

Vaccine Hesitancy and Society*

Benny Rochwerg

January 23, 2024

Vaccine hesitancy refers to a practice whereby individuals avoid or defer vaccinations that are available to them (Public Health Agency of Canada 2022). This arises for several reasons, including the belief that vaccines do not work and worry over potential vaccine side effects (Public Health Agency of Canada 2022). However, vaccine hesitancy is not a harmless phenomenon; for instance, during the COVID-19 pandemic, vaccine hesitancy was found to have contributed to several thousand deaths (Weeks 2023). As a result, understanding the background of this issue is critical in order to protect society from its harmful impacts.

The origins of vaccine hesitancy date back hundreds of years (Pennington 2021). For instance, there was religious opposition to the original smallpox vaccine following its creation in the late 18th century (Pennington 2021). However, one major recent contributor to vaccine hesitancy is a research study by Andrew Wakefield from 1998 (Pennington 2021).

Wakefield’s study concluded that there was a causal relationship between vaccination for measles, mumps, and rubella (MMR) and autism (Pennington 2021). In this paper, a small sample size of 12 children consisting of all but one boy was employed (Wakefield et al. 1998). This appears to limit the ability to which the findings of the research can be extrapolated to the overall human population.

In addition, the paper includes a description of the purported event that was associated with the beginning of each child’s behavioural issues (Wakefield et al. 1998). However, the paper indicates that these events, most of which are listed as “MMR”, were either “identified by parents or doctor” (Wakefield et al. 1998). This makes it impossible to determine the extent to which these events were self-reported by the children’s parents, casting further doubt on the research. For example, the behavioural issues in question may have started prior to vaccination but coincidentally became noticeable following vaccination, possibly leading these parents to believe that the vaccine caused their children’s problems. Also, Wakefield was found to have cherry-picked data and was receiving financial support from the children’s parents’ lawyers who they hired in their quest to take vaccine companies to court (Pennington 2021). This seemingly renders the paper worthless.

*All files associated with this analysis can be found here: <https://github.com/bennyrochwerg/vaccine-hesitancy-and-society/>

In 2021, Oxford University professor Amia Srinivasan stated that “I think we should be suspicious when we find ourselves attracted to data—very, very thin and weak data—that seem to justify beliefs that have held great currency in lots of societies throughout history, in a way that is conducive to the oppression of large segments of the population” (Cowen 2021). This quote is especially relevant to the dataset used in the Wakefield paper (Wakefield et al. 1998). Namely, the dataset was extremely minimal (for instance, there were only 12 participants), and the paper itself acknowledges that “We did not prove an association between measles, mumps, and rubella vaccine and the syndrome described” (Wakefield et al. 1998). Despite this, Wakefield’s results were followed by an observable decline in vaccination uptake in the United Kingdom (Pennington 2021), indicating that this small dataset had an outsized impact on the population. This led to thousands of measles cases and a number of deaths from the disease during a 20-year period of lower vaccination uptake in the United Kingdom (Pennington 2021), clearly contributing to the oppression of innocent individuals in society.

Moreover, D’Ignazio and Klein (2020) point out that “numbers [...] cannot speak for themselves” and that “when those numbers derive from a data setting influenced by differentials of power, or by misaligned collection incentives (read: pretty much all data settings), and especially when the numbers have to do with human beings or their behavior, then they run the risk not only of being arrogantly grandiose and empirically wrong, but also of doing real harm in their reinforcement of an unjust status quo”. This is especially true for the Wakefield paper. Namely, the data collection process for the paper by Wakefield et al. (1998) was undertaken in order to support legal action against the companies who made the vaccine (Deer 2011), not in pursuit of scientific understanding, ultimately resulting in misinformation that has harmed many individuals in our society (Pennington 2021).

Overall, vaccine hesitancy has contributed to societal harm. This has been bolstered by a dataset within a paper by Wakefield et al. (1998), which suggested the presence of a link between the MMR vaccine and autism. Ultimately, this underscores a need for greater scientific literacy among the general public as well as among media organizations to prevent this type of dangerous misinformation from taking hold in society in the future. Additional research should be performed to determine practices that would assist with the achievement of this objective.

References

- Cowen, Tyler. 2021. “Amia Srinivasan on Utopian Feminism (Ep. 132).” *Conversations with Tyler*, September. <https://conversationswithtyler.com/episodes/amia-srinivasan/>.
- D’Ignazio, Catherine, and Lauren Klein. 2020. *Data Feminism*. Massachusetts: The MIT Press. <https://data-feminism.mitpress.mit.edu/>.
- Deer, Brian. 2011. “How the Case Against the MMR Vaccine Was Fixed.” *BMJ* 342. <https://doi.org/10.1136/bmj.c5347>.
- Pennington, Matthew. 2021. “History of Vaccine Hesitancy.” *Charles River Laboratories*, July. <https://www.criver.com/eureka/history-vaccine-hesitancy>.
- Public Health Agency of Canada. 2022. “Vaccine Hesitancy in Canadian Parents.” *Government of Canada*, April. <https://www.canada.ca/en/public-health/services/publications/healthy-living/vaccine-hesitancy-canadian-parents.html>.
- Wakefield, A J, S H Murch, A Anthony, J Linnell, D M Casson, M Malik, M Berelowitz, et al. 1998. “RETRACTED: Ileal-Lymphoid-Nodular Hyperplasia, Non-Specific Colitis, and Pervasive Developmental Disorder in Children.” *The Lancet* 351 (9103): 637–41. [https://doi.org/10.1016/S0140-6736\(97\)11096-0](https://doi.org/10.1016/S0140-6736(97)11096-0).
- Weeks, Carly. 2023. “Vaccine Hesitancy, COVID Conspiracies Led to Thousands of Deaths, High Cost for Health Care System, Report Finds.” *The Globe and Mail*, January. <https://www.theglobeandmail.com/canada/article-report-the-high-human-cost-of-misinformation/>.