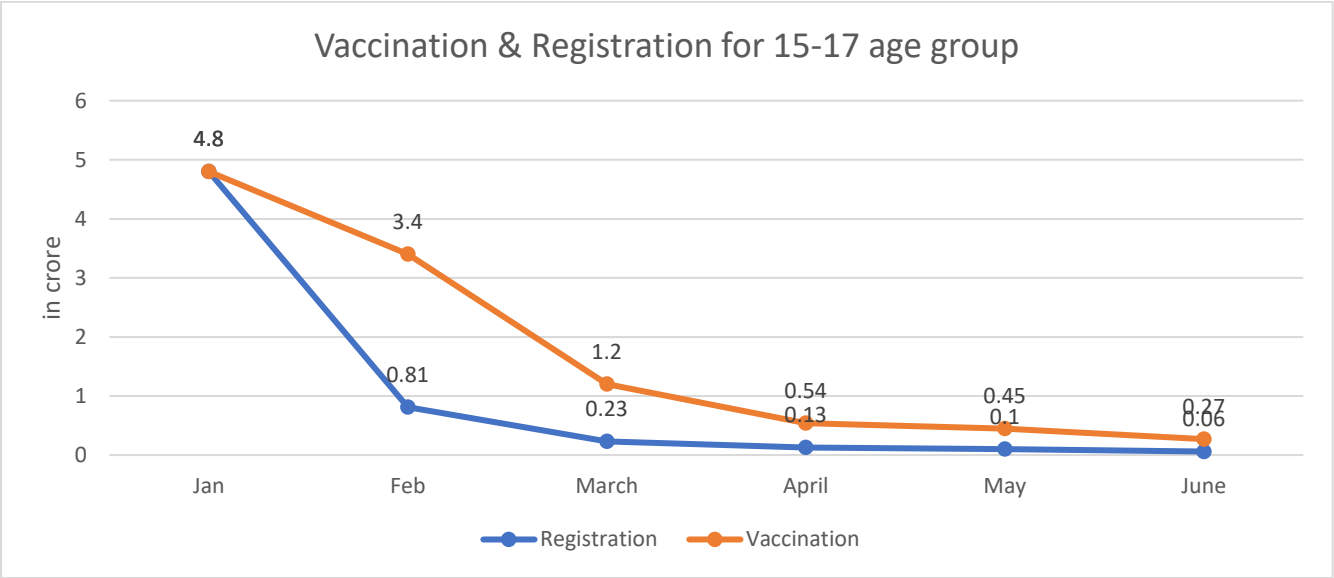


Figure 6 *Vaccination and Registration of 15-17 age group excel sheet*

Vaccination for 15-17 age group has been started on 03 Jan, 2022. Graph (fig.6) shows max registration and vaccination for 15-17 age group in its first month i.e., in Jan, 2020. After Jan, 2022 no. of registration and vaccination both reduced from 4.8 crore to 6 lakhs and 27 lakhs respectively in June. Total vaccination as well as vaccination per day for 15-17 reduces in Feb but it reduces with more rate in March and April 2022 because almost 2/3rd population of this group got vaccinated with 1st dose by mid Feb. Total Population in 15-17 age group is 7.4 crore. Total 10.7 crore vaccines have been administered to 15-17 age group till today (22 June,2022) and out of which 6 crore dose-1 has been administered to this group (15-17) and 4.7 crore dose administered to this population means 63.5% population of this group is fully vaccinated and 17.5% population is partially vaccinated. 19% population of 15-17 group is not vaccinated even with single dose.(12) According to the data, 15-17 age group shows a thumbs up for their vaccination and soon majority of them become fully vaccinated.

