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RESEARCH PAPER

Retraction of scientific papers: the case of vaccine research

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ABSTRACT

The controversy over vaccines, which has recently intensified following the COVID-19 pandemic, provokes heated debates, with both advocates and opponents raising allegations of bias and fraud in research. Researchers whose work raises doubts about the safety of certain vaccines claim to be victims of discriminatory treatment aimed at suppressing dissent, including the unjustified retraction of their published research. Such practices have previously been discussed in other controversial fields in science (e.g., AIDS, the environment, and water fluoridation) but not in the field of vaccines. The purpose of this study was to analyze, for the first time, the subjective views of researchers whose papers were retracted. Study participants are active researchers, most with international reputations in their respective fields. They perceived retraction as a means of censoring and silencing critical voices with the aim of preserving the pro-vaccination agenda of interested parties. Participants also reported additional measures aimed at harming them personally and professionally. These findings point to the need for a fair, open, and honest discourse about the safety of vaccines for the benefit of public health and the restoration of trust in science and medicine.

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Introduction

The public debate over vaccination is one of the most polarized controversies in medicine (Bragazzi et al., 2017; Johnston, 2004), with both advocates and opponents raising allegations of conflicts of interest, research fraud and harm to public health. The history of vaccine development abounds with heroic stories about visionaries who paved the way for the eradication of many infectious diseases. However, it also presents, almost from the beginning, evidence of immoral and unethical experiments, such as misusing orphans and prisoners as research subjects (Gesser-Edelsburg & Shir-Raz, 2016). Furthermore, a number of authors have documented fraud and criminality in the pharmaceutical industry, including vaccine research and development, driven by economic considerations (e.g., Cernic, 2018; Doshi, 2013; Dukes et al., 2014; Elliott, 2010; Ferner, 2005; Gøtzsche, 2013, 2020; Habakus & Holland, 2012; Holland et al., 2018; Posner, 2020).

According to some scholars, questionable practices have been employed to silence dissents in controversial fields, such as AIDS, environmental studies, and fluoridation (e.g., Delborne, 2016; Kuehn, 2004; Martin, 1981, 1991, 1996). Retracting papers that indicate safety problems with vaccines can be understood similarly as a silencing practice (Martin, 2015; Vernon, 2017).

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The purpose of this study is to examine this issue from the subjective perspective of researchers whose papers pointing to possible safety problems with vaccines were retracted. It should be emphasized that we do not intend to explore the medical aspects nor to advocate any position about vaccine safety.

The debate over vaccines and the suppression of vaccine dissent

Vaccines are generally viewed as safe, effective, and essential for reducing the prevalence of mortality from infectious diseases, while adverse reactions are considered exceedingly rare and marginal (Andre et al., 2008; Offit, 2010). This position has been adopted by most health authorities and physicians and is authoritatively claimed to be beyond scientific debate. Nevertheless, there are physicians, scientists, journalists, and citizens who raise questions about the safety of vaccines and their components, such as aluminum (e.g., Bragazzi et al., 2017; Doshi, 2013; Gøtzsche, 2020; Halvorsen, 2007; Palmer, 2019). Others point to methodological flaws and even fraud in clinical trials of vaccine safety (Holland et al., 2018).

The removal from the market of the first routine immunization for Rota virus intensified the debate, with vaccine opponents pointing to this as another example of the potential risks of vaccines (Glass et al., 2004). Recently, the Philippine Department of Justice filed criminal charges against health and regulatory officials and officials of Sanofi Pasteur for 'reckless imprudence resulting in homicide' following the deaths of many children in the Philippines due to the Dengue virus vaccine Dengvaxia, which was marketed despite defendants' awareness of vaccine risks (Arkin, 2019).

Research and individuals who contradict official positions may encounter scientific suppression (Delborne, 2016; Ronel & Elisha, 2019). Methods of suppressing individuals include 'smear campaigns,' such as spreading rumors and vilification, harassment, reprimands, demotions, deregistration, and dismissal. The methods of suppressing research include censorship, denying funding and grants, denying access to research materials, and sometimes also retraction of papers from scientific journals after publication (Cernic, 2018; Martin, 1999; Vernon, 2017).

