

## Editorial

# The Birth of Epidemiological Public Health Ethics

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## Introduction

Before stepping down as Professor at the University of Tokyo, I would like to introduce a new research area that I have developed an interest in through my activities at the CBEL and BICRO.

In collaboration with Drs. Komada, Lee and Watanabe at Tokyo University of Health Sciences, we published an article on December 13, 2022 in a high ranking, peer-reviewed journal *Vaccine: X* (Public Health, Environmental and Occupational Health: Q1, Elsevier) [1].

This study was based on a secondary analysis of data from an original health questionnaire survey of 5,002 participants randomly selected from approximately 100,000 local residents aged 20–79 years living in the Tohoku region. The original study was conducted in 2011 **after** the H1N1 influenza pandemic in 2010 and **before** the COVID-19 pandemic in 2019. The results showed that among those aged 20–64 (about 3,000 people), those who interacted with five or more people in their neighborhood were about 1.4 times more likely to be vaccinated against influenza than those who interacted with four or fewer people (relevant confounding factors were adjusted, such as gender and education). We found that the issue of interaction was independently significant, regardless of other factors. Those who interacted more with others were significantly more likely to

be vaccinated against influenza than those who interacted less.

This paper has been nominated for a 2023 *International Research Awards on Pediatrics, Perinatology and Child Health*.

## Discussion

What can we infer from the fact that contact with a large number of people is associated with higher voluntary vaccination rates? After considering conventional interpretations of the data, I felt something was missing in terms of the analysis.

I stepped outside conventional epidemiological reasoning to account for the results. The study showed that those who had more contact with others on a daily basis were significantly more likely to receive the influenza vaccine than those who had less contact. The standard interpretation might be as follows: people decided to be vaccinated 1) for their own self-protection, and 2) that people who have considerable contact with others have a lot of information to exchange. However, we further considered the possibility that, 3) people act to avoid spreading the infection to others; that is, a motivation based upon altruism.

The statistical analysis showed that there were many other significant factors. However, our interpretation of 3) strongly resonated with the reviewers and editors of

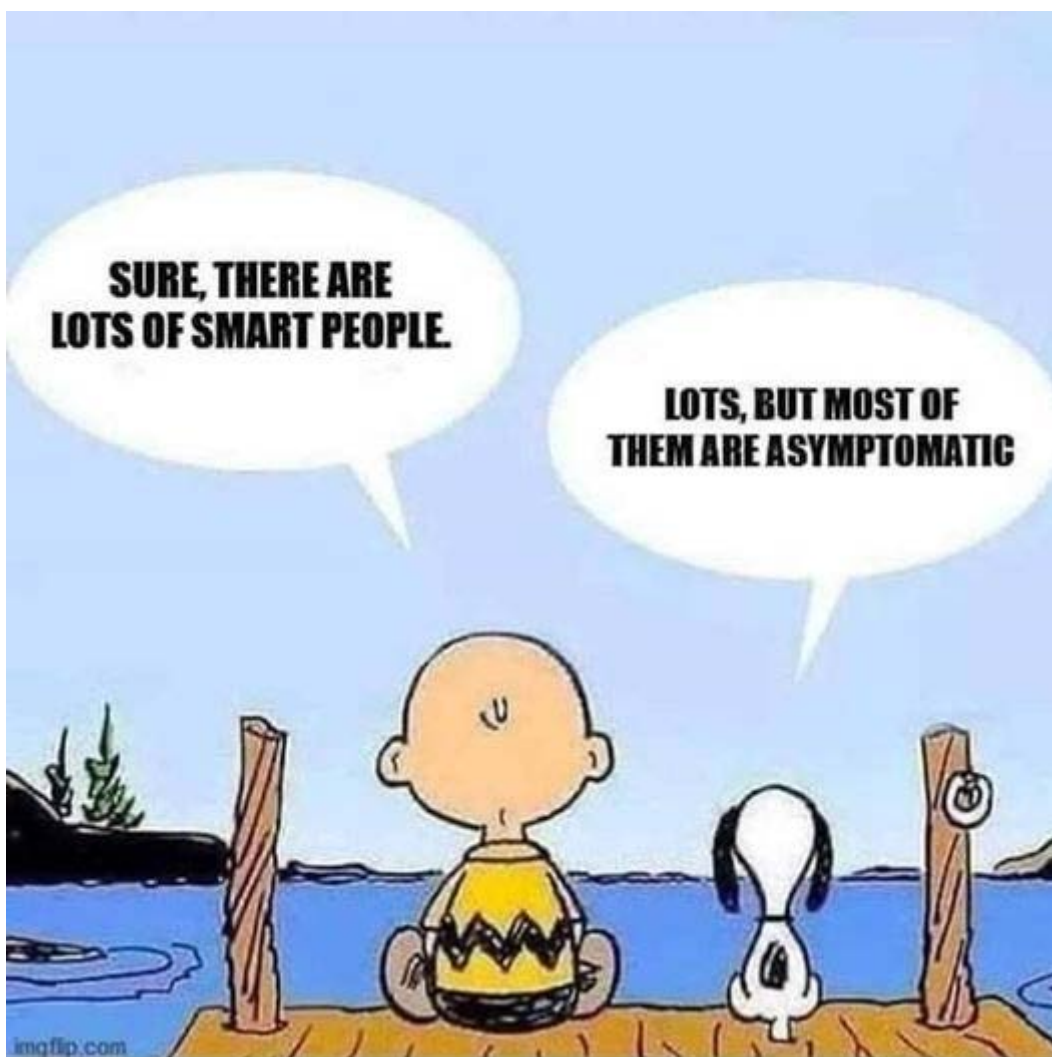
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*Vaccine X*, and it seems that this paper was accepted precisely because of this innovative thinking. In this way, the possibility of the **existence of** Japanese altruistic behavior was demonstrated for the first time from an unbiased secondary data analysis.