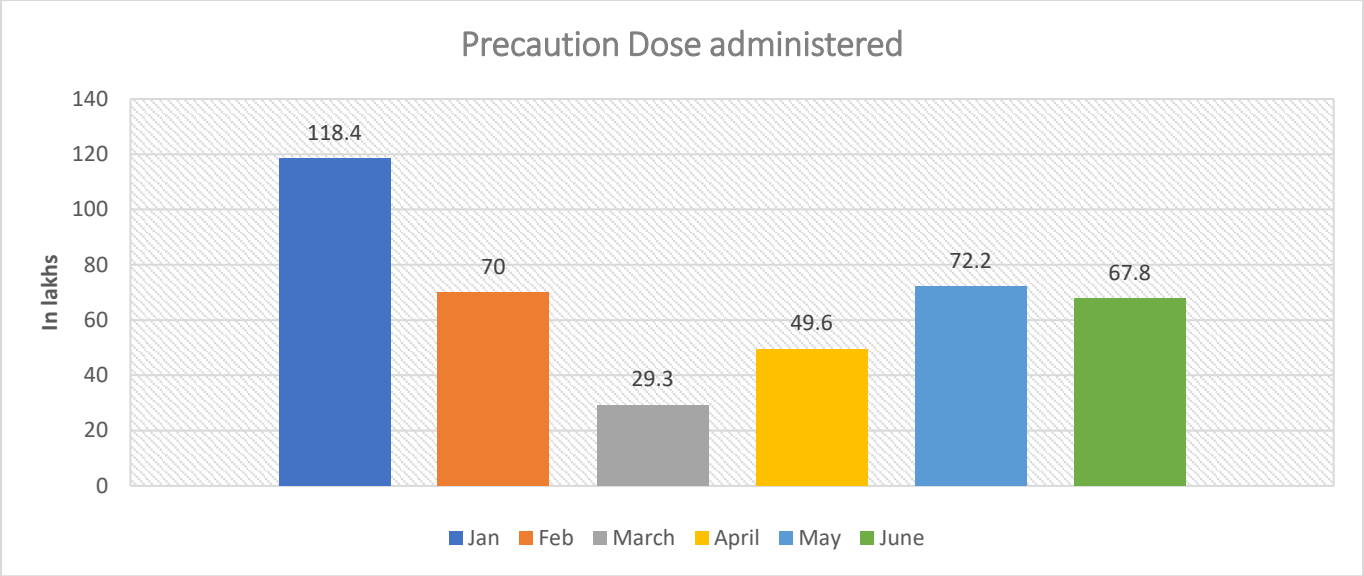


Figure 7 *Precaution dose administered month wise*

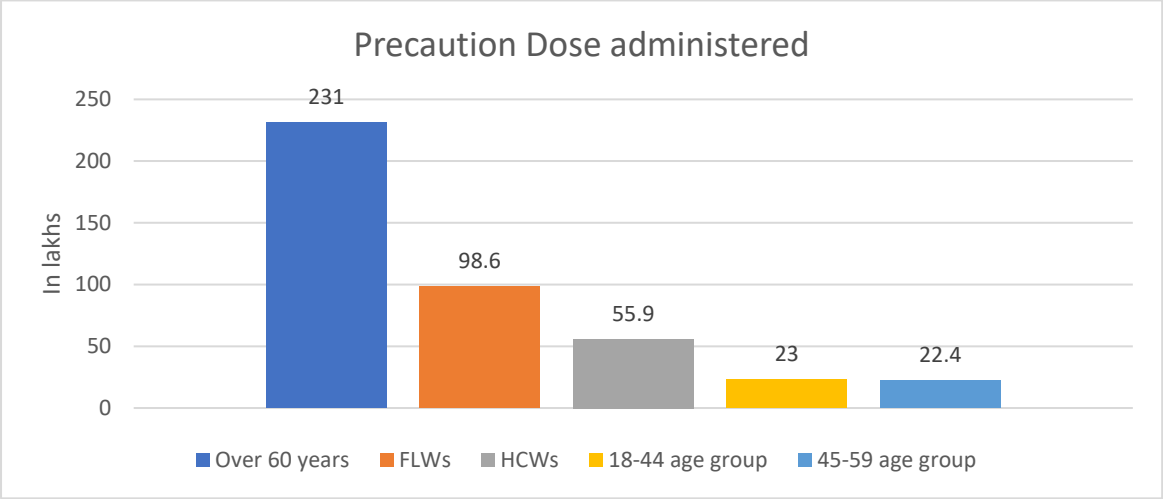


Figure 8 *Distribution of Precaution dose (*(13) *excel sheet*

On 10 Jan, 2022, GoI started administering Precaution Dose for the first time in India that's why January, 2022 shows the highest no. in the graph (fig.7). Another reason behind highest no. of Precaution dose administered in Jan is only HCWs, FLWs and 60+ aged people are allowed for it and majority of the HCWs and FLWs are educated and at high risk to get infection, so they got their precaution dose as soon as possible. According to fig.8, total 4.3 crore precaution dose administered to Indian population till 22 June, 2022 out of which 3.85 crore precaution doses have been taken by HCWs, FLWs and 60+ aged people before and only approx. 45 lakh precaution doses have been administered to 18-59 age group (12). From April 10, GoI started giving precaution dose for 18+ population and this is the reason of graphs(fig.7) shows increasing trend after March. It decreases form Jan to March as majority of eligible population got their precaution dose but from April graph shows increasing trend as no. eligible citizens increased (18+ people now eligible for it). In May GoI relaxes time period between 2nd dose and precautionary dose from 9 months to 3 months for overseas travelers, this is also a major factor to increase no. of precaution dose administered in May and June. In June No. may go higher than May because these no. is only for 22 days not for whole month.

