HUMAN VACCINES & IMMUNOTHERAPEUTICS
2022, VOL. 18, NO. 1, e2016010 (7 pages)
https://doi.org/10.1080/21645515.2021.2016010

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COMMENTARY

Status of COVID-19 vaccination around South Asia

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ABSTRACT

The public health sector and the global economy are facing the challenges of the epidemic of coronavirus disease 19 (COVID-19) since December 2019. Severe acute respiratory syndrome coronavirus-2 (SARS-CoV -2) is an emerging outbreak and spreading rapidly across the globe. The COVID-19 pandemic of unprecedented proportions has devastated almost all countries and pervaded globally. However, various vaccines have been developed to achieve immunity against the virus and limit transmissibility. By 18 November 2021, 52.6% of the world population got first dose of the COVID-19 vaccine. South Asia shares 15% fully vaccinated and 22.6% partially vaccinated population in the world. The 56.5% of South Asian Association Regional Cooperation (SAARC) regions, consisting of Pakistan, Afghanistan, Bangladesh, India, Sri Lanka, Nepal, Maldives, and Bhutan, got the first shot of COVID-19 vaccine, whereas 30.5% were fully vaccinated. India has the highest percentage of the vaccinated population of about 46.5% among SAARC countries. Although South Asian countries have unstable multiple socio-economic factors, including poverty, overpopulation, low literacy about medical care and medical systems, etc., the increasing trend in vaccination status has been observed. The high percentage of health budgets of SAARC countries was utilized for purchasing COVID-19 vaccines. This report observes that South Asian countries have been significantly tackling the threats of COVID-19.

ARTICLE HISTORY
Received 20 October 2021
Revised 23 November 2021
Accepted 3 December 2021

KEYWORDS
SARS-cov-2; pandemic; SAARC; vaccines; COVAX; health budget; immunization

Introduction

The Coronavirus Disease 2019 (COVID-19) has generated considerable socio-economic jolt on the lives of individuals in South Asian Association Regional Cooperation (SAARC) regions, consisting of Pakistan, Afghanistan, Bangladesh, India, Sri Lanka, Nepal, Maldives, and Bhutan.[1] As of November 18th, 2021, the reported number of cases was 1.28 + million, and the cumulative number of deaths was more than 28.6 thousand across SAARC countries. Many countries step forward to tackle pandemics by developing vaccines against SARS-CoV-2. In order to protect public health, the U.S. Food and Drug Administration (FDA), European Medicines Agency (EMA), World Health Organization (WHO) approved the COVID-19 vaccination programs for emergency use. WHO Emergency Use Listing (EUL) approved 7 COVID-19 vaccines that include Sinovac, Sinopharm, Oxford/AstraZeneca, Covishield, Moderna, Pfizer/BioNTech, and Janssen (https://covid19.trackvaccines.org/agency/who/) and started the COVAX program. COVAX is a collaboration between the World Health Organization (WHO), the Global Alliance for Vaccines and Immunization (GAVI), the Coalition for Epidemic Preparedness Innovations (CEPI), and UNICEF, with the goal of providing equitable access to COVID-19 vaccines. By December 2020, the first mass vaccination program had been started, due to which 52.8% (4.14 billion) of the world population has received at least one dose of COVID vaccine (or 7.3 billion vaccine doses have been administered as of 18th November 2021). China shares the highest percentage of administered doses (2.4 billion doses) followed by India (1.2 billion) and U.S. (0.5 billion). On the other hand, the United Arab Emirates shares the highest percentage of fully vaccinated citizens of about 90%, followed by Singapore (88%) and Portugal (87%). The vaccination program has reduced the COVID-19 caseload in the SAARC regions, easing the lockdowns and other restrictions in the region. The governments of the South Asian countries spent a good percentage of health GDP to purchase COVID-19 vaccines from other countries. Additionally, the international funding agencies and developed countries have financially assisted the SAARC nations in vaccinating the population by donating or presenting COVID vaccines. This review aims to report the status of COVID-19 vaccination status in SAARC regions, also observing the public health infrastructure, vaccinations policies, public awareness, and attitude toward COVID-19 vaccination. The cutoff date for this review was 18 November 2021.

