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Protective Effect of COVID-19 Vaccine Among Health Care Workers During the Second Wave of the Pandemic in India

To the Editor: Vaccination has played a major role in eradicating communicable diseases.[1] Because health care workers (HCWs) serve in the forefront during pandemics, they are particularly vulnerable. Thus, in the coronavirus disease 2019 (COVID-19) pandemic, it was imperative to vaccinate frontline workers as quickly as possible and ascertain the extent of protection offered by vaccination.

Christian Medical College, Vellore, a 2600-bed tertiary care hospital in India with 10,600 employees, vaccinated 8991 staff (84.8%) between January 21, 2021, and April 30, 2021. Most employees (8394 [93.4%]) received Covishield, the Oxford-AstraZeneca vaccine manufactured by the Serum Institute of India, and the remainder received Covaxin, a killed virus vaccine produced by Bharat Biotech, India.

We report the incidence of symptomatic COVID-19 infection among HCWs between February 21 and May 19, 2021. Among the 1350 staff who tested positive for COVID-19 on reverse transcriptase–polymerase chain reaction, the median (interquartile range) age was 33 years (27 to 41 years); the female to male ratio was 3:2. The median time from first dose to development of infection was 77 days (62 to 89 days) and coincided with the second peak in India during April and May 2021. Thirty-three HCWs experienced infection within 2 weeks of the second dose of vaccine and were excluded from our analysis.

Among 7080 fully vaccinated HCWs, 679 (9.6%) had development of infection 47 days (34 to 58 days) after the second dose. The risk of infection among fully vaccinated HCWs was substantially lower when compared with unvaccinated HCWs (relative risk [RR], 0.35; 95% CI, 0.32 to 0.39). Similarly, vaccination with 2 doses reduced hospitalization (RR, 0.23; 95% CI, 0.16 to 0.32), need for oxygen therapy (RR, 0.08; 95% CI, 0.03 to 0.26), and intensive care unit admission (RR, 0.06; 95% CI, 0.01 to 0.27). The protective effect of vaccination in preventing infection, hospitalization, need for oxygen, and intensive care unit admission was 65%, 77%, 92%, and 96%, respectively (Table). The only staff member who died since the beginning of the second wave of the pandemic had multiple comorbidities and had not taken the vaccine.

Subgroup analysis on the efficacy of the 2 vaccines was not possible because few HCWs received Covaxin. Some HCWs (1878 [17%]) could not take the second dose, initially due to vaccine shortage and subsequently, despite

TABLE. Staff Who Contracted COVID-19 Infection[a,b]

Variable	Not vaccinated (n=1609)	Received 1 dose (n=1878)	RR[c] (95% CI)	Protective effect of 1 dose of vaccine[d]	Fully vaccinated (n=7080)[e]	RR[f] (95% CI)	Protective effect of 2 doses of vaccine[d]
Developed infection[g]	438 (27.2)	200 (10.6)	0.39 (0.34-0.46)	61% (54%-66%)	679 (9.6)	0.35 (0.32-0.39)	65% (61%-68%)
Hospitalized[g]	64 (4.0)	22 (1.2)	0.30 (0.18-0.48)	70% (52%-82%)	64 (0.9)	0.23 (0.16-0.32)	77% (68%-84%)
Needed oxygen therapy[g]	11 (0.7)	0 (0)	0.04 (0.0-0.63)	96% (37%-100%)	4 (0.06)	0.08 (0.03-0.26)	92% (74%-97%)
Needed ICU care[g]	8 (0.5)	0 (0)	0.05 (0.0-0.87)	95% (13%-100%)	2 (0.03)	0.06 (0.01-0.27)	94% (73%-99%)
Deaths	1	0	0.29 (0.01-7.0)	NC	0	0.08 (0.0-1.86)	NC

[a]COVID-19, coronavirus disease 2019; HCW, health care worker; ICU, intensive care unit; NC, not calculable; RR, relative risk.
[b]Data are presented as No. (percentage) of employees unless indicated otherwise.
[c]Comparison between nonvaccinated and 1 dose of vaccine.
[d]Protective effect calculated as (1 − RR) × 100.
[e]The fully vaccinated cohort comprised 7080 HCWs who were infected with COVID-19 at least 2-weeks after their second vaccine dose; 33 HCWs in whom infection developed prior to this period were excluded.
[f]Comparison between nonvaccinated and fully vaccinated group.
[g]Proportion needing hospitalization, oxygen therapy, or ICU admission calculated as among those who were vaccinated or unvaccinated.

vaccine availability, due to changes in guidelines on the interval between doses.