Such practices have been employed by the tobacco and pharma industries to delegitimize scientists who exposed health risks associated with their products (Kessler, 2001). Another notable example is the withdrawal of Vioxx following evidence that long-term use of the drug increased the risk of heart attack and stroke (Greener, 2008). The lawsuit against Merck revealed internal correspondence indicating attempts by Merck officials to soften problematic findings and to 'neutralize' doctors who criticized the drug (Culp & Berry, 2007; Krumholz et al., 2007).

The case of Dr. Andrew Wakefield illustrates the debate on vaccine safety. In 1998, Wakefield, a gastroenterologist at the Royal Free Hospital in the UK, published, with 12 of his colleagues, a paper in *The Lancet* that described cases of 12 children who developed gastrointestinal symptoms alongside regressive autism, which raised the possibility of a link to the Measles-Mumps-Rubella (MMR) vaccine (Fang et al., 2012). The paper received a great deal of media attention, sparking a debate over vaccines and leading to hesitation of parents to vaccinate their children (Goldacre, 2009). It is worth noting that Wakefield was not opposed to vaccination, but rather questioned the use of the MMR triple vaccine and suggested using single vaccines. However, in a series of reports from 2004 to 2010, a journalist, Brian Deer, publicly accused Wakefield of research fraud. Deer's publications led to a lengthy inquiry by the General Medical Council (GMC). The GMC charged Wakefield and his co-author, John Walker-Smith, with undeclared conflicts of interest and non-compliance with research ethics, which lead to the revocation of their medical licenses. *The Lancet* retracted the paper as flawed. Walker-Smith appealed the charges and had his license reinstated, while Wakefield left the UK and moved to the US, where he started a new career (Martin, 2015).

To date, this controversy has not been resolved. Many scholars view Wakefield as a fraud (e.g., Collier, 2015; Leung, 2019). Others, however, claim that he was subjected to institutional suppression and made an example of simply because he challenged the dominant position in favor of vaccines (Habakus & Holland, 2012; Lewis, 2014; Wakefield & McCarthy, 2010). It has also been argued that a double standard was applied to Wakefield, since many other scholars accused with similar and even more serious charges have not been subjected to such strict sanctions and public humiliation (Goldacre, 2013; Martin, 2015).

Retraction of papers on vaccines

Retraction can be an important tool for correcting the professional literature and maintaining high quality and reliability. The number of papers that have been withdrawn from medical journals has increased tenfold since 1975, yet retraction remains a rare event that represents 0.02% of publications. The most common reasons for retraction are misconduct (67.4%), errors (21.3%), duplication (14.2%), and plagiarism (9.8%) (Fang et al., 2012).

However, some scholars argue that the retraction of a paper may be used as a means to censor and silence critical voices in certain areas of knowledge that are steeped with money and conflicts of interest, such as vaccination. According to them, there are medical journals, as well as officials in health and regulatory organizations, who act in the interests of vaccine manufacturers and are driven by their research, financial and commercial ties with the pharmaceutical companies (e.g., Aharon-Maor & Shoenfeld, 2000; DeLong, 2012; Gatto et al., 2013; Hooker, 2014; Martin, 2015; Shaw, 2020; Vernon, 2017).

The well documented phenomenon whereby regulators end up promoting the interests of the industry they are supposed to be monitoring is referred to as 'regulatory capture' (Goldacre, 2013). One of the main factors leading to regulatory capture in public health is the conflicts of interest of officials who serve simultaneously as researchers and consultants on behalf of pharmaceutical companies (DeLong, 2012; Rogers, 2019). It seems that the prevalence and the magnitude of such conflicts of interest (COIs) have only increased over the years (Bekelman et al., 2003; Boyd et al., 2003; Gøtzsche, 2013; Schwab, 2019).

