



## Examining the Ethics of Public Health Interventions: Balancing Individual Rights and Collective Well-being

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### KEYWORDS

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### ABSTRACT:

This research paper explores the complex ethical aspects related to public health interventions, with a main emphasis on managing the delicate equilibrium between protecting individual rights and promoting the overall well-being of the community. Our study examines historical perspectives, theoretical frameworks, and current practices to gain a thorough understanding of the ethical landscape in light of changing public health challenges. We suggest a new framework to address the ethical complexities that are inherent in public health interventions. The purpose of this framework is to assist decision-makers in finding a balanced and nuanced approach that both upholds individual freedoms and promotes the well-being of the community. The proposed framework integrates insights from utilitarian, rights-based, and communitarian perspectives to provide a comprehensive approach to ethical decision-making in policy formulation, highlighting the significance of ethical considerations. We evaluate the effects of public health interventions on individual rights and collective well-being by carefully analyzing case studies, such as compulsory vaccination programs, quarantine measures, and surveillance technologies. We conduct a comprehensive examination of the ethical principles involved, including autonomy, privacy, utility, and justice, to illuminate the ethical challenges confronted by policymakers. The research findings enhance the ongoing discussion on public health ethics by providing a nuanced viewpoint on the ethical consequences of interventions. The paper concludes by offering recommendations derived from the proposed framework, with the objective of improving the ethical underpinnings of public health policies. In essence, this study provides a valuable tool for policymakers,

researchers, and practitioners who are looking to address the ethical dilemmas that arise when striving for a healthier society.

## I. Introduction

Public health interventions are crucial in protecting and enhancing the health of populations, by addressing diseases, promoting wellness, and improving overall well-being. Public health interventions refer to a wide range of measures, policies, and initiatives aimed at safeguarding and enhancing the well-being of communities. The interventions encompass a wide spectrum, including vaccination programs, disease surveillance, lifestyle interventions, and health education campaigns. Comprehending the historical backdrop of public health interventions is crucial for recognizing the ethical intricacies that have emerged throughout history[1], [2].

Public health interventions encompass systematic initiatives aimed at preventing diseases, fostering well-being, and extending lifespan within a population. These interventions encompass a blend of tactics, policies, and measures designed to enhance the health outcomes of communities. Frequently, the involvement of multiple stakeholders is necessary, encompassing government agencies, healthcare professionals, community organizations, and individuals. The varied character of public health interventions exemplifies the multifaceted strategy required to tackle intricate health issues[3], [4].

The moral aspects of public health interventions have been a topic of reflection and discussion throughout history. Significant advancements in the ethical considerations of public health have influenced the fundamental principles that govern decision-making within this domain. An example of such a significant regulation is the Nuremberg Code, which was

established after World War II to guarantee ethical behavior in the field of human experimentation. The ethical guidelines for research involving human subjects have been further refined by subsequent developments, including the Belmont Report and the Declaration of Helsinki. The presence of these historical markers emphasizes the significance of ethical considerations in the implementation of public health practices and interventions[5], [6].

The development of demonstrates a constantly changing interaction between the rights of individuals and the overall welfare of the collective. Historically, public health interventions prioritized the well-being of the community over individual rights. Nevertheless, with the progression of societal values, the ethical framework concerning public health also underwent changes. The increasing emphasis on individual autonomy versus the collective good has become more noticeable in current discussions, highlighting the need for a thorough analysis of the ethical consequences of public health interventions. The continuous development of public health ethics is closely linked to the acknowledgment that individual rights must be upheld, even when striving for the common good. Policymakers, researchers, and practitioners involved in creating and carrying out public health interventions face a difficult task in finding the right balance between these two important goals[7].

The significance of analyzing the ethical aspects of public health interventions is emphasized by the exceptional difficulties confronting global health in the 21st century.

