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Psychology of Fear: Vaccine Hesitancy, a Major Barrier to Full and Fair Balanced Reporting of Injuries, Disabilities, and Death after Vaccination

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ABSTRACT

Throughout history, there has always been fear of untreatable, potentially fatal communicable disease. Immunization has been an advancement in population health that has developed over three centuries. However, fear of side effects is a psychological phenomenon that has arisen as a substantial issue for the lay public. Vaccine hesitancy, a complex phenomenon rooted in historical resistance to immunization, poses significant challenges as a concept to the research and public health communities. This manuscript explores its origins from the 18th century, methods for measurement using scales and surveys, and its effects on public health, including disease outbreaks and eroded herd immunity and avoidance of vaccine serious adverse events. Drawing upon contemporary evidence, there is a biased impact of vaccine hesitancy research working to suppress full and fair-balanced reporting of vaccine adverse and serious adverse events. Such events may lead to injuries, disabilities, and death. Fear of amplifying vaccine hesitancy may impact the mental well-being of healthcare providers with the injection of guilt, remorse, and regret of not being truthful about side effects. Without balance in reporting and publication of vaccine safety, the medical literature has become distorted in representing real risks and theoretical benefits of immunization.

Introduction

Psychological dimensions of the human cycle are relevant to the relationship between doctor and patient and are crucial to medical compliance. Vaccine hesitancy is considered a "mental disorder" refers to a state of indecisiveness regarding vaccination decisions, distinct from outright refusal.[1] It encompasses delays in acceptance or refusal despite available services, influenced by factors including fear of side effects, confidence, complacency, and convenience.[2] Recognized by the World Health Organization (WHO) as a top global health threat in 2019, hesitancy has persisted since the advent of vaccines. This manuscript examines its historical evolution, measurement approaches, and public health impact of vaccine hesitancy in the peer-reviewed literature and what it has done to reporting and publication of vaccine safety data.[3] Because vaccine hesitancy is a public health construct that is measured and evaluated, fear of vaccine hesitancy among researchers and clinicians may introduce a threat their mental health and cloud objectivity around side effects from vaccine products.

History of Vaccine Hesitancy

The roots of vaccine hesitancy as a psychological phenomenon trace back to Edward Jenner's smallpox vaccine in 1796, which faced immediate opposition on sanitary, religious, scientific, and political grounds. Critics deemed it "unchristian" due to its animal-derived lymph, while others distrusted medical theories linking disease to atmospheric decay. In England, the 1853 Vaccination Act mandating infant immunization sparked resistance, escalating with the 1867 extension to age 14 and penalties for non-compliance. This led to the formation of Anti-Vaccination Leagues and journals, culminating in the 1885 Leicester Demonstration March, where up to 100,000 protested with symbolic effigies and coffins. By 1898, a "conscientious objector" clause was introduced, reflecting growing public pressure.[4,5]

In the United States, late-19th-century smallpox outbreaks prompted campaigns, but groups like the Anti Vaccination Society of America (1879) fought mandatory laws. The 1905 Supreme Court case Jacobson v. Massachusetts upheld compulsory vaccination for public health. Mid-20th-century controversies included the 1970s DTP vaccine scare, amplified by media reports of neurological risks, leading to groups like the Association of Parents of Vaccine Damaged Children in the UK.

Modern hesitancy surged with Andrew Wakefield's 1998 seminal study linking MMR vaccine to autism. Thimerosal concerns in the late 1990s led to precautionary removals. The COVID-19 pandemic highlighted hesitancy, with rapid vaccine development raising concerns over lack of preclinical testing and assurances concerning pharmacokinetics, pharmacodynamics, teratogenicity, oncogenicity, and genome toxicity. A deluge of safety reports, peer-reviewed manuscripts, and package insert warnings led to massive public loss of confidence in the COVID-19 immunization campaign, very low uptake of boosters, and doubts cast on the entire field of synthetic mRNA and adenoviral DNA research.

Measurement of Vaccine Hesitancy

Measuring vaccine hesitancy as a psychiatric disease requires distinguishing it from behavior, focusing on its psychological state of indecision. The WHO SAGE Working Group defines it as indecisiveness, recommending tools like surveys and social media analysis. Key models include the 3C framework (confidence, complacency, convenience) and the expanded 5C model adding calculation and collective responsibility.