According to the concept of 9 months gap between 2nd dose and booster dose, total population eligible for Precautionary dose is 26.1 crore while the no. of precaution dose administered is 4.3 crore which shows still a large portion of eligible population is remaining left for precaution dose i.e., approx. 22 crore. The reason behind people

not getting themselves vaccinated with booster dose are – non-availability of booster dose at many places, booster dose is paid for all except 60+, HCWs and FLWs, majority of the youth population is not eligible for it, the GoI also shows less efforts for convincing citizens for precautionary dose as it is not made mandatory for Government employers, to travel within nation, for schools and private organizations. When daily cases of COVID-19 cases increase, rate of vaccination also increases. Now the cases are not increasing that's why people are not taking precautionary dose.

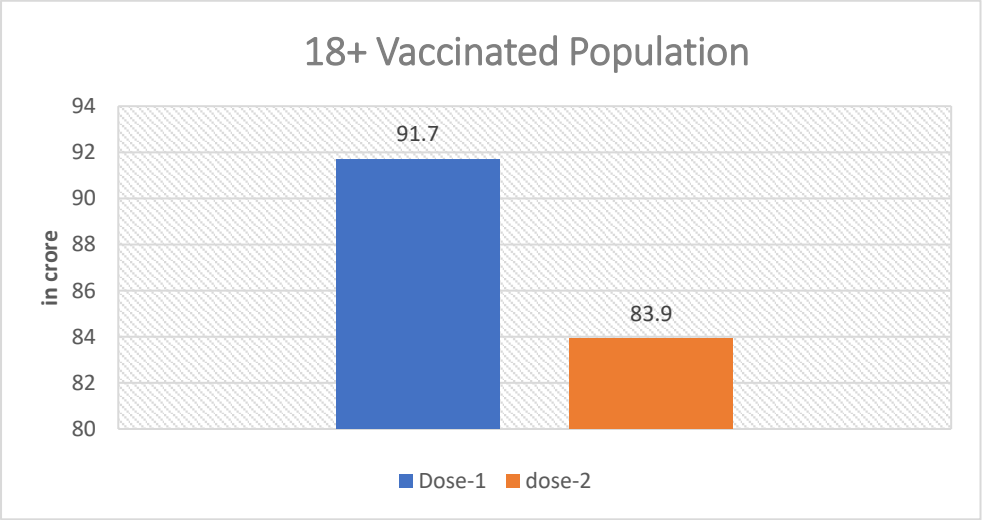


Figure 9 *Vaccination status in 18+ population*

Vaccination for HCWs, FLWs has been started from Phase-1 (16 Jan, 2021), vaccination for 45+ and 60+ has been started from Phase-2 (1 March, 2021) and vaccination for 18+ has been started from Phase-3 (1 May, 2021). As shown in fig.9, 91.7 crore dose-1 have been administered from starting to till date (22 June, 2022) and 83.9 crore dose-2 also have been administered to the same age group. 97% of the adult population is now administered with at least single dose of vaccine and 89.5% of adult population is fully vaccinated.

Indian Average of Vaccination vs Global Average (14) **–**

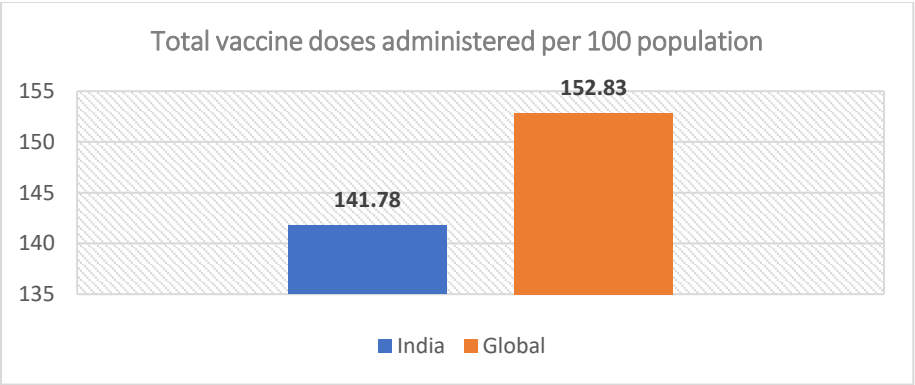


Figure 10 *Comparing India vs Global total vaccine doses administered per 100 population*