Emerging societal norms and values necessitate ethical considerations in response to challenges like infectious disease outbreaks, health disparities, and the increasing burden of chronic conditions. The COVID-19 pandemic has highlighted ethical quandaries related to public health measures, such as compulsory vaccination, surveillance, and distribution of resources[8], [9].

With the increasing complexity and interconnection of public health challenges, it is crucial to prioritize the comprehension of the ethical aspects of interventions. This study aims to provide valuable perspectives on the ethical factors that form the basis of decision-making in public health, particularly when dealing with emerging health risks and changing societal demands.

The process of making ethical decisions in public health policy is complex and requires a sophisticated comprehension of the ethical principles involved. The objective of this study is to offer valuable insights to policymakers who are dealing with the ethical aspects of public health interventions. Through the analysis of specific instances and the development of a comprehensive structure, our aim is to provide practical advice for effectively managing the complex challenge of reconciling individual rights with the welfare of the collective[5], [6].

Public health policies have a significant impact on the health outcomes of entire populations. Therefore, it is crucial to consider ethical principles to ensure that interventions are not only effective but also fair and uphold individual rights. This research aims to analyze the ethical consequences of different interventions in order to provide guidance for the creation of policies that prioritize the health of individuals and the well-being of communities. The utilitarian viewpoint, based

on the philosophy of maximizing overall happiness or well-being, has had a significant impact on public health interventions for a considerable period of time. Utilitarianism asserts that actions should be assessed according to their outcomes, and public health interventions are frequently assessed in relation to their effect on the largest number of individuals. The utilitarian calculus has been used to make decisions regarding quarantine measures during infectious disease outbreaks and the allocation of limited healthcare resources in order to maximize the overall societal benefit.

Utilitarianism offers a consequentialist framework for evaluating public health interventions, but its implementation gives rise to ethical concerns. We must carefully contemplate and engage in ethical reflection when balancing the pursuit of the common good with the possibility of encroaching upon individual rights. This study examines the ethical complexities of utilitarian methods in public health, investigating the conflict between promoting the overall welfare of society and upholding the rights of individuals[10].

Contrary to utilitarian viewpoints, rights-based approaches in public health ethics prioritize safeguarding individual rights and freedoms. The design and implementation of public health interventions prioritize essential human rights, including the right to privacy, autonomy, and bodily integrity. This study rigorously analyzes the ethical ramifications of maintaining individual rights, investigating how frameworks centered on rights can enhance morally sound public health practices. Communitarian perspectives emphasize the significance of communal values and responsibilities in influencing public health interventions. Communitarian ethics

underscore the interdependence of individuals in a community and emphasize the collective responsibility to advance the welfare of all. This study examines the ethical aspects of communitarian approaches, investigating how they influence the equilibrium between individual rights and the overall welfare of the community in public health interventions.

The study's importance lies in its thorough examination of the historical, ethical, and philosophical aspects of public health interventions. This research contributes to the ongoing discussion on the ethical foundations of public health by exploring the relationship between individual rights and collective well-being. It examines the implications of utilitarian, rights-based, and communitarian perspectives and offers practical insights for making ethical decisions in policy. In the following sections, we will thoroughly examine the suggested framework, scrutinize case studies, and derive conclusions with the intention of informing and improving ethical practices in the field of public health interventions.

## II. Literature Review

The COVID-19 pandemic highlighted the complex connection between public health and ethics, especially in the rapidly advancing digital era. The increasing reliance on digital tools for disease surveillance, contact tracing, and public health messaging has given rise to numerous ethical dilemmas. These dilemmas have posed challenges to our understanding of privacy, individual autonomy, transparency, and inclusivity. This review explores the intricate terrain of contemporary public health practices and their ethical considerations regarding digital technologies.

Essential components of the pandemic response included the implementation of social distancing protocols and the utilization of mobile phone-based contact tracing methods[11], [12]. Although their ability to reduce viral transmission was unquestionable, they sparked ethical discussions. Striking a balance between the demands of public health and the rights of individuals became a delicate and challenging task. The concerns primarily focused on possible violations of data privacy, specifically regarding contact tracing apps that raised concerns about data security and the potential for misuse. Inquiries emerged regarding the voluntary aspect of such interventions, and the intricate equilibrium between the common welfare and personal liberty persisted as a prominent motif.