Such conflicts of interest can lead to biased research that harms public health (Resnik, 2014), a flawed approval process of medical treatments (Cohen & Carter, 2010; DeLong, 2012; Ferner, 2005) and an unbalanced allocation of budgets to fight diseases (Nozaki, 2013; Stuckler et al., 2008). They also have a deleterious effect on public trust in science, medical research, and medicine (Cook et al., 2007; Drazen & Koski, 2000; Friedman, 2002). Indeed, a survey conducted by The Academy of Medical Sciences (2017) revealed that only 37% of the public trusts medical research.

Controversies and integrity in science

Academic integrity becomes more challenging in the context of scientific controversy. Such debates are healthy and necessary, but because science operates in broader institutional, political, cultural, and economic contexts, arguments over truth often reflect dynamics of power. But without debates and disagreements, science will become nothing more than orthodoxy, a dogmatic way of knowing, closed to challenges or corrections (Delborne, 2016; Foucault, 1997).

Merton (1973) refers to 'organized skepticism' as a central principle of science. A notable example for challenging scientific ideas is peer review that aims to filter out poor research and unsubstantiated conclusions. While this practice does not guarantee 'truth' per se, it attempts to create a social process of producing knowledge based on testing new ideas and accumulating expertise (Delborne, 2016).

Disagreements and controversies in science can be perceived in very different ways, depending on one's perspective. From the point of view of a dissenter, the clash of ideas may be perceived as an unfair attack, while from the point of view of mainstream science, dissent is based on unfounded or unsound ideas. Science has its own power structures while operating within a society with different interests that mobilize scientific knowledge in political struggles. Thus, a scientific controversy may appear as a political one and vice versa (Delborne, 2016; Martin, 1991). Furthermore, the act of retracting a paper can be viewed as a tactic in what Gieryn (1999) refers to as scientific 'boundary work,' whereby scientists strive to maintain their power and authority by demarcating certain fields of scientific inquiry as out of bounds and discrediting them as essentially unscientific.

Method

The study is based on the principles of qualitative research (Strauss, 1987), which aims to identify internal perceptions of those who have experienced the phenomenon under question.

Respondents

Study respondents include eight researchers from different countries of the world, out of them five men and three women. Each of the respondents had published a paper in a scientific medical journal that pointed to potential safety issues with various vaccines and was subsequently retracted. (Note: the vaccines to which the participants refer in the retracted studies are different). To preserve the anonymity of the respondents, we omit further details that might lead to their identification.

Research tools and procedures

The study is based on in-depth interviews using a semi-structured interview schedule. The questions focused on the causes and motives for the retraction and its effects from the respondents' point of view. The study was approved by the Bar-Ilan University IRB.

We identified 24 retracted papers on vaccines through a search in the Pubmed database. We contacted the papers' author(s) via email, explained the purpose of our study and asked for their consent to be interviewed. Nine did not respond at all, even after repeated inquiries. Three declined on the grounds of concern for their career. In four cases, we received an error message stating that the email address was incorrect and were unable to locate another one.

The interviews were conducted via Skype, telephone or face-to-face, and lasted about an hour and a half on average. In some cases, we interviewed respondents a second time or asked them to answer supplementary questions via email. Each respondent was asked to sign an informed consent form. The interviews were recorded and transcribed. Data analysis and coding was based on identifying the key issues that emerged from the interviews regarding the phenomenon under investigation, while classifying and grouping them into meaningful categories. The interviews and themes derived from them were read and approved by all authors.

Findings

The findings section presents the main themes that emerged from the interviews: the official reasons for the retraction; the perceived causes and motives behind the retraction; and the implications of the retraction. The following description is accompanied by respondents' quotes who are identified with a number.

