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Commentary

COVID-19 vaccine hesitancy: Lessons from Israel

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As of late April 2021, about 55% of Israeli citizens and residents, including 82% of those over 60 years, were immunized with two doses of the Pfizer-BioNTech COVID-19 vaccine (BNT162b2). The Israeli vaccination drive started soon after the Emergency Use Authorization of BNT162b2 by the FDA in the United States, and so far proved highly efficient against SARS-CoV-2 infections, including for the B.1.1.7 variant, for reducing infection and new hospitalization rates by over 50-fold within 3 months [1]. The timely COVID-19 vaccine supply in Israel, unparalleled by other countries, was possible thanks to an agreement between its government and Pfizer, according to which Israel agreed to serve as a real-world testing ground (sort of a “Phase 4” study) for the vaccine, in return for sharing with Pfizer aggregated information on COVID-19 vaccination and infection rates. However, at time of writing, details of this agreement remain undisclosed. This lack of transparency, along with the fact that Israeli citizens eligible and willing to receive COVID-19 vaccination were not offered alternative (non-mRNA based) COVID-19 vaccines, and were not asked to sign an informed consent to be vaccinated, contributed to public mistrust in the Israeli vaccination drive.

Of note, no other COVID-19 vaccines are presently available to Israeli citizens, even that the Moderna COVID-19 vaccine is stocked in Israel, and is offered to Palestinian Authority citizens with permits to work in Israel. Thanks to efficient coordination by Israel's four national healthcare providers, in which its entire population are covered by health insurance, the high COVID-19 vaccine demand was rapidly met [1,2]. Israelis over 60 years or with comorbidities putting them at higher COVID-19 risk, as well as healthcare personnel, were prioritized for vaccination, followed by teachers and later on made available (in a stepwise manner) to all citizens and residents over 16 years [1]. Unlike most developed countries, Israel is unique in having a relatively young population, with only ~ 12% of its citizens aged over 65 years, and with very few of them living in nursing homes [3]. These factors in-part explain Israel's low population-adjusted COVID-19 mortality compared with other developed countries [1,2].

However, once the BNT162b2 vaccine became available for all Israelis over 16 years, vaccine hesitancy as well as vaccine rejection

became evident, with many younger people declining vaccination in spite of massive general media campaigns and evidence for its real-world efficacy. COVID-19 vaccine hesitancy was also observed in other developed countries, mostly among younger people [4]. Vaccine hesitancy often reflects concerns about its unknown long-term effects [5], was reported to be more common among ethnic minorities [6], and was already evident prior to the first FDA approval of a COVID-19 vaccine [7].

Here, I describe some ethical and legal aspects of COVID-19 hesitancy and rejection which became apparent in Israel from February 2021, when the BNT162b2 vaccine became available to people aged under 60 years. At some point, the general Israeli media reported on low acceptance rates among Israeli teachers (who are mostly under 60 years). This led some parent groups to circulate calls for forbidding non-vaccinated teachers from teaching children and adolescents under 16 years (who, at time of writing, are not eligible for the BNT162b2 vaccine). In a step that was interpreted by the general media as an attempt to reduce vaccine hesitancy among teachers, in early March 2021 the Israeli Ministry of Education gave school principals access to online password-protected data with names of their school teachers who either recovered from COVID-19 or were already vaccinated (by at least the first dose). The official standpoint was that this step was taken for exempting such teachers from the obligatory 14-day self-isolation in case of being in touch with an individual found positive for SARS-CoV-2 in a PCR test. Israeli human-rights groups soon raised concerns that this action allows school principals to identify their non-vaccinated teachers, and coerce them to get vaccinated. One of these human-rights organizations appealed to Israel's High Court that this action is a violation of human rights. Consequently, the school principals' access to such lists was blocked (in advance of any High Court ruling on this matter).

In another controversial case, in mid-March 2021 a large Israeli food stores chain informed its employees (with a four-week advance notice) that for entering their workplace they must either present a COVID-19 recovery/vaccination certificate, or a negative COVID-19 test done during the preceding 72 h. One employee (supported by an Israeli human rights organization) appealed to the relevant Labor Court (in the town of Haifa), claiming that this action violates the Israeli Freedom of Occupation law; in late March 2021 this court ruled against the plaintiff. At time of writing, it is unknown if an appeal to a higher court (optional by Israel's

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law) will be made. Meanwhile, social media posts urged customers to prefer other food store chains.