Afghanistan

On February 23, Afghanistan officially launched its mass COVID-19 vaccination program. A total of 4 million vaccine doses have been administered as of 14 November 2021 (Table 1). 3.5 million people (9.1%) have been administered at least one dose of the vaccine, and 3.20 (8.2%) have been fully vaccinated (Figure 1). Afghan security forces, journalists, and doctors were among those who received the vaccine in the first round. The first stage of vaccination in Afghanistan began with India's shipment of 500,000 doses of the COVISHIELD (AstraZeneca) vaccine. The government aims to vaccinate

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Table 1. The demography (population), the outbreak of COVID-19 (Total number of COVID-19 cases, deaths), vaccination status, and health GDP for vaccines in South Asia (Data: 18th November 2021).

Country	Population	Total confirmed cases of COVID-19	Total deaths	First dose of vaccination given	Population with at least one dose of the vaccine		Population fully vaccinated		Percentage of vaccinated population compared to other South Asian countries		Total health budget spending	
									At least one dose of the vaccine	Fully vaccinated	Per capita (US$)	Share GDP (%)
Afghanistan	38,928,346	156,739	7,297	22 February 2021	3,530,173*	9.1%	3,188,609*	8.2%	0.2%	0.2%	50	9.4
Bangladesh	164,689,383	1,573,214	27,934	27 January 2021	52,995,393	32.2%	33,999,865	20.6%	3.3%	2.1%	42	2.3
Bhutan	771,608	2,629	3	27 March 2021	588,307**	76.2%	559,839**	72.6%	0.04%	0.03%	103	3.1
India	1,380,004,385	34,478,517	464,623	16 January 2021	760,532,284	55.1%	388,254,602	28.1%	46.5%	23.8%	73	3.5
Maldives	540,544	90,266	248	1 February 2021	395,233	73.1%	361,635	66.9%	0.02%	0.02%	974	9.4
Nepal	29,136,808	818,307	11,489	27 January 2021	8,911,971	30.6%	7,624,038	26.2%	0.6%	0.5%	58	5.8
Pakistan	220,892,340	1,280,362	28,628	02 February 2021	78,747,199	35.6%	48,890,845	22.1%	4.8%	3%	43	3.2
Sri Lanka	21,413,249	553,722	14,057	29 January 2021	15,894,375	72.5%	13,688,710	62.5%	1%	0.8%	157	3.8
Total (SAARC region)	1,634,943,779	38,953,756	554,279	27 January 2021–27 March 2021	918,064,762	56.2%	493,379,534	30.2%	56.5%	30.5%	1500	5.0625

*14 November 2021, **31 October 2021.

20% of the country's population and has received $112 million from WHO's COVAX Program. COVAX has pledged to supply at least 16 million doses to the country. The COVAX facility intends to provide vaccines for 20% of the population, and another 28% of the population is funded by World Bank and ADB grants. The World Bank has pledged $60 million, and The Asian Development Bank (ADB) approved a $50 million grant for COVID-19 vaccination in the country. According to the government, more than $100 million was allocated for the purchase of at least 5 million doses of vaccines. COVAX shipped 468,000 doses of the COVISHIELD vaccine from the Astra Zeneca Serum Institute of India on March 8, 2021, making Afghanistan the first Central Asian country to receive the vaccine through COVAX. The European Union has also provided over 49,000 doses to Afghanistan via COVAX. France donated 144,000 coronavirus vaccine doses. Sweden donated 268,800 doses of the AstraZeneca (AZD1222) vaccine.700,000 doses Sinopharm BIBP COVID-19 vaccine was donated by China. The United States delivered 3,312,050 J&J/Janssen Single-Shot COVID-19 vaccines to Afghanistan. According to the Ministry of Public Health, Afghanistan has received a total of 5248850 doses from France, India, the U.S., and China. China will provide at least $31 million emergency aid to Afghanistan, including 3000000 vaccines, as the Taliban revealed the members of its new government. COVID-19 vaccination rates in Afghanistan have plummeted since the Taliban took over, according to UNICEF, on 25 August 2021. Moreover, the rate of vaccination decreased by 80% in the first week after the Taliban took over. This has led to concerns that doses will expire before they can be administered.