The role of digital surveillance and information dissemination in public health was critically examined, in addition to immediate control measures[13], [14]. The utilization of social media and internet-based methods for disease surveillance provides immediate and up-to-date information on disease patterns. However, this approach raises ethical concerns regarding the collection of data and the transparency of the process. It is crucial to carefully consider the possibility of algorithmic biases and discriminatory practices. Likewise, the dissemination of public health information via digital platforms necessitated careful consideration of inclusivity and accessibility. Implementing customized communication strategies that address the needs of diverse populations and languages, while also countering misinformation and fostering trust, were crucial in achieving successful public comprehension and adherence.

An essential area of investigation[15], [16] involved comprehending the factors that impact public adherence to public health

guidance during the pandemic. Research has demonstrated the crucial significance of establishing trust and engaging in transparent communication to promote compliance with measures such as wearing masks and practicing social distancing. Combatting misinformation and customizing messages for specific demographic segments have been identified as crucial tactics in fostering collective mobilization. The review also emphasized the significance of recognizing and tackling the various motivations and challenges encountered by individuals in navigating pandemic restrictions. This further underscores the necessity of empathy and ethical considerations in shaping public health interventions[10].

The ethical ramifications of artificial intelligence (AI) and big data become increasingly significant as digital technologies progress from reactive approaches to proactive public health strategies[17], [18]. Although AI algorithms show potential in disease prediction and resource allocation, it is crucial to address concerns related to algorithmic bias, data opacity, and potential discrimination. It is imperative to prioritize transparency in the development and implementation of AI algorithms, while also addressing and minimizing any inherent biases, in order to prevent unintended consequences and uphold ethical standards.

To summarize, the digital era offers both advantageous prospects and obstacles for public health. Utilizing digital tools has clearly assisted in responding to the pandemic and holds promise for future interventions. However, effectively navigating this field necessitates ongoing attentiveness and thoughtful consideration of the ethical consequences. It is imperative that we prioritize fundamental values such as openness,

responsibility, confidentiality, and fairness in our endeavors. Sustained discourse and cooperation among researchers, policymakers, and communities are essential to guarantee that technological progress in public health benefits the common welfare while safeguarding individual rights and well-being. We can only utilize the potential of the digital age to promote a more equitable and healthier future for everyone by following ethical principles.

### **III. Proposed Framework**

The proposed framework seeks to navigate the delicate equilibrium between individual liberties and communal welfare when assessing public health interventions. The process begins by carefully delineating the intervention and its potential advantages for public health, as well as any constraints it may impose on individual liberties. We evaluate the intervention's conformity to our moral values by considering established ethical principles such as justice, non-maleficence, and proportionality. Our main focus is on selecting options that impose the fewest limitations, while also actively involving the public in open and clear conversations. Ultimately, the intervention's ethical integrity is upheld through diligent supervision, ongoing assessment, and a readiness to make necessary adjustments. This framework aims to provide researchers and policymakers with a thorough approach to navigating the intricate ethical aspects of public health interventions. Its ultimate goal is to find solutions that protect individual rights while also promoting the common good.

Proposed framework for examining the ethics of public health interventions, taking into account the crucial balance between individual rights and collective well-being:

### 1. Identify the Public Health Intervention:

- Clearly define the intervention being examined (e.g., mandatory vaccination, contact tracing, mask mandates).
- Specify the target population and intended public health outcome.

### 2. Potential Benefits and Burdens:

#### Benefits for Collective Well-being:

- Quantify the potential impact on reducing disease transmission, morbidity, and mortality.
- Consider indirect benefits, such as economic gains and societal stability.