The social situation when this paper was accepted for publication was such that although the pandemic had subsided, on January 6, 2023 the number of deaths reached a record high of **498**, and the number of seriously affected also increased to **659** [2]. The number of deaths alone had soared to 228 (12/9/2022), 259 (12/16/2022), 315 (12/23/2022), and 326 (12/30/2022)

[2]. However, vaccination coverage against the Omicron strain is still only at 36% (as of January 7, 2023) [3]. It is well known that healthy people and children are often mildly ill or asymptomatic when infected with the Omicron strain of COVID-19, and the public knows this. Nonetheless some healthy people and children are not willing to be vaccinated fearing adverse side-effects. However, there is a risk that such people may become vectors of infections and transmit them to **the elderly or patients with weakened immunity**.



So, I summarize the paper [1] as follows:

*Even after eliminating various factors, the presence or absence of opportunities to come into contact with many people is related to vaccination rates. We have found the **possibility** that the Japanese may act altruistically (for the sake of others) for the first time, based on the unbiased analysis of data.*

What makes our work **groundbreaking** is that, until now, core concepts in the humanities and social sciences were primarily philosophically based, and that there were few scientific methods to support their existence. For example, how can we investigate whether concepts such as "kindness" or "good will" really exist in a material way? For example, suppose we asked the question, "Are you kind?" respondents may then misrepresent themselves and give the answer that society expects. It does not prove that the concept of kindness really exists or that kind acts are performed, or indeed, what the motivation for them is.

We have found that, at least in the context of vaccination, people who frequently come into contact with others may be doing so for self-protection, but they may also be doing so for the sake of others' wellbeing and this may be reflected in their behavior. The results were the first to be analyzed in a manner that does not rely on subjective self-assessment, but rather through the use of rigorous statistical analyses.

In the field of public health, ethics has been actively studied for more than 20 years. Public health ethics has often been viewed as a conflict between "individual liberty" – which is only limited by John Stuart Mill's

"harm to others" principle, and "the public good." However, the concept of the public good is very vague. During the COVID-19 pandemic, this core concept of public health ethics was not well known in Japan.

I would like to reiterate that as a breakthrough in academic methodology that quantitative results from unbiased data supports the possibility that altruism motivates decision making in Japanese people.

One of the strengths of CBEL and BICRO is that we can ask other fields' experts about the validity of the interpretation of these results. I asked a well-known epidemiologist. He said: "We epidemiologists can't write this much, but if it is a "possibility," as Dr. Akabayashi says, it is well understood. Also, the bias is certainly reducing."

New academic endeavors may seem to go out on a limb. However, change cannot come without risk. This study is not a hypothesis-proving study, but rather an exploratory one. However, for an exploratory study, I think the results are of interest.

There are many discussions about the characteristics of Japanese altruism, which are related to the concepts of gift exchange and volunteerism. It is said that Japanese altruism is "altruism that seeks reward," which is different from altruism that offers something for free. Also, Japanese altruism may include the family-oriented attitudes, through which all that is good for the family unit is in itself good, and that vaccination is accepted because people do not want their family members to be infected. This issue of family is also discussed in the article concerning the low number of brain-dead donors in Japan [4]. My colleagues and I are now conducting further enquiry into philosophical and public health ethics considerations regarding the Japanese concept of

altruism.

I hope that this emerging methodology, "**Epidemiological Public Health Ethics**," which integrates epidemiological statistical methods with public health ethical analysis, will lead to the development of a new, powerful research methodology that **integrates the humanities and sciences**.

### Directions for the Future

Finally, I would like to address some specific suggestions for vaccine policy in practice.

I believe that this paper has significant implications for the future of infectious diseases in Japan and for public health ethics regarding vaccination. I believe that healthy people and children are now strongly encouraged to be vaccinated with Omicron strain-compatible vaccines as well as to mask wearing. To this end, it would be effective for public health promotion to include a personal message, such as "It protects you and prevents the spread of infection to others," when calling for vaccination, rather than merely expressing abstract concepts such as the public good and self-protection [5]. This will be same in mask wearing discussion [6]

Finally, questions arise regarding the economic effect of vaccination. If there was a vaccine shortage, there would be an issue of who should be vaccinated. However, currently there is no such shortage. There remains the issue of pressure on medical costs — comparing the cost of 500 deaths and 650 seriously injured people every day (entailing ICU maintenance, lack of medical personnel and the enormous medical costs of not knowing how long this situation will continue), to vaccinating at least the remaining 60% of the population. Would the health care cost crisis really be reduced by requiring a

co-payment for vaccination? For those without money (often the elderly and sick, or people with other vulnerabilities) the co-payment of vaccines would affect their standard of living. Consequently, social disparities would widen.

In conclusion, I believe that the Japanese people are at heart altruistic, and that if sufficient explanations are given, the number of people being vaccinated will increase.

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