Vaccine hesitancy in Afghanistan is said to be influenced by factors such as complacency, confidence, and convenience. Afghans believe that the COVID-19 vaccine, provided to low-income countries, may be of low quality, unsafe and that they have sufficient immunity to combat the virus. The majority of people were aware that efforts were being made to develop COVID-19 vaccines. This demonstrates that the general public is interested, but they also had doubts about the availability of vaccines. Only a few people believe that the Afghan government would be able to provide the vaccine to its people during 2021. This sense of nonavailability may have played a role in hesitancy toward a vaccine.[2]

Bangladesh

Bangladesh began administering COVID-19 vaccinations on 27 January 2021. The mass vaccination started on 7 February 2021 by administering the Indian developed AstraZeneca. A total of 87 million doses of vaccine have been administered (Figure 1). Fifty-three million citizens got at least one dose of the vaccine including doses of AstraZeneca-Covishield (9.2 million), Pfizer (1.2 million), Sinopharm (39 million), Moderna (2.7 million) vaccines. Thirty-four million has been fully vaccinated with doses of AstraZeneca-Covishield (6.2 million), Pfizer (0.3 million), Sinopharm (24.5 million), and Moderna vaccine (2.6 million).

Bangladesh's government intends to vaccinate approximately 138.2 million people (80% of the population). Bangladesh receives $1.04 billion from the World Bank for

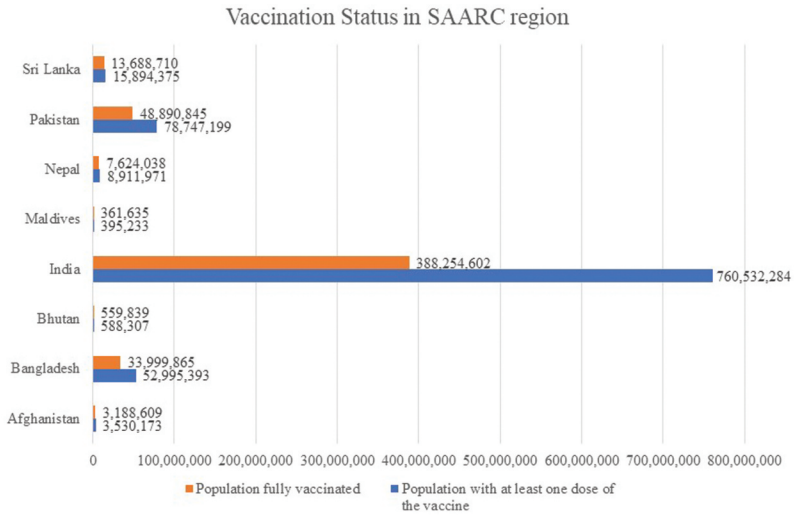

Figure 1. The comparison of vaccination status in South Asia.

vaccination and supposed to receive 68 million doses of vaccine from the COVAX facility. The WHO agreed to send vaccines to Bangladesh in phases for 40% of the country's population. Bangladesh has received 7,000,000 doses of Oxford AstraZeneca vaccine from the Serum Institute of India at $4 per shot, 3,300,000 doses as a gift from the Indian government, and 3,329,387 doses of Oxford–AstraZeneca under COVAX. Moreover, Japan has sent 30,57,780 doses of AstraZeneca through COVAX. The Bulgarian government donated 270,000 doses of the AstraZeneca vaccine to Bangladesh. China has arranged 2,100,000 doses of the Sinopharm vaccine as a gift, 3,471,600 doses through the COVAX facility, and 29,396,350 doses out of a total of 60 million at $10 per dose. Furthermore, Bangladesh has received a total of 49,429,940 vaccine doses (AstraZeneca, Sinopharm, Moderna, and Pfizer) through the COVAX facility. Under the COVAX initiative, Bangladesh has received 3.6 million more doses of the Pfizer-BioNTech vaccine. Bangladesh will receive 7.1 million doses of Pfizer (US donation) and 1.8 million doses of Moderna (regular COVAX allocation) vaccines under the COVAX facility, and these will be shipped in the last quarter of 2021.