#### Burdens on Individual Rights:

- Identify potential infringements on individual rights like privacy, autonomy, bodily integrity, and freedom of movement.
- Assess the severity and duration of these infringements.
- Consider disproportionate impacts on specific groups based on socio-economic factors, cultural practices, or pre-existing vulnerabilities.

### 3. Ethical Principles:

- Apply relevant ethical principles to analyze the intervention:
- Justice: Are benefits and burdens distributed fairly across the population? Are marginalized groups disproportionately affected?
- Non-maleficence: Does the intervention minimize harm to individuals and avoid unnecessary risks?
- Beneficence: Does the potential benefit to collective well-being outweigh the burdens on individual rights?

- Autonomy: Does the intervention respect individual decision-making and informed consent, whenever possible?
- Proportionality: Is the intervention's intensity proportionate to the public health threat?

### 4. Least Restrictive Alternative:

- Consider alternative interventions that achieve similar public health goals with less infringement on individual rights.
- Evaluate the feasibility, effectiveness, and cost-effectiveness of these alternatives.

### 5. Public Engagement and Transparency:

- Ensure open and transparent communication about the intervention's rationale, evidence base, and potential impacts.
- Facilitate public engagement in decision-making processes through town halls, community forums, and public hearings.

### 6. Oversight and Accountability:

- Establish independent oversight mechanisms to monitor the implementation of the intervention and ensure ethical adherence.
- Develop clear accountability procedures for addressing unintended consequences and grievances.

### 7. Dynamic Evaluation and Continuous Improvement:

- Continuously monitor the intervention's effectiveness and ethical implications as it is implemented.
- Be prepared to adapt or retract the intervention if it proves ineffective or ethically problematic.

#### **IV. Individual Rights in Public Health Interventions**

The protection of individual rights within public health interventions is a crucial aspect of ethical considerations, where the careful equilibrium between preserving personal freedoms and promoting the overall welfare of society is of utmost importance. The fundamental individual right to privacy is subject to scrutiny in the context of public health interventions. Surveillance, an essential instrument in disease monitoring and control, gives rise to substantial privacy concerns[19]. The ethical challenges faced by policymakers are highlighted by the conflict between the necessity for public health surveillance and the possible infringement on individual privacy. Moreover, the matter of obtaining informed consent in public health research is crucial for upholding individuals' autonomy and privacy. Ensuring both informed consent and efficient research in emergency situations presents ethical quandaries, particularly when prompt interventions are essential.

Autonomy, which refers to the right of individuals to make their own decisions, plays a crucial role in the ethical discussions related to public health interventions. The difficulties in achieving a balance between individual autonomy and public health objectives are apparent, especially in situations where interventions may encroach upon personal decision-making. Public health policies that enforce measures such as vaccination or quarantine may come into conflict with individual autonomy, necessitating a nuanced approach to address conflicts between personal freedoms and the greater good[5]. The concept of nudging, which involves employing subtle influences to affect decision-making, raises additional ethical considerations. Although

nudging can be a potent method for promoting healthy behaviors, concerns arise regarding the potential manipulation of personal choices and the ethical limits of influencing decisions in the context of public health. This section examines the ethical intricacies involved in balancing individual rights with public health priorities, providing insight into the inherent complexities.

#### **V. Collective Well-being in Public Health Interventions**

The concept of collective well-being in public health interventions involves ethical considerations that prioritize the welfare of entire communities. The goal is to achieve an optimal balance between promoting health and ensuring the fair distribution of resources. Utilitarian perspectives, which are based on the philosophy of maximizing overall happiness or well-being, support interventions that aim to achieve the greatest benefit for the largest number of people. The utilitarian calculation is especially important in public health decision-making, as the goal is frequently to reduce the impact of diseases on entire populations. Nevertheless, the endeavor to achieve collective well-being is not devoid of obstacles, as trade-offs and ethical dilemmas arise. The possibility that certain individuals or groups may experience a greater burden as a result of interventions raises ethical concerns that require thoughtful examination[9], [20].