Currently India is lagging in total vaccine doses administered per 100 population with a difference pf approx. 10 doses (fig.10), but in future India will overcome this gap because in India vaccination for 12-14 age, 15-17 age and Booster dose has been administered only from last some months while in other countries it has been started earlier.

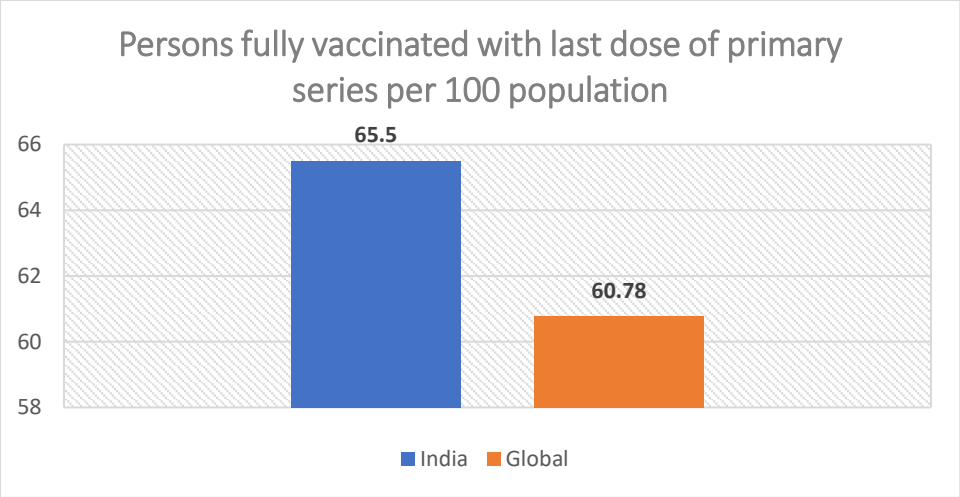


Figure 11 *comparing India with Global persons fully vaccinated with last dose of primary series per 100 population*

In fig.10 it is clearly seen that India set an example for other countries by its unbelievable results –

- 18+ = 89.5% fully vaccinated
- 15-17 age = 63.5% fully vaccinated
- 12-14 age = 47% fully vaccinated

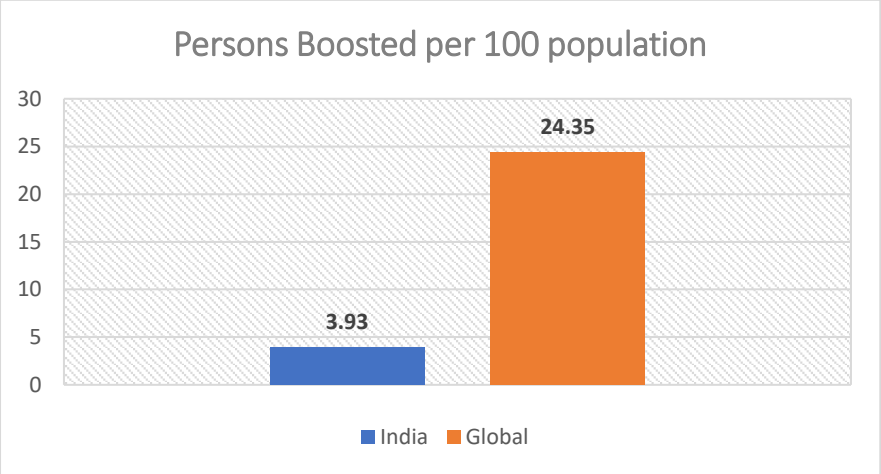


Figure 11 *Comparing India vs Global Persons Boosted per 100 population*

In fig. 11 it is clearly seen that India has only 3.93 persons boosted per 100 population which is very less than global average i.e., 24.35 boosted persons. India needs to do more work on administering precautionary dose. Now, India is providing administering booster dose for 18+ but instead of this not getting good number of vaccinations per day.

