

COVID-19 Vaccine Acceptance in India: Early Experiences and lessons From Adult Immunization, H1N1 Pandemic and Seasonal Influenza Vaccination

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Abstract

With no definite therapeutic or preventive drug against COVID-19 virus, vaccine is critical to disrupt the pandemic. Two vaccines have received emergency use authorization in America and Europe and two vaccine in India. Indian introduced COVID-19 vaccination on January 16, 2021. Despite severe disruption of the lifestyle, socioeconomic activities and ongoing restrictions, vaccine hesitancy is anticipated. While the vaccine introduction is in progress, the vaccine hesitancy needs to be considered based on the past experiences on pandemic and adult immunization drives. The initial experiences in India has been uneven with lower performance in some progressive states. Special targeted efforts are needed to tackle the vaccine hesitancy and improve public confidence for effective implementation.

Keywords: COVID-19; Vaccine; Vaccine Acceptance.

Introduction

The emergency use authorization (EUA) of two COVID-19 vaccines in United States and Europe have raised hopes for possible containment of the pandemic in near future [1]. Riding on the significant progress in vaccine development in India, Government is preparing for COVID-19 vaccine introduction, with guidance from the National Expert Group on Vaccine Administration. The first phase, COVID-19 vaccine is being given to about 300 million beneficiaries including the health care workers (HCWs), non-health frontline workers and population at higher risk. The COVID-19 vaccination campaign and session planning draws from the experiences of polio and measles-rubella vaccination campaigns and election processes. COVID Vaccine Intelligence Network, a digitalized platform has been developed to list, document and track the vaccine beneficiaries [2]. While the vaccination campaign is in full swing, there is need to reflect on the relevant issues that might influence vaccine uptake.

COVID-19 vaccine acceptance and hesitancy

With the COVID-19 and vaccine infodemic reaching a never before status, it has risk of spreading incomplete and misinformation and fueling vaccine hesitancy. In an online survey, only 45% of the Indian health professionals were willing for vaccine in first phase, while 45% wanted to defer and 10% would never take. Also, 64% wanted to do antibody test before vaccination [3]. Community social medial platform surveys indicated that COVID vaccine hesitancy has increased from 61 to 69% between October and December 2020 among Indians [4].

In a multicounty survey reported highest hypothetical vaccine acceptance in China (88.6%) and lowest in Russia (54.8%). The acceptance among Indians was 74.5%. The significant influencer for acceptance were higher education, higher income, higher number of cases, higher mortality and trust on government, but not the self or family member COVID-19 infection status[5]. The COVID-19 vaccine acceptance among adult Americans dropped from 67-72% in May to 60% in November 2020[6, 7]. The acceptance intent increased with better vaccine efficacy, longer protection period, fewer adverse effects, full regulatory approval, domestic manufacturing and endorsements by credible bodies [8]. Majority of the respondents were apprehensive and unwilling to receive the vaccine in the first phase [7]. In Israel, the COVID-19 vaccine acceptances were 75%, 78% and 61% among general population, doctors and nurses, respectively. The vaccine safety (76%) and efficacy (13%) were the key concerns [9]. In Saudi Arabia, 64.7% adults were willing for COVID-19 vaccination and the acceptance increased with older age, higher education, non-Saudi origin, and government employment [10].

Lessons from Past Pandemic

The COVID-19 pandemic has several similarities with the influenza outbreaks in past and the lessons from them would be of interest for the COVID-19 vaccination. During the 2009-10 influenza/H1N1 pandemic, the overall global vaccine usage was 76% with wide variation across the countries. The countries received the vaccines earlier, in the first wave utilized the vaccine most (83%) compared to those received

later during the pandemic (72%) or after the pandemic (48%) [11]. The H1N1 vaccine utilization varied from 57% to 73% across regions, except the Eastern Mediterranean region (15%). In European region, the coverage varied widely (4-88%) across the countries. The observed challenges in vaccine deployment were public concerns (about safety, efficacy and necessity), refusal among HCWs and vaccine deployment after the pandemic peak [12].

During the first wave of H1N1 vaccination campaign, over 4 months, 23.9% of Americans including 33.2% of the priority groups, 34.7% of HCWs and 36.8% of the children were vaccinated [13]. In Latin American countries, the vaccine coverage among the prioritized risk groups ranged from 1% to 100% with relatively higher coverage among HCWs compared to the other beneficiaries [14]. A study from China reported H1N1 influenza vaccine coverage of 25% among the HCWs. The HCWs had concern about the safety (61%) and adequacy of testing (46%) [15]. The willingness vaccination among the HCWs during the H1N1 pandemic varied across countries; 36% in Italy, 47.9% in Hong Kong, 79.5% in Singapore and 80% in Mexico [16-19]. The actual vaccine coverage's in HCWs reported were 16.5% in Spain, 17-21.5% in Greece, 21.3% in Turkey [20-22]. The gap between intention and actual coverage reflect the perceived disease vulnerability, emotional tolerance, fear of side effects and access to vaccine.