Public health interventions are enhanced by incorporating ethical principles such as social justice and equity, in addition to utilitarian perspectives. It is crucial to prioritize the resolution of inequalities in public health interventions to prevent vulnerable populations from being disproportionately impacted. This entails recognizing and addressing structural inequalities that may worsen disparities in

health. Furthermore, guaranteeing equity in the distribution of resources is a crucial element in fostering the overall welfare of a group. Ethical dilemmas arise when deciding the allocation of scarce resources, such as vaccines or medical treatments, among a population. It is crucial to maintain a balance between the principles of justice and equity in order to prevent worsening existing inequalities and to promote a public health system that prioritizes the well-being of every individual, regardless of their socio-economic or demographic characteristics. This section explores the ethical aspects of promoting collective well-being in public health interventions, providing insights into the challenges and considerations involved.

## VI. Case Studies

An analysis of particular public health measures, particularly in light of the unparalleled global crisis presented by

COVID-19, is crucial for comprehending the complexities of managing personal liberties and the overall welfare of society. This section explores three crucial interventions that have played essential roles in the ongoing pandemic: Mandatory Vaccination Programs, Quarantine and Isolation Measures, and Contact Tracing with Surveillance Technologies. Each of these interventions embodies a comprehensive strategy to reduce the transmission of the virus, and examining them enables a detailed examination of ethical considerations, quantitative metrics, and a cost-benefit evaluation. Through careful examination of these case studies, our objective is to acquire valuable knowledge about the difficulties and achievements of public health interventions. Table-1,2 will provide a deeper understanding of the ethical considerations involved in managing infectious diseases.

*Table 1 Intervention table*

<b>Intervention</b>	<b>Parameters</b>	<b>Measurement</b>	<b>Value/Outcome</b>
Mandatory Vaccination Programs	Vaccination Coverage Rate	Percentage	Maximum eligible population vaccinated
	Reduction in COVID-19 Cases	Number or Percentage	Optimal reduction in cases after vaccination
	Herd Immunity Achievement	Percentage	70% of the population achieving immunity
Quarantine and Isolation Measures	Effectiveness in Reducing Transmission	Transmission Rate	50% reduction in transmission rate
	Duration of Quarantine/Isolation	Days	14-17 days for isolation
	Compliance Rate	Percentage	95% compliance with quarantine
Contact Tracing and Surveillance Technologies	Timeliness of Contact Tracing	Hours/Days	80% of contacts traced within 48 hours
	Coverage of Contact Tracing	Percentage	95% coverage of identified contacts
	Reduction in Secondary Infections	Number or Percentage	60% reduction in secondary infections

*Table 2 Cost-benefit table*

<b>Intervention</b>	<b>Costs</b>	<b>Benefits</b>
Mandatory Vaccination Programs	Cost of Vaccines, Distribution, and Administration	Reduced Healthcare Costs, Productivity Gains
Quarantine and Isolation Measures	Enforcement Costs, Economic Impact on Individuals	Reduced Transmission, Saved Lives
Contact Tracing and Surveillance Technologies	Implementation and Maintenance Costs	Reduced Transmission, Early Case Identification

## VII. Analysis and Recommendations

An analysis of the case studies on mandatory vaccination programs, quarantine and isolation measures, and contact tracing using surveillance technologies offers a detailed comprehension of the ethical consequences associated with public health interventions, especially in light of the difficulties presented by the COVID-19 pandemic.

### A. Evaluating the ethical aspects of case studies.

- **Effects on Individual Rights:** The ethical assessment of these interventions requires a careful examination of their effect on individual rights. Compulsory vaccination initiatives, despite their substantial contribution to herd immunity, can give rise to apprehensions regarding personal autonomy and the entitlement to make well-informed decisions about healthcare. The implementation of quarantine and isolation measures is crucial in managing the transmission of contagious illnesses. However, it is important to conduct a meticulous ethical assessment to strike a balance between the imperative of safeguarding public health and respecting individual liberties. The implementation of contact tracing and surveillance

technologies presents privacy challenges, requiring an ethical evaluation of the compromises between public health surveillance and the safeguarding of individual freedoms.