From the beginning of the pandemic, there has been widespread, rumors, unawareness, and misinformation concerning COVID-19 among the general public in Bangladesh. Due to a lukewarm response to online registration, the Bangladesh government has reduced its plan to inoculate 3.5 million instead of 6 million people in February 2021. The government has ordered and paid for at least 30 million doses of the Oxford-AstraZeneca vaccine. Bangladesh will receive 68 million doses through the COVAX initiative led by the WHO and Gavi in installments across 2021. A substantial majority of Bengalese showed unwillingness in acceptance of COVID-19 vaccination due to concerns about the vaccine's effectiveness and doubt about its side effects. Some expressed unwillingness to vaccination because they believe they do not require the vaccination, while some are doubtful since it is coming from India.[3]

In Bangladesh, a significant rate of vaccination refusal and reluctance was observed among rural and slum populations due to poor literacy rates, low trust in the healthcare system, and low adherence to health safety regulations. The ongoing app-based registration for vaccination has raised hesitancy and reluctance in the low-educated population. Because the majority of rural inhabitants and all slum dwellers come from low socioeconomic and educational backgrounds.[4]

Bhutan

Bhutan began the first phase of the mass immunization campaign with India's donation of 500,000 AstraZeneca vaccines on 27 March 2021.[5] Within 2 weeks by 9 April 2021, 470,000 adults had received their first AstraZeneca-Oxford vaccination dose, corresponding to 60% of Bhutan's total population (Figure 1). The second-dose vaccination drive started on 20 July 2021, and Bhutan administered the second dose to 90% of adults within a week with vaccines, i.e., Sinopharm, Moderna granted by India, China, and the USA. A total of 1.15 million doses have been administered in the country, comprising 588 thousand people administered with one dose of the vaccine, and 599 thousand have been fully vaccinated (Table 1). Bhutan was generally the first country to acquire the vaccines by the government of India. The government of India gave 150,000 Covishield vaccines doses as a symbol of friendship (or Vaccine Maitri). Further, Bhutan has also received vaccines from the USA (500,000 doses of Moderna), Denmark (250,000 doses of AstraZeneca and 5,850 doses of Pfizer), China (50,000 doses of Sinopharm), Croatia, and Bulgaria (over 100,000 doses of AstraZeneca).

India

India has the second-highest confirmed cases of COVID-19 in the world after the United States and is reported as the third highest country regarding the total death cases (after the United States and Brazil). India commenced its vaccination

startup on 16 January 2021, with the AstraZeneca vaccine (Covishield) and the indigenous Covaxin. Later, Sputnik V and the Moderna vaccine were accepted for emergency use too. A total of 1.2 billion doses of vaccine had been administered (Table 1). Seven hundred and sixty million people have received at least one dose of the vaccine, and 388 million have been fully vaccinated (Figure 1).

India used two Indian-made vaccines from January to April 2021: Oxford-Covishield/AstraZeneca, which produces up to 840 million vaccines per year, and Bharat Biotech's COVAXIN, which presently produces 120 million doses per year. Through agreements with local pharmaceutical companies, Russia's Sputnik V vaccine has been given emergency use authorization since April. The vaccine's production target is up to 850 million doses per year. In India, Biological E has received approval to manufacture the J&J Covid-19 vaccine.[6] Moreover, the Ministry of Health and Family Welfare was given $10.17 billion in Union budgets between 2021 and 2022, the majority of which was allocated for the COVID-19 vaccination program. Bharat Biotech received $206.25, and the Serum Institute of India received and $412.5 million payments in advance from the Indian Government for an increase in the capacity of vaccine production.