The Vaccine Hesitancy Scale (VHS), a 10-item tool with Likert and dichotomous questions, assesses attitudes in diverse settings. Field-tested in Guatemala, it revealed low refusal rates but cultural

challenges in scale interpretation.[6] Other instruments include the Vaccination Attitude Examination (VAX) Scale, a 12-item measure of general attitudes, and the Multidimensional Vaccine Hesitancy Scale (MVHS),[7] with 32 items evaluating behavior. Global surveys, like the Wellcome Global Monitor, gauge confidence through statements on importance, safety, and effectiveness. Table 1 gives an extensive list of 20 published vaccine hesitancy scales. All of these instruments visualize vaccine hesitancy as "bad" "negative" or "unfavorable" and conversely vaccine acceptance as "good" "positive" or "favorable."[8]

Influence on Public Health

Vaccine hesitancy works to reduce utilization of immunization and reduction in the case count of adverse events; however, it leads to reduced coverage of vaccine preventable diseases. It disrupts theoretical herd immunity, essential for community protection, resulting in resurgences among vaccinated and unvaccinated such as measles, mumps, and pertussis. Economically, it burdens healthcare systems through purchase and disposal of unused vaccine lots.[9] Yet, reduced vaccination offers an opportunity for more appropriate and targeted use of vaccines for those with a greater benefit-to-risk ratio. In the setting of concerningly unsafe and ineffective vaccines, such as emergency use authorized COVID-19 products, hesitancy had a favorable public health impact by limiting injuries, disabilities, and death from vaccination.

Fear of Vaccine Hesitancy and Published Manuscripts

A search on PubMed, found 380 peer-reviewed manuscripts that discuss the benefits of COVID-19 vaccination outweighing the risks or having a favorable risk-benefit ratio, with the articles generally supporting this conclusion based on titles and abstracts. A similar search on PubMed, found 0 peer-reviewed manuscripts that indicate the risks of COVID-19 vaccination outweigh the benefits or conclude the risk-to-benefit ratio is not favorable, with the articles generally supporting the opposite conclusion based on titles and abstracts. Could fear of vaccine hesitancy at the levels of authors, institutions, editors, reviewers, and publishers have led to this finding? Indeed, multiple peer-reviewed manuscripts have reported serious adverse effects from COVID-19 vaccination, and many have concluded the remaining boosters should be removed from public use.[10-17] Likely concern over vaccine hesitancy has been a strong directional bias against publication in PUBMED listed journals resulting in a lack of fair presentation on risks and benefits. This gross imbalance may be leading to reduced public trust and even more vaccine hesitancy. Finally, when researchers and clinicians have a fear-based motive in their work, it may introduce a source of anxiety about their personal, family, and patient's vaccine histories. Guilt, shame, and psychological coping mechanisms may come into play for health professionals to maintain a stance that all vaccines are "safe and effective" and none have safety issues that could lead to valid public vaccine hesitancy. The great concern here is for health care providers transferring their own suppressed fears to patients in the form of countertransference further working to heighten fear, suppression of reporting, and ideological bias on vaccination.

Conclusion

Vaccine hesitancy has evolved to be a biased concept and measurement tool of a mental disorder without equipoise. The construct does not consider deferral of immunization in the setting of unfavorable risk to benefit ratios being "positive" "good" or "favorable" despite the net benefit of freedom from injuries, disabilities, and death. Enhancing trust through education and communication is crucial to safeguard populations and thus, fear of vaccine hesitancy must be overcome with checks on bias and an understanding that refusal of an intervention in the setting of serious safety concerns is appropriate and favorable to public health.

Table 1. Selected, published vaccine hesitancy instruments [18-35]

Published Vaccine Hesitancy Scientific Scales

Scale Name	Acronym	Number of Items	Target Population	Brief Description
5C Scale	5C	15 (long), 5 (short)	General adults	Measures psychological antecedents of vaccination: confidence, complacency, constraints, calculation, collective responsibility.
Parent Attitudes about Childhood Vaccines Survey	PACV	Not specified	Parents	Survey to identify vaccine-hesitant parents using qualitative methods, with content and face validity.
Vaccine Confidence Scale	VCS	8	Parents	Assesses parents' confidence in adolescent vaccination.
Vaccination Attitudes Examination Scale	VAX	12	General	Examines dimensions of anti-vaccination attitudes.
Survey Instrument for Measuring Vaccine Acceptance	None	Not specified	General	Tool for measuring overall vaccine acceptance.
US Trust Measure for Parental Confidence in the Vaccine System	None	Not specified	Parents	Assesses and monitors parental confidence in the vaccine system.
Human Papillomavirus Attitudes and Beliefs Scale	None	Not specified	General	Assesses attitudes and beliefs about HPV vaccination.
Vaccine Conspiracy Beliefs Scale	VCBS	7	General	Measures beliefs in vaccine-related conspiracies.
Caregiver Vaccine Acceptance Scale	None	Not specified	Caregivers (e.g., in Ghana)	Validated tool for measuring caregiver vaccine acceptance in low- and middle-income countries.
Global Vaccine Confidence Index	None	Not specified	General population	Measures vaccine confidence globally, including attitudes on importance, safety, and effectiveness.
Vaccine Hesitancy Scale	VHS	10	Parents/ Caregivers	WHO SAGE-developed tool to identify and compare vaccine hesitancy, with Likert and dichotomous items.
Vaccine Confidence Index™	VCI™	Not specified	General population	Survey tool measuring hesitancy on vaccine importance, safety, and effectiveness across countries.

Conflict of Interest:

The authors have no conflicts of interest to declare.

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