EDITORIAL

ADVERSE EFFECTS FOLLOWING IMMUNIZATION (AEFI) OF COVID-19 VACCINES

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The coronavirus disease of 2019 (COVID-19) pandemic has severely affected every aspect of our life from 2019. Almost 705 million cases and 7 million deaths of COVID-19 have been documented worldwide. Vaccines against COVID-19 were introduced on an emergency basis in the last quarter of 2020. An estimated 13.6 billion doses of COVID-19 vaccines have been administered as on 15 May 2024 globally. An early study projected about 20 million deaths have been reduced due to vaccination from 2020 to 2021 in more than 180 countries.

The World Health Organization prequalified COVID-19 vaccines based on several promising platforms including adenovirus vector vaccines (Oxford-AstraZeneca, Sputnik V, Janssen), inactivated virus vaccines (Sinopharm BIBP, CoronaVac, Covaxin, Valneva), mRNA vaccines (Pfizer-BioNTech, Moderna), and subunit vaccines (Novavax, Sanofi-GSK). Majority of these vaccines showed moderate to high efficacy (70-85%) varying among different population. However, after initiation of vaccination, concerns about safety and effectiveness affected the global acceptance of COVID-19 vaccines and still is a burning issue.

Mass vaccination of COVID-19 started on 7 February 2021 in Bangladesh. The first authorized vaccine for emergency use was Oxford-AstraZeneca followed by Sputnik V and Sinopharm BIBP. Later, emergency use of Pfizer-PF (Comirnaty), Moderna, Sinovac, and Janssen was also approved by the government of Bangladesh. According to the WHO plan, vaccination was targeted for 70% of the total population. As of May 2024, 1st dose was administered in about 88.6% of total population followed by 2nd dose in 83.3%, 3rd dose in 48% of 2nd dose receivers, respectively. Among the seven vaccines introduced in Bangladesh, the highest number of doses were from Sinopharm BIBP (114.1 million) followed by Pfizer-BioNTech (80.6 million), Sinovac (61.3 million), AstraZeneca (56.3 million), Pfizer-PF (Comirnaty) (35.1 million), Moderna (15.8 million) and Janssen (0.6 million), respectively. Though vaccination program was started on an emergency crisis, the safety profile and long-term health effects of these vaccines were unassessed in resource limited settings like Bangladesh. Amidst the concern of assessment of side effects of COVID-19 vaccine, Oxford-AstraZeneca vaccine has been withdrawn recently due to safety concern. Both short-term and long-term side effects of COVID-19 vaccine in Bangladesh are also poorly assessed.

After the first dose of vaccination, about 97.5% (1760 of 1805) recipients experienced adverse effects. All of the adverse effects were more prevalent among the recipients of Oxford-AstraZeneca than Sinopharm BIBP. Among the Oxford-AstraZeneca recipients, pain at the injection site (95.6%) was the most prevalent effect followed by fever (78.4%), myalgia (74.8%), headache (60.4%), heaviness in the injected hand (57.7%), redness at the injection site (52%) and chills (47.9%), respectively. Recipients of Sinopharm BIBP reported different skin problems including itchy skin (83%), psoriasis (64%), and urticaria (54%) as prevalent side effects followed by pain at the injection site (54%) and hand (49%), respectively. However, thrombosis after vaccination was only reported among 3.7% of the Oxford-AstraZeneca recipients.

Local and systemic adverse effects after second dose vaccination with Oxford-AstraZeneca and Sinopharm BIBP as homogenous dose in second shot reduced by 15-25% than first dose. However, various skin problems after 6 months of the second dose increased among these vaccine recipients. Among the participants with the Moderna vaccine, the majority of the local and systemic side effects were found in the highest frequency (80-99%). Pain at the injection site (98.9%) and fever (98.9%) was the most common adverse effects among them followed by heaviness in the injected hand (96.7%), pain in the hand (95.7%), redness in the site (93.5%), and headache (91.3%), respectively. Similarly, among the Pfizer-BioNTech (70-95%) vaccine recipients, side effects were found more frequently than Oxford-AstraZeneca, Sinopharm BIBP, and Sinovac. We found around 60-80% of the second-dose recipients reported skin-related side effects including itchy skin, psoriasis, rash, and urticaria after three months. Events like thrombosis were only found among 3.5% of Oxford-AstraZeneca recipients. Around 6.3% of participants reported no side effects after the second dose of vaccination.

Side effects after the third dose of COVID-19 vaccines were reduced than the second or first dose among the participants. The recipients of Pfizer-BioNTech experienced elevated levels of local (86-100%) and systemic (60-75%) adverse effects than other vaccines. Further, the recipients of the Moderna vaccine reported elevated adverse effects; local effects (70-90%) and systemic effects (65-95%). Thrombosis persisted only among the Oxford-AstraZeneca recipients (5.7%) after the third dose. Other significant adverse effects among the recipients of vaccines included altered sleep habits, restlessness, altered allergic reactions, muscle pain, back pain, increased ophthalmic allergies, and changed memorizing ability. About 20% of third-dose recipients reported no adverse effects.

Though it was found that after vaccination of described vaccines had a number of side effects but still during the epidemic it halted the spread of Covid 19 markedly. Therefore despite the adverse effects of Covid vaccination at least saved the humanity.

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