Actions that discriminate against vaccine hesitant or resistant individuals constitute a risky ‘slippery slope’ toward further human rights violations, while their effectiveness is questionable. Coercion to get vaccinated may reduce public trust in vaccination drives, a crucial aspect for combatting the pandemic [8–9]. Moreover, while the Israeli vaccination drive demonstrated high real-world efficacy against COVID-19 [1,2], the efficacy of the BNT162b2 and other approved COVID-19 vaccines against future SARS-CoV-2 variants remain uncertain.

The lesson from these Israeli examples is that governments and public health authorities must be careful when taking steps or issuing regulations that may be perceived as coercing COVID-19 vaccination. Rather than taking steps that put pressure on vaccine hesitant or resistant individuals to agree to be vaccinated, health authorities should take steps for building public trust in approved vaccines by increased transparency on national COVID-19 infection, mortality, and vaccination rates, while minimizing actions that may infringe human privacy, autonomy, and employment. Assuring that vaccines are administered with informed consent would also be helpful for increasing public trust. Lastly, developed countries in a similar COVID-19 situation to that of Israel, where its spread has been contained following vaccination of over half their population, are urged to donate their surplus vaccines to the World Health Organization COVAX initiative, so that they may benefit the populations in developing countries [10,11]. These lessons from the rapid Israeli vaccination drive will remain timely as long as the COVID-19 pandemic is ongoing, and will definitely remain relevant also for future pandemics.

Declaration of Competing Interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- [1] [1] Shilo S, Rossman H, Segal E, 2021. Signals of hope: gauging the impact of a rapid national vaccination campaign. *Nat Rev Immunol.* 2021 Mar 12:1–2. doi: 10.1038/s41577-021-00531-0.
- [2] Mallapaty S. Vaccines are curbing COVID: Data from Israel show drop in infections. *Nature* 2021;590(7845):197. <https://doi.org/10.1038/d41586-021-00316-4>.
- [3] Clarfield AM, Jotkowitz A. Age, ageing, ageism and “age-itation” in the Age of COVID-19: rights and obligations relating to older persons in Israel as observed through the lens of medical ethics. *Isr J Health Policy Res* 2020;912(1):64. <https://doi.org/10.1186/s13584-020-00416-y>.
- [4] Murphy J, Vallières F, Bentall RP, Shevlin M, McBride O, Hartman TK, McKay R, Bennett K, Mason L, Gibson-Miller J, Levita L, Martinez AP, Stocks TVA, Karatzias T, Hyland P. Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. *Nat Commun* 2021;12(1):29. <https://doi.org/10.1038/s41467-020-20226-9>.
- [5] Punsalan MLD (2021). Fight against hesitancy: public health concern towards COVID-19 vaccine. *J Public Health (Oxf)*. 2021 Mar 18:fdab084. doi: 10.1093/pubmed/fdab084.
- [6] Razai MS, Osama T, McKechnie DGJ, Majeed A. Covid-19 vaccine hesitancy among ethnic minority groups. *BMJ* 2021;372. <https://doi.org/10.1136/bmj.n513>.
- [7] COCONEL Group (2020). A future vaccination campaign against COVID-19 at risk of vaccine hesitancy and politicisation. *Lancet Infect Dis.* 20(7):769–770. doi: 10.1016/S1473-3099(20)30426-6
- [8] J.L. Schwartz Evaluating and Deploying Covid-19 Vaccines - The Importance of Transparency, Scientific Integrity, and Public Trust *N Engl J Med.* 383 18 2020 1703 1705 10.1056/NEJMp2026393
- [9] Trogen B, Oshinsky D, Caplan A. Adverse Consequences of Rushing a SARS-CoV-2 Vaccine: Implications for Public Trust. *JAMA* 2020;323(24):2460–1. <https://doi.org/10.1001/jama.2020.8917>.
- [10] Sharma S, Kawa N, Gomber A, 2020. WHO’s allocation framework for COVAX: is it fair? *J Med Ethics.* 2021 Apr 9:medethics-2020-107152. doi: 10.1136/medethics-2020-107152.
- [11] World Health Organization COVAX website (accessed May 20, 2021). <https://www.who.int/initiatives/act-accelerator/covax>