The official reasons for the retraction

According to the respondents, the official reasons given by the journals' editors for dismissing the paper involved methodological problems and/or undeclared conflicts of interest. Respondents also stated that the decision to initiate an 'investigation' prior to the retraction usually followed from anonymous complaints to the journal editors, due to serious methodological problems. For example:

> *The official explanation was that after the review, there were some anonymous complaints. Then the editor ordered another review that set some minor points. Those minor points that were totally irrelevant were taken as a very important problem of the paper. So, the editor said that paper had a very big problem in its design. That's the only reason*. (#1)

Respondents argued that most comments on the alleged methodological flaws were minor or simply false. They also noted that even if these comments were correct, they should have been given the opportunity to correct the paper as usually happens in such cases, rather than retract them:

> *The official reasons were serious flaws in analysis, but not fraud. The journal said that as a result of serious public and private post-publication concerns, they sent the article to four post-publication reviewers … One of the post-publication reviewers cited a statistical technique that was not appropriate for my analysis. Colleagues checked with two independent statisticians for me to confirm that my statistical analysis was fine … (#3)*

From the respondents' point of view, the official reasons seemed puzzling and pointed to more political and economic motivations behind the apparent scientific concerns. Some respondents argued that pharmaceutical companies, through their proxies, pressure publishers and editors of scientific journals to avoid publishing or remove publications that challenge pro-vaccine views:

> *My hypothesis is that the paper was too strong for the pharmaceutical companies who keep saying that the vaccine is safe and there is no problem with it. So, the only thing they could do was pressure the editor and to pressure the editorial [board] to remove it … They don't care about the science. It's just amazing to see.* (#1)

> *This vaccine is very profitable, the researchers who developed it received a Nobel Prize, which means there is a matter of prestige and money here, and so all the interested factors, whether it is the editor, whether it is the pharmaceutical company, put pressure on the editor. (#4)*

Some respondents even pointed out a clear conflict of interest on the part of the journals, given their financial contacts with pharmaceutical companies and regulators:

> *It's all political, just politics, no professional or logical reason here … I believe that a pharmaceutical company that supports the journal was unhappy with our paper … In my opinion, the journal editor has contact with the vaccine manufacturer.* (#2)

> *These editors have a lot of power. And NIH funds the journals. The journals are commercials for Big Pharma and NIH who pays for them. Also, they need money to publish a paper … So, it's propaganda masquerading as science so that these opinion articles … they tell you what to think about the science. (#8)*

The alleged motives behind the retraction

The main theme that emerges is that our respondents viewed their retraction as a means used by vaccine manufacturers and interested parties to silence, censor and suppress vaccine critics. Specifically, respondents accused policymakers in health and regulatory organizations of acting in the interest of vaccine makers rather than public health due to their commercial, financial and research ties. Participants also accused the media of uncritically cooperating in conveying the industry agenda.

'It's an old story. When it comes to vaccines, there's a lot of money … They are protecting their products.'

Respondents indicated that the main motive for retracting and discrediting studies that indicate problems with vaccines is economic. Thus, according to several respondents, the pharmaceutical manufacturers use dubious methods to prevent damage to the vaccines' reputation and hence their profits:

> *It's an old story. It could be anything if there's money in it … When it comes to vaccines, there's a lot of money … So, the things that get attacked, there's a profit motive involved in it somewhere … The pharmaceutical industry made 37 USD billion last year … Projection is in a couple of years the numbers will be well into the 50 USD billion range. That's not trivial. That's big money. It's a product. They are protecting their products. (#6)*

To illustrate that this is not a conspiracy theory, respondents noted well known examples of corruption by vaccine manufacturers, which included concealing information about the risks of vaccines that subsequently caused tragic results and organized attempts to neutralize opponents. For example:

> *The bottom-line is you're threatening our profit, and we're going to destroy you … This became evident to the world when Merck was being sued in Australia over Vioxx that killed up to 500,000 people. Merck knew before in their pre-licensing studies that it was causing stroke and heart attack … They knew that, but they went to market anyway. In the discovery documents in Australia, then there were a series of exchanges between Merck employees about how they should deal with doctors who criticized Vioxx. It was, "we destroy them … " So, it talked about how they should isolate them and discredit them … That's company policy. It's not conspiracy theory. (#7)*

'All these statements by policymakers are basically one big lie . . . '

Some respondents referred to the statements of public health and policymakers in health and regulatory organizations (e.g., WHO, NIH, CDC, FDA) as lies and deception. According to them, these officials deliberately mislead the public about vaccine safety, partly out of fear that if they reveal the true risks, the public will be reluctant to get vaccinated, which could jeopardize the manufactures' profits and the status and reputation of vaccines:

> *Policymakers also ignore these studies. The reason for ignoring and deceiving the public by saying there are no side effects is their fear that if they say there is something, then people will not want to be vaccinated . . . All these statements by policy makers are basically one big lie . . . Some of the policymakers belong to bodies that are fed by the vaccines. For example, the NIH receives millions of royalties for papilloma vaccine. It was invented by two NIH scientists, so it is clear they will defend this vaccine. (#4)*

'Journalists will investigate everything but vaccine safety. They will only talk about anti-vaccine people, how bad they are'

Respondents explained the perpetuation of the pro-vaccine agenda via the collaboration of the mainstream media with officials in health organizations, while creating intimidation from a world-wide epidemic and attacking anyone who claims otherwise:

> *Of course, media are domesticated; journalists will investigate everything but vaccine safety. They will only talk about anti-vaccine people, how bad they are, how many problems they cause and how wonderful are vaccines that save millions of lives and have no secondary effects at all . . . (#1)*

> *The media is also fed by the policy makers. For example, WHO has ruled that one of the top 10 threats to public health is non-vaccination, and the media gets carried away with it. (#4)*

The implications of the retraction

The initial reaction of the participants to the retraction was shock, which was later replaced by anger, despair, and a desire to fight back. However, all respondents reported on the negative implications of the retraction, either personally and/or professionally. This included being labeled as an 'anti-vaxxer,' calls for their dismissal, difficulty publishing other papers, and inability to gain funding for future research:

> *So, someone came upon the idea that retracting papers is the way to clobber someone's reputation, you also clobber their ability to get money. You don't have money - you can't do research. If you can't do research, what are you doing in the university? So, it's a way to keep people, to basically paralyze people. It works. It works very well. (#6)*

> *They tried to trash it through the regular websites, through the Respectful Insolence . . . There are a couple of websites like that. They are just really nasty websites. They have a lot of ad-hominem. They attack the person. They don't attack the argument. (#3)*

Some respondents mentioned Wakefield's treatment, which they viewed as a warning to other researchers, while referring him as 'falsely convicted.' According to them, retractions deter others from getting involved in vaccine research, which further strengthens the pro-vaccine agenda.

> *If I was a junior researcher, I wouldn't touch this* [vaccines]. *It's fatal. It's a fatal choice. Maybe it's a brave thing to do, but it's also a stupid thing to do if you want a career in the medical science field. (#6)*

> *I've had individuals that have talked to me and basically said, look, we're not going to publish in this field, I'm not going to do this or I'm not going to do this anymore or whatever . . . It also seems like people who have published in this particular [field], it just makes them think twice, too. (#5)*

Discussion

The purpose of this study was to describe, for the first time, the subjective experiences of researchers whose papers that pointed to safety concerns with vaccines were retracted.

First, it is interesting to note that of the 24 retracted papers on vaccines we located through PubMed, all of them pointed to safety concerns with vaccines. In other words, none of the retracted papers indicated a positive or neutral result. Also, out of all the authors of these 24 papers, only eight agreed to participate in our study, although they were guaranteed anonymity. The majority did not respond to our email inquiries, while some replied that they refuse for fear of their career – even though they were promised anonymity. As for respondents who agreed to participate, they explained their willingness to make their voice heard as a moral obligation and professional responsibility.

The main narrative that emerged from the interviews is that the retraction of their papers is perceived by the authors as a means of censoring and silencing critical voices in the field of vaccines. While the official reasons given by journal editors for the retraction mainly refer to 'methodological flaws' and/or 'undeclared conflicts of interest,' respondents pointed to hidden motives, double standards, fraud, and dishonesty. Respondents argued that the journal editors and/or the journal publishers had conflicts of interest and that their considerations were political and economic, not scientific. These findings are consistent with arguments made in previous research on the science of vaccines (e.g., DeLong, 2012; Gatto et al., 2013; Martin, 2015, 2016; Shaw, 2020; Vernon, 2017).