Repurposing CoWIN in India -

The GoI is planning to repurpose the CoWIN for other health related programs while continuing with its current function of recording COVID-19 vaccination and issuing certificates. Government plans to repurpose CoWIN to enhance the platform for more –

- **UIP –** The Union Government is planning to repurpose CoWIN for India's Universal Immunization Programs. A decision has been made to bring UIP under the scope of CoWIN platform. Digitize system enables easy

tracking & facilitating real-time monitoring. Instead of physical record, digital certificates will be stored in Gigi-Lockers. (15)

- **Blood Donation Platform –** Registration of volunteers for blood donation would be enable on CoWIN. Blood banks need to register on E-Raktkosh that act as blood center. Certificate generation on E-Raktkosh portal and available through Aarogya Setu.(15)
- **ABDM –** Ayushman Bharat Digital Mission, check availability of medical resources. Discover health services & products. Access & view patient's health history to health providers. HPR data is available on Dashboard.(16)
- **Organ Donation Platform –** CoWIN platform can also be seen to used for the users to register themselves for organ donation on CoWIN.

key takeaways from the CoWIN –

- **Digital Public Good –** The PM, Shri Narender Modi addressed the CoWIN Global Conclave as India offered CoWIN platform as a digital good to the world to fight against COVID-19. Recently India entered into an MoU with Guyana to share CoWIN with them. India has emerged as a global leader in building population on-scale digital public goods.
- **Digitalized Health –** The project has made presence-less (Aadhar), Paperless (eKYC, eSIGN, Digilocker) and cashless (UPI) services available for healthcare and urban governance. ABHA ID is being present on vaccine certificate and UHID will be provided.
- **Leveraging existing digital public infrastructure –** This mass scale health program became possible due to the amalgamation of digital health platforms and on-ground service support. Besides CoWIN, DIVOC, eVIN, DigiLocker, Aarogya Setu, Gavi and other digital health platforms were leveraged to make the vaccination drive a success.
- **Flexible for administrator –** CoWIN application has five modules, which functions independently from the others to minimizes dependencies across the modules and make it easier to fix technical issues. Problems arose in many cases, which were solved by the technical team from time to time.
- **People centric –** The government prioritized non-technology aspects of the platform, offering citizens and health workers the flexibility to register either online or in person. Beneficiaries are given their choice of vaccine, testing center, and appointment time and providing with the information needed to make informed decisions. Prioritizing inclusion and grievance redressals also.
- **Empowering Health Workers –** A major learning from the implementation of CoWIN is the importance of empowering the last mile worker. System is only as good as the people who operate them. eVIN and CoWIN have simple smartphone user interfaces that are easy to understand for the last mile HCWs. It allows them to record transactions, make entries, create orders and generate reports – all as part of their daily work.
- **Building Safeguards and feedback loops –** Each dose of a vaccine delivered is digitally recorded using an easily traceable and verifiable QR code - reflecting 'privacy-by-design'. Based on user feedback, the government created special measures to make vaccines more accessible to differently abled people and the elderly. CoWIN also enabled continuous tracking of AEFI to quickly respond to and track data for better policy making.
- **Integration with other already available reputed apps –** This will let developers include the CoWIN API in their own apps, providing an in-app portal to get registered for the vaccine. This will allow more integration and hence bring more convenience to people. Third party apps – Aarogya Setu, Umang, Paytm etc.

- **Transparency helps in building trust for vaccination –** CoWIN dashboard provides real time data- one can check every statistic on this dashboard regarding COVID-19 vaccination program.

Major issues these days related to CoWIN on Twitter –

Category	Issues
Correction in Certificate	Not eligible for precautionary dose because of wrong date on vaccination certificates. Substantive errors such as in Age (year of birth), CVC name, vaccination date, vaccination type, dose number and date of dose.
Appointment Issue	Portal books slot for vaccination, but hospital denies because of unavailability of vaccines.
False vaccinated info.	Not taken 2nd dose but got SMS that 2nd dose has been administered successfully.
Precautionary dose	Not available at many centers. Not available for those who had taken Sputnik vaccines. Not available for those who had taken both vaccines abroad.
Registration	Got registered by others on portal now don't know the previously registered mobile no. Got SMS that some unknown registered on my mobile no.