The export agreements give a total of 66.37 million doses being deployed from India (as of 29 May 2021). India has donated 10.72 million doses to 47 countries under Vaccine Maitri Program, 35.8 million doses to 26 countries through commercial agreements, 19.86 to 48 countries under the COVAX program (https://mea.gov.in/vaccine-supply.htm). Since January 16, India has administered more than 925 million doses. More than 670 million people are partially vaccinated, and the rest 250 million are fully vaccinated. On September 17, India administered more than 20 million doses in a day. The Government of India also permitted Indian pharma company Cipla to import Modena's vaccine, which manifests 95% effectiveness against COVID-19. The government of India is expending $5 billion to supply free doses among the population. To speed up the vaccination drive, the Indian government has supplying COVID-19 vaccines by drones to people living in rural areas.

Maldives

The economy of the Maldives is largely dependent on the tourism industry, putting it at risk of importing epidemic-prone diseases. According to statistics, tourism revenues totaled 510 million Maldivian Rufiyaa (MVR) or $33 million in March 2019, providing a rough estimate of the opportunity cost of protecting the people of Maldives from COVID-19. Nonetheless, among nations with more than 10% of their exports based on tourism, the Maldives has performed far better than countries with no such reliance in terms of postponing the pandemic's arrival.[7]

A total of 762 thousand doses of vaccine had been administered (Figure 1). More than 395 thousand people have received at least one dose of the vaccine, and 361 thousand have been fully vaccinated (Table 1). Mass vaccination commenced on 1 February 2021, with 100,000 doses of AstraZeneca's Covishield vaccine donated by India. China pledge to donate 100,000 doses of the same vaccine. Moreover, India donated 100,000 more doses of the Covishield vaccine by February 20, 2021. 100,000 doses of AstraZeneca's Covishield vaccine were purchased by the government on March 6. On April 2, 2020, World Bank approved a $7.3 million financing for Maldives COVID-19 Emergency Response and Health Systems Preparedness Project. The World Bank approved additional financial aid of $21.6 million on 25 January 2021. The country predominately vaccinates 90% of its frontline tourism workers. Sinopharm vaccines were used to administer second dose, and AstraZeneca vaccines were used to administer first and second dose to all inhabitants over the age of 18. Maldives have received 12,000 doses of Oxford-AstraZeneca vaccine, developed by the Serum Institute of India, 134,550 doses of Pfizer-BioNTech vaccine, and 112,000 doses of AstraZeneca (AZD1222) vaccine (donated by Japan) through the COVAX facility.

Nepal

The government of Nepal, with the help of the World Bank Group, WHO, UNICEF, and GAVI developed an estimated cost for implementing its COVID-19 vaccination program to vaccinate up to 71.62% of the population. A total of 16.5 million doses of vaccine had been administered in Nepal (Table 1). 8.9 million people have received at least one dose of the vaccine with AstraZeneca (3 million doses), Pfizer (3220 doses), and Sinopharm (5.9 million doses). 7.62 million has been fully vaccinated with AstraZeneca (1.7 million doses), Sinopharm (4.3 million doses), and J&J/Janssen (1.5 million doses) Single-Shot COVID-19 vaccine.

COVAX has committed to providing Nepal with about 13 million COVID-19 vaccine doses, enough to cover 20% of the country's population. On March 18, 2021, the World Bank agreed with further funding for the COVID-19 Emergency Response and Health Systems Preparedness Project, providing $62.6 million funding to acquire vaccines for 12.47% of the population. The Government of Nepal and the World Bank on 2 April 2021 signed an additional financing agreement of $75 million agreement for vaccination program. Asian Development Bank proposes $165 million funding on 22 July 2021 for vaccination of 22.3% of the population. The government's COVID-19 immunization coverage has a budget shortfall of $83.41 million.

India had donated 1.1 million doses of AstraZeneca-Covishield. The government has procured 2 million doses of COVID-19 vaccines, covering 2.79% of the country's population, and has allocated $5.27 million for the immunization program's operational costs as of May 5, 2021. 1 million doses of the Covishield vaccine have been delivered out of the 2 million doses. COVAX has also provided 348,000 doses of the Covishield vaccine. As donations, the government has received 1.8 million doses from the China covering 4.04% of the population. Nepal has received a total of 13,357,590 vaccine doses so far, including AstraZeneca (4,422,740 doses), Sinopharm (7,400,000 doses), and Janssen vaccine (1,534,850 doses). Bhutan gave 230,000 doses of the AstraZeneca vaccine, whereas Japan provided 1,614,740 doses of AstraZeneca. The

United Kingdom supplied 130,000 doses of the AstraZeneca vaccine to Nepal. The U.S. has provided 1,534,850 doses of the Janssen single-shot vaccine to Nepal.