- **Contribution to the overall welfare of society:** At the same time, the case studies highlight the significant impact of these interventions on the overall welfare of the group. Compulsory immunization initiatives, through attaining extensive immunization rates, not only safeguard individuals from severe illness but also enhance the overall community's ability to withstand infectious diseases. When properly enforced, quarantine and isolation measures are crucial in lowering transmission rates and protecting public health. The implementation of contact tracing and surveillance technologies allows for the timely detection of cases, enabling swift interventions that are advantageous for both the individual and the community.

### B. Identification of Ethical Principles Involved

- **Striking a Balance Between Autonomy and Utility:** The ethical considerations involved in public health interventions require a careful equilibrium between

individual autonomy and the effectiveness of these interventions for the overall benefit of society. Achieving this equilibrium necessitates meticulous deliberation of individuals' rights to exercise independent judgment regarding their well-being and the wider societal advantages that may result from interventions such as compulsory immunizations, quarantine protocols, and surveillance technologies.

- **An Investigation into the Significance of Justice in the Ethical Considerations of Public Health:** Justice is a vital ethical principle that becomes significant when considering public health interventions. Ensuring a fair approach requires the fair allocation of advantages and disadvantages, with a particular focus on protecting vulnerable populations. Analyzing the effects of these interventions from a justice perspective entail tackling inequalities in access, taking into account the socioeconomic consequences, and promoting an inclusive approach to ethical considerations in public health.

### C. Suggestions

- **Principles to Follow for Ethical Decision-Making:** Integrating Community Involvement: A crucial suggestion is to include strong community involvement in the creation and execution of public health interventions. By incorporating a range of viewpoints, the inclusion of diverse perspectives guarantees that the community's values and concerns are taken into account, thereby cultivating a sense of ownership and trust in the strategies implemented.
- **Promoting Transparency in Public Health Policies:** Transparency is established as a fundamental principle for

making ethical decisions in the field of public health. Effective dissemination of the justification for interventions, the possible drawbacks and advantages, and the procedures for making decisions improves public comprehension and confidence. Transparent policies enable individuals to make well-informed decisions regarding their health, in accordance with the principles of autonomy and respect for individual rights.

### VIII. Conclusion with future prospect

Conclusively, the investigation of public health interventions, specifically in the context of the COVID-19 pandemic, has unveiled an intricate ethical terrain. The case studies examining compulsory vaccination programs, quarantine and isolation measures, and contact tracing using surveillance technologies have underscored the delicate equilibrium necessary to maintain individual rights while advancing collective welfare. The ethical assessment has thoroughly examined the subtle effects on autonomy, utility, and justice, providing valuable insights into the difficulties and achievements of these interventions in protecting public health.

The conclusions derived from this analysis have substantial implications for future research and the formulation of policies in the field of public health interventions. Given the changing characteristics of infectious diseases and the ongoing challenges in public health, it is crucial to persist in examining ethical aspects. Future research should focus on investigating the enduring societal consequences of interventions, assessing their efficacy in diverse cultural settings, and formulating more precise and morally sound strategies to address public health emergencies. Policymakers are advised to incorporate

community viewpoints, guarantee transparency, and give priority to fair practices in the process of policy formulation.

As we navigate the constantly changing field of public health, it is essential to emphasize the significance of ethics as the foundation of effective and fair interventions. The COVID-19 pandemic has highlighted the interdependence of global health and the need for ethical frameworks that consider both individual rights and the overall welfare of society. The concluding reflections on this ethical terrain emphasize the necessity of continuous discourse, interdisciplinary cooperation, and a dedication to enhancing ethical principles in response to emerging health dilemmas. Public health interventions, driven by strong ethical principles, can effectively limit the transmission of diseases and promote a healthier and more resilient society that upholds and safeguards the rights of individuals in the shared pursuit of well-being.

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