The information from India on H1N1 vaccine utilization was limited. In Karnataka, the H1N1 vaccine utilization among HCWs increased from 37.9% in Phase-1 to 99.1% in Phase-3, over 6 months [23]. Among HCWs in Srinagar (Jammu and Kashmir), only 4.4% received the vaccine, although 80.5% were aware about the vaccine [24]. A survey in Pune (Maharashtra, India) H1N1 influenza vaccine compliance was noted in 29.8% of HCWs. The key reasons for not receiving the vaccine were low perceived disease risk, concerns about vaccine efficacy, safety and protection duration and time constraint [24-25]. The H1N1/influenza vaccine coverage was 8.3% in general public and only 15.8% were advised for vaccine by their doctor [26]. Despite availability of the H1N1 vaccine, only 12.7% of the students in Tamil Nadu (India) received it [27]. The reasons for not taking the vaccine in general public were similar to the HCWs, perceived low disease risk, adequacy of preventive measures adopted, safety concerns, lack of access and awareness and cost [26-27]. With low uptake, over 70 million H1N1 vaccine doses in United States and over 7 million doses in India were discarded [28-29].

Influenza Vaccination and Adult Immunization

Despite WHO' recommendation on influenza vaccination for high-risk populations, in 2014, 115 of the 194 countries including 32% of the low- or low-middle income countries had national, public health influenza vaccine program [30-31].

During 2019-20, 48.4% of the American adults and 80% of the HCWs received influenza vaccination, a rise by 25% from 2010 [32-33]. Between 2006 and 2017, the adult influenza vaccination decreased in Spain (from 66% to 54.9%), Netherlands (from 76% to 64%), and Italy (from 68.3% to 52%), while increased in Portugal (from 50.4% to 60.8%) [34]. A report from China reported influenza vaccination among

0.4% adult patients with chronic diseases [35].

According to reports, 24.4% of Indian adults with chronic diseases received influenza vaccination and only few (6.5%) were prescribed vaccination by doctors [36-37].

Adult immunization in India is in rudimentary shape. The tetanus and diphtheria vaccines for pregnant women, Japanese Encephalitis (JE, in select districts) and anti-rabies vaccines are the only public adult vaccination in India. Several states have hepatitis B and influenza vaccination program for the HCWs and high-risk population. There is no reliable reports on coverage of adult vaccines in India. A study reported lack of awareness (51.7%), complacency (14%), no perceived benefit (9.4%) and fear of complications or injection (8.1%) as the key reasons for no vaccination among Indian adults. The physicians (91.9%) were the primary source of adult vaccination followed by media (6.4%), pharmacy (2.7%), and family members (1.3%) [36].

COVID-19 Vaccination is Different

The COVID-19 pandemic is quite different from the H1N1 influenza pandemic in magnitude, severity, degree of disruptions, restrictions and government responses. A never before communication efforts including periodic government briefing, media publicity and vaccine development updates have been observed over last few months, which has increased the public awareness. But whether the public information and knowledge on COVID-19 translates into the vaccine acceptance, is yet to be seen. There are several unknowns regarding the virus persistence, infection seasonality, long term consequences, vaccine effectiveness and safety and sustained financing. Also the lack of clarity about the effect of vaccinating the COVID-19 infected individuals. Although India's immunization program is the largest program globally and has demonstrated experience of vaccinating large populations quickly, the experience with adult vaccination is limited. About 50% of the adults received JE vaccine during the campaign [38]. Thus, shifting the gears for COVID-19 immunization in campaign mode is not easy.

Early Experiences of COVID Vaccination in India

Till February 21, 2021, near 11million COVID-19 vaccine doses have been administered in India with first dose and second dose vaccination has started. The coverage of first dose among the HCWs/FLWs has been uneven across the states. Twelve States/Union Territories (UT) have reached 75% mark (top three states: Bihar-85%, Odisha-82%, and Gujarat-80.7%) and seven remained under 50% target (bottom three states: Tamil Nadu-47%, Delhi-44% and Punjab-38%) for the first dose [39]. The lower coverage's in the progressive states like Tamil Nadu, Delhi and Punjab are of concern. These are in alignment with the past experiences from Tamil Nadu state for pandemic vaccination or vaccination campaigns. The concerns among HCWs perception of the disease severity and continued risk, adverse events and premature usage approval.

Conclusion

The COVID-19 vaccination experience will be different from the childhood immunization campaigns. The preliminary information from some countries are potentially below the community immunity

threshold and there is uncertainty about translation of the intention into vaccination. The rudimentary adult vaccination program and concerns regarding the perceived risk and vaccine safety and access shall pose challenges for effective implementation. The COVID-19 vaccine acceptance and implementation may influence the performance of routine immunization program. As the first phase of vaccination targets the HCWs and the performance will definitely influence the subsequent phases of implementation. For ensuring vaccine uptake among HCWs, there is need to actively engage the professional associations of doctors, nurses and paramedics. For ensuring public vaccine confidence, there is need to address the concerns among beneficiaries and uncertainty through sociocultural appropriate and consistent communication across all levels, which matches with the vaccine eagerness.

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