The literacy rate in Nepal is only 56.6% and the majority of people still believe in superstitions, making it easy for them to believe in myths, which could lead to people disobeying public health regulations. Nepal suffers from a weak socio-economic situation and a weak healthcare system. The out-of-pocket (OOP) model of health-care accounts for over 65% of all healthcare spending. The economy depends heavily on foreign assistance. Similarly, remittances account for one-third of GDP. Even though a significant percentage of the budget for health is assigned in the current fiscal year, more emphasis is placed on curative rather than preventive services. There were incessant political conflicts among Nepalese authorities, which not only delayed crucial COVID-19 response decisions but also reduced the people's faith and confidence.[8]

Pakistan

The COVID-19 pandemic in Pakistan has caused a considerable loss of human life and introduce an unparalleled challenge to human health. The social and economic obstructions caused by COVID-19 are destructive.[9] On 1 February 2021, Pakistan received the first doses of vaccine from neighboring country China. A total of 78.7 million Pakistanis got at least one dose of the vaccine, and ~50 million has been fully vaccinated (Table 1). On 16 March, Pakistan received 500,000 doses of Sinopharm vaccine as a donation from China. On May 28, 2021, Pakistan received 106,000 doses of the Pfizer–BioNTech vaccine through the COVAX initiative. On 9 June 2021, the Pakistani government allocated $1.1 billion for COVID-19 vaccines and already had purchased vaccines of $250 million (https://www.dawn.com/news/1628307) On August 5, 2021, the Asian Development Bank accepted and signed a $500 million loan to assist Pakistan in vaccination program. The financing would also help Pakistan's National Deployment and Vaccination Plan in the deployment of estimated 39.8 million COVID-19 vaccine doses (https://www.adb.org/news/500-million-adb-loan-procure-covid-19-vaccines-Pakistan). In March, 50,000 doses of Sputnik V were shipped for the private sector by AGP Pharma Limited, and AJM Pharma procured 10,000 doses of single-dose CanSino Bio's Chinese vaccine Convideica. As a gift, China has delivered 2 million Sinopharm vaccine doses to Pakistan. On September 1, Pakistan received 1 million doses of the Sputnik V vaccine by Russia.

The government aims for 70 million people to vaccinate by the end of 2021. On the 9th of November 2021, the highest number of vaccine doses 1.7 billion) were administered to the Pakistani population, as reported by the officials (https://twitter.com/nhsrcofficial). With the cooperation of China, Pakistan launched a locally manufactured single-dose CanSino COVID-19 vaccine on June 1, 2021. Under the supervision of Chinese experts, 118,000 doses of the Pakvac vaccine were manufactured and packed at the National Institute of Health, Islamabad. Pakistan was one of the first countries to participate in the clinical trial of the CanSino vaccine (https://www.aa.com.tr/en/asia-pacific/Pakistan-launches-locally-produced-covid-19-vaccine/2260803). Pakistan has placed orders to various companies for a total of 30 million COVID-19 vaccine doses, including Sinopharm, CanSino, and CoronaVac from China. Pakistan has received about 10.05 million Sinovac vaccine doses, 4.7 million Sinopharm vaccine doses, and 0.26 million CanSino vaccines. The United States has provided more than $50.5 million in COVID-19 assistance to Pakistan. The COVAX facility has committed 45 million doses of vaccine to Pakistan till the end of 2021. The COVAX facility will vaccinate 20% of the population. COVAX has shipped more than 18.6 million doses of COVID-19 vaccine to Pakistan, including AstraZeneca-Covishield (2,474,400 doses), Sinopharm (976,782 doses), Moderna (5,500,060 doses), and Pfizer-BioNTech (9,700,620 doses) (https://www.unicef.org/Pakistan/press-releases/covax-delivers-first-batch-10-million-doses-us-donated-pfizer-covid-19-vaccine).