Respondents believe that vaccine manufacturers, in collaboration with the officials in health and regulatory organizations, were involved in silencing and suppressing vaccine critics. According to them, the regulatory agencies, which are supposed to protect public health, act to benefit of pharmaceutical companies out of mutual interests – a phenomenon known as regulatory capture (DeLong, 2012; Goldacre, 2013; Rogers, 2019). Some respondents also claimed that policymakers are concealing from the public information about safety issues with vaccines, for fear that this will lead to non-immunization. In addition, respondents denounced the mainstream media for promoting the pro-vaccine agenda without any criticism.

According to the respondents, this is a classic story involving money, prestige, and power. Support for this argument can be found to some extent in previous publications on corporate corruption (also referred to as 'corporate crime'), which have pointed to deceptions, manipulations, corruption, and fraud in the pharmaceutical and vaccine industries (e.g., Braithwaite, 1984; Cernic, 2018; Dukes et al., 2014; Gøtzsche, 2013, 2020; Holland et al., 2018; Kessler, 2001; Posner, 2020).

Some respondents also reported being subjected to further suppression attempts following the retraction. This included calls for their dismissal, difficulty in publishing other papers, preventing research grants, and character attacks in on-line publications. According to them, these tactics are intended to de-legitimize them and harm them professionally and personally, while labeling them as 'anti-vaxxers' and presenting their studies as 'junk science.' This tactic echoes the dubious practices of 'smear campaigns' (Kessler, 2001) and ad-hominem attacks (i.e., attacking the person instead the argument) (Delborne, 2016), which has been reported in previous studies on the suppression of researchers in other controversial fields of science (e.g., Kuehn, 2004; Martin, 1981, 1991, 1996). These can be understood as examples of the boundary-work employed to demarcate science from non-science (Gieryn, 1999), but in this case it is interested actors in industry who are engaged in this form of boundary work.

Respondents also stated that censorship, silencing, and suppression of vaccine critics had recently intensified, following the WHO's declaration of 'vaccine hesitancy' as one of the top 10 global health threats, while public health officials warn of a global epidemic because of non-vaccination (Chandler, 2019). Indeed, a global epidemic has come – the COVID-19 pandemic, which has further inflamed the debate on vaccines. This has led to a great deal of financial investment in medical research, with companies and governments around the world competing to expedite the production of vaccines. However, the eagerness to publish research seems to be causing biases among peer reviewers as well. Recently, two medical COVID-19 papers by the same authors, published in leading journals – *The Lancet*

(Mehra et al., 2020a) and *The New England Journal of Medicine* (Mehra et al., 2020b) – were retracted after concerns were raised about the data they relied on (Packer, 2020).

Indeed, controversies can be perceived in very different ways, depending on one's perspective. Therefore, it is difficult to prove the claims made by our respondents. Nevertheless, the accumulating evidence regarding suppression of dissent in other controversial fields, as well as cases of corruption involved with certain vaccines and the damage caused by them as revealed over the years, provide corroborating evidence to support to some extent their arguments. Regardless, doubt, disagreement and diversity of ideas are fundamental elements in science (Delborne, 2016; Merton, 1973). Retracting papers because they challenge the mainstream position undermines scientific integrity and ultimately undermines trust in science and medicine.

Study contribution, implications, and limitations

The main contribution of this study is in expanding our knowledge about the subjective experience of researchers whose paper was retracted and its devastating implications. Study findings may also contribute to a broader discourse on vaccines, beyond the narrow medical aspect. Allowing an open debate on controversial issues and expressing diverse opinions are fundamental principles of science, while retraction of critical papers leads to many physicians, scientists and citizens being unaware of the debate in this field. Beyond the fundamental unfairness that entails a violation of scientific ethical values, such oppression leads to a narrow worldview that impairs medical science and public health (Martin, 2014, 2015, 2016; Vernon, 2017).

The main limitations of the study relate to the small number of participants, and the fact that findings reflect solely the subjective point of view of those who agreed to participate in our study. It is possible that if we had interviewed other researchers, we would have been exposed to other interpretations. Therefore, similar studies among broader groups of researchers, physicians, and policymakers are urgently needed.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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