ADDRESSING DIVERSITY, EQUITY, AND INCLUSION CHALLENGES IN CLINICAL TRIALS: A NARRATIVE REVIEW AND COMMENTARY THROUGH A HUMAN RIGHTS LENS

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Abstract

This Thesis critically examines the persistent underrepresentation of marginalised populations in clinical trials through the lens of international human rights law. Despite compelling scientific and ethical imperatives for inclusivity, groups such as racial minorities, women, older adults, and persons with disabilities remain systematically excluded. This exclusion stems from a complex interplay of structural, institutional, legal, societal, and individual barriers, including centralised research infrastructure, restrictive eligibility criteria, historical mistrust, and inadequate regulatory enforcement.

The Thesis argues that such underrepresentation constitutes a violation of fundamental human rights, particularly the rights to health, to benefit from scientific progress, and to non-discrimination, as enshrined in international and European legal frameworks. While current DEI strategies offer a roadmap for reform, a critical analysis reveals a risk of performative inclusion, where market logic often overrides rights-based obligations, and epistemic injustices devalue marginalised knowledge. The Thesis concludes that achieving genuine equity demands a transformative shift: from symbolic representation to legally binding mandates, robust accountability, and a fundamental redistribution of power within the clinical research ecosystem, ensuring science serves as an equitable public good.

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Abbreviations

Abbreviation	Expansion
AAAQ	Availability, accessibility, acceptability, quality
ACHPR	African Commission on Human and People's Rights
CAB	Community advisory board
CBPR	Community-based participatory research
CDC	Centers for Disease Control and Prevention
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
CESCR	Committee on Economic, Social and Cultural Rights
CFR	Charter of Fundamental Rights of the European Union
CHW	Community health workers
CIOMS	Council for International Organizations of Medical Sciences
CJEU	Court of Justice of the European Union
CRPD	Convention on the Rights of Persons with Disabilities
DCT	Decentralised clinical trial
DEI	Diversity, Equity, Inclusion
ECHR	European Convention on Human Rights
ECtHR	European Court of Human Rights
EMA	European Medicines Agency
ESR	European Social Charter
EU	European Union
FDA	U.S. Food and Drug Administration
HRC	Human Rights Committee

ICCPR	International Covenant on Civil and Political Rights
ICERD	International Convention on the Elimination of All Forms of Racial Discrimination
ICESCR	International Covenant on Economic, Social and Cultural Rights
NGO	Non-governmental organisation
SCD	Sickle cell