In Pakistan, the COVID-19 vaccine uncertainty and skepticism are challenges surrounded by disinformation and falsehood because the vaccination perception raises grave concerns for individual compatriots. A cross-sectional study was conducted from 3 December 2020 to 14 February 2021 to measure acceptance of vaccine. Out of 5237 responses, 3679 (70.2%) accepted COVID-19 vaccination, and 1284 (24.5%) wanted to delay until more information was accessible. As it were 5.2% of health-care workers rejected being vaccinated. Vaccine acceptance was more in young (76%) and female gender (63.3%) who worked in a tertiary care hospital (51.2%) and were direct patient care providers (61.3%). The reason for rejection in females was doubtful vaccine effectiveness (31.48%), while males rejected due to prior COVID-19 exposure (42.19%) and side effects of the vaccine (33.17%).[10]

Sri Lanka

The coronavirus vaccination program began on January 29, 2021 following the delivery of 0.5 million doses of the AstraZeneca vaccines by India as the donations, and the government also purchased 500 thousand vaccines. A total of 29.6 million doses of vaccine had been administered to 50% of the population (Table 1). Sri Lanka received 27 million vaccine doses, fully vaccinating 13.7 million peoples (62.5%) (Figure 1). Sri Lanka initially received 500,000 doses of the AstraZeneca vaccine from India as a donation, and the government purchased 500,000 vaccines.

On April 12, 2021, Sri Lanka and China signed a loan agreement of 500 USD million to facilitate economic recovery following the COVID-19 pandemic's setbacks. Australia will give AUD 5.5 million to Sri Lanka as part of a new Health Security Program to assist the Sri Lankan government with its COVID-19 response. Japan has granted $16.2 million and United States has granted over $8 million to assist the government's response to the pandemic.

On 14 May 2021, Sri Lanka and the World Bank have signed an agreement of $80.5 million supplementary loans for the deployment of COVID-19 vaccines. With a total of $298.07 million, including an additional $80.5 million for vaccine assistance. The Asian Development Bank has approved a loan of $150 million to Sri Lanka for the procurement of safe and effective

COVID-19 vaccines for about 4 million people on July 10, 2021. The COVAX facility will vaccinate 20% of the population, with ancillary costs covered by a $5 million grant from the Asian Development Bank and a $380,000 grant from GAVI to establish cold storage facilities. The overall cost of vaccinating the remaining 60% of the population, approximately $139.1 million, LKR 27 billion. This cost is almost 12% of the entire budget allocated to the Ministry of Health in National Budget 2021.[11]

Sri Lanka has received EUR 22 million funding on 9 April 2020 from the European Union (EU) to combat the coronavirus pandemic. The Serum Institute of India provided 264,000 doses of Covishield-Astra Zeneca vaccines via COVAX Facility. US donated over 1.5 million doses of Moderna and over 100,000 doses of Pfizer-BioNTech COVID-19 vaccines under the COVAX. 1,455,380 doses of AstraZeneca were provided by Japan via COVAX Facility. COVAX committed to providing 8.4 million doses, which will cover 20% of the country's population. China donated 1,400,000 doses of the Sinopharm vaccine to Sri Lanka. A total of 31.7 million doses of AstraZeneca, Pfizer, Sinopharm, Moderna, and Sputnik V vaccines have been acquired by the State Pharmaceutical Corporation (SPC). Sri Lanka has received 2,719,840 AstraZeneca vaccine doses, 1,010,430 Pfizer doses, 1,500,100 Moderna doses, 330,000 Sputnik V doses and 26 million Sinopharm (US$ 15 per dose from China) vaccine doses.