Discussion

To study the CoWIN Platform and its importance in COVID-19 Vaccination drive in India, data was collected from the CoWIN Dashboard, MoHFW portal and Twitter. In this review, evolution of CoWIN, Comparison of CoWIN with other platforms, Vaccination status in India, comparison of vaccination status of India with global level, repurposing CoWIN in India, takeaways from CoWIN and major issues related to CoWIN are studied. Data from CoWIN Dashboard and MoHFW portal has been collected in excel sheet and studied using clustered bar graphs.

CoWIN has evolved from its very basic version to its advance version and now GoI planning to make CoWIN portal useful for other health related services. CoWIN also act as Public good and India offers it to many countries in Global conclave 5 July, 2021 (Tweeter) Recently on 18 June,2022 India entered into an MoU with Guyana to share CoWIN as public good with them (Tweeter). CoWIN proved its competence by having highest userbase of 1096 million users within just 1.5 year.

With the help of CoWIN platform India achieved to administer 196.5 crore vaccine to their citizens which is highest of any country in the world (5). CoWIN records 20 crore registration within 4 months, 40 crore registrations within 6 months and 100 crore registration in just 12 months which makes it uncontested (4). India also claims for highest no. of vaccination recorded in a single day across world by 25 million vaccines administered on 18 Sept, 2021 (Tweeter). Out of 196.5 crore vaccines, 101.5 administered as dose-1, 90.8 administered as dose-2 and only 4.1 crore vaccine administered as booster dose (5). Vaccination for 12-14 age group has been started from 16 March, 2022 but till 78% children of this age group are vaccinated with dose-1 and 47% children of this age group is fully vaccinated 22% children are not vaccinated by any dose.

Vaccination for 15-17 age group has been started on 3 Jan, 2022 and within just 6 months it shows a remarkable result – 63.5% population of this group got fully vaccinated while 17.5% are partially vaccinated and, on

the way, to get themselves fully vaccinated. This age group (15-17) shows interest and get themselves involved in vaccination drive to achieve 100% vaccination. Withing one month, this 2/3rd population of this age group got themselves vaccinated with dose-1.

India is struggling a lot to administer booster dose to their citizens because only 4 crore doses are administered till date 22 June, 2022 (5). Out of 26.1 crore eligible population for booster dose only 4.1 crore got themselves vaccinated with it (excel sheet). Government needs to look into this matter as soon as possible and make strategies to tackle this problem. A major reason for not taking booster dose is - this dose is available for free and in govt. HCF only for HCWs, FLWs and 60+. Population between 18-59 years have to take this paid booster dose from private vaccination center that's why only 40 lakh people from this group has taken booster dose. Figure 7 shows increasing trend of no. of booster dose from May, 2022. We can hope in future it will increase with a good no. of booster dose administered/day.

India's adult population is lagging behind in taking booster dose but standing at top in taking dose-1 and dose-2. 97% adult population of India have taken their dose-1 and 89.5% adult population is fully vaccinated at present (17). India is doing good in COVID-19 vaccination drive when compared with global average expect in administering booster dose (fig.10). This area of Booster dose needs to be improved in future.

Indian Government also planning to repurpose CoWIN India for other health related programs like – UIP, Blood Donation Platform, ABDM, Organ Donation Platform. We also mentioned some key takeaways from the CoWIN which can be used by other health related platforms to improve Health access in India. These takeaways are – Digital Public Good, Digitalized health, leveraging existing digital public interface, flexible for administrator, public centric, empowering health workers, Transparency, Integration with 3rd party apps, Building safeguards and feedback loops. Also mentioned some of the major issues which general public is facing nowadays related to CoWIN portal and posted on Twitter.

Conclusion

CoWIN is a Scalable, Inclusive and Open Platform for Universal Vaccination to provide equitable vaccination at scale across 28 states and 8 UTs with 12 languages. It's dynamic architecture capable of evolving and accommodating changing circumstances, dual interface: citizen facing and vaccination administrator facing. Vaccination program was scheduled in a phased manner, different phases for different age group population. Urban as well as Rural population got benefitted by the portal. CoWIN being a public good performing good in India's covid-19 vaccination program by administering 196 crore vaccines to the citizens and in future going to uplift other health related programs. India plans to repurpose CoWIN to enhance healthcare health status in India.

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Conflict of Interest

None

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