A study of 23,324 HCWs in the United Kingdom reported vaccine coverage of 89%.[2] During the 2-month follow-up, symptomatic and asymptomatic infections occurred in 80 participants (3.8%) among vaccinated and 977 (38%) among unvaccinated HCWs.[2] In a study from Jerusalem, infection occurred over 2 months in 366 (6.9%) of 5297 vaccinated HCWs and 213 of 754 unvaccinated individuals.[3] A third study of 28,184 HCWs from California found that only 37 who received 2 doses of the vaccine tested positive for COVID-19.[4] Our study corroborates the findings of these studies that vaccination is protective, although we did not look at the variants responsible for the massive second wave.

Beyond the immediate situation, implications for public health include cost-effective protection from infection, reduction of illness severity, and an intervention to break the chain of transmission effectively. Even as many states chose to restrict movement to reduce stress on the health care system, we realize that future waves can at best be prevented or at worst mitigated through aggressive and widespread vaccination.

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1. Greenwood B. The contribution of vaccination to global health: past, present and future. *Philos Trans R Soc Lond B Biol Sci*. 2014;369(1645):20130433.
2. Hall VJ, Foulkes S, Saei A, et al; SIREN Study Group. COVID-19 vaccine coverage in health-care workers in England and effectiveness of BNT162b2 mRNA vaccine against infection (SIREN): a prospective, multicentre, cohort study. *Lancet*. 2021;397(10286):1725-1735.
3. Benenson S, Oster Y, Cohen MJ, Nir-Paz R. BNT162b2 mRNA Covid-19 vaccine effectiveness among health care workers [letter]. *N Engl J Med*. 2021;384(18):1775-1777.
4. Keehner J, Horton LE, Pfeffer MA, et al. SARS-CoV2 infection after vaccination in health care workers in California [letter]. *N Engl J Med*. 2021;384(18):1774-1775.

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Changing the Culture of Tobacco Dependence Treatment Among Not Only Patients, But Also Prescribers

To the Editor: The article by Ebbert et al[1] is a crucial addition to the literature emphasizing the safety of medications for tobacco and nicotine dependence. The implications of such research are extremely important because these medications have a significant impact on the tobacco or nicotine user's chances of quitting and are recommended as standard of care.[2,3] The article discusses that many patients have misperceptions about the side effects of these treatments that lead them to avoid them.[1] However, potentially more important is the general misperceptions held by prescribers. Regardless of patient preference and despite guidelines, many prescribers will still avoid these medications in certain or all populations.[4,5] For instance, some may avoid use of varenicline in any patient with a history of behavioral health issues, while others do not feel comfortable prescribing it to any of their patients. Although the safety of these medications has been in the literature for the past half decade[6] and has been published in the most recent guidelines,[2,3] we continue to provide substandard treatment of tobacco and nicotine dependence out of fear of side effects, for which the incidence compared with placebo has been debunked.

The web of this chronic disease, whether it be defined as tobacco use disorder or nicotine dependence, intermingles itself among almost every other disease state, both acute and chronic.[7] It is one of the single most important diagnoses because successful treatment leads to less of a need for treatment of other illnesses such as stroke, peripheral artery disease, coronary disease, and many more. However, we continue to put these and other diagnoses above tobacco use disorder on the problem list, and despite the best efforts of select policy makers and electronic medical record designers, it is subsequently overlooked, ignored, and improperly managed.

The evidence provided in Ebbert et al[1] is an important piece of the complex puzzle of decreasing tobacco and nicotine use through improving prescriber's knowledge and comfort with evidence-driven and optimal care. We need to make the treatment of tobacco and nicotine dependence the disease state that providers feel most familiar with, not the least.

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