To halt the spread of the COVID-19 epidemic, Sri Lankan authorities made it compulsory for citizens over the age of 30 to carry their vaccination cards in public places from September 15th. Sri Lanka has long surpassed the WHO's vaccination target, with more than half of the population (53.3%) now fully vaccinated. In September 2021, Sri Lanka seeks a $100 million loan from the International Monetary Fund (IMF) to purchase 14 million Pfizer vaccines and other vaccination-related expenditures. The majority of Sri Lankan people were concerned about vaccine brand, its side effects, or allergies, and how long they would be protected from virus.[12]

Discussion and concluding remarks

The South Asian Association of Regional Cooperation (SAARC), a regional inter-government collaboration of Nepal, Afghanistan, Bangladesh, Maldives, Bhutan, Pakistan, Sri Lanka, and India, has over 25% of the global population that is vulnerable to COVID. As compared to other SAARC regions, India shares the highest percentage of fully vaccinated population (23.8%), followed by Pakistan (3%). Since the outbreak of COVID-19, South Asia's fragile healthcare system has been considerably challenging. The situation remains alarming because SAARC country faces poverty, overpopulation, low budgetary expenditures on the health sector, poor living conditions, weak health systems, poor quality health care, and limited diagnostic capability in laboratory facilities. South Asia's inadequate healthcare system continues to face numerous challenges, obstructing the delivery of healthcare services, and activities of health-care workers have been discouraged. Moreover, the low literacy in rural areas of SAARC regions causes vaccine uncertainty in the population. The fake messages on social media disappointed citizens that COVID-19 vaccines are unsafe and cause sexual dysfunction or life-threatening disorders. But, the efforts of the government and media established great awareness about the COVID-19 vaccines to the population. Also, this was accomplished through the appropriate plan of action, solid central administration, and prudent utilization of healthcare resources. During the stratagem phase, many people were unwilling and hesitant about the COVID-19 vaccine. But the government's imparting and conveying strategy that involves presenting the basic science of vaccines to the general public, publicity of vaccines by social media influencers led to the acceptance of vaccines among the general public.

Although SAARC nations have low low-level epidemic preparedness and public health infrastructure, the mass vaccination programs in SAARC regions decrease the COVID-19 caseload and lives of the population. South Asian countries' governments spent a fair enough part of the health GDP on vaccinations. The South Asian governments aimed at disease eradication by vaccinating 80–90% of the total population. However, due to low health GDP, SAARC countries have a limited economy to finance the vaccination programs, and also health system may face hurdles in reaching the whole population.[13] Moreover, the developed countries and international funding agencies (WHO, World Bank, European Union, etc.) have also stepped forward for the financial assistance and vaccines provision of the SAARC countries. Therefore, the progress has been observed in vaccinating South Asian population due to intense efforts of international and national authorities. 56.5% of the South Asian population got at least first dose of vaccine, while 30.5% are fully vaccinated. India has 55% partially vaccinated population but fully vaccinated portion comprises approximately half (28%). Such a difference in the ratio of fully and partially vaccination may arise due to vaccine hesitancy. The government of Pakistan planned to vaccinate 70 million population by the end of 2021, however, the target was achieved earlier by 29 October 2021. The vaccination at this rate could vaccinate the majority of the population in 2022. Bhutan has the least share of vaccination in South Asia. The government of Bhutan should take action on this issue, in order to control the pandemic in the country and region. Afghanistan, Bhutan, Maldives, and Sri Lanka have approximately equal shares of fully and partially vaccination in South Asia. However, due to change in the government of Afghanistan and Taliban took over the control, it has significantly affected the vaccination drive in the country. Vaccination rates in Afghanistan remain extremely low, with ~2% of the vaccinated population, and the virus continues to have a profound impact on the lives of the country's most vulnerable children and families, who are dealing with the combined effects of the pandemic, conflict, and drought. The immunization campaign is also dealing with administrative issues and vaccine hesitancy in rural areas. The governments of South Asian regions should increase the restrictions on non-vaccinated persons to increase the rate of the vaccinated population. There is a chance that all south Asian population man not get vaccination either due to hesitancy, herd immunity, low health budget, or paid vaccine doses. Such future contemplations should be considered in SAARC region.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Ethical publication statement

'We confirm that we have read the Journal's position on issues involved in ethical publication and affirm that this report is consistent with those guidelines.

Funding

The author(s) reported there is no funding associated with the work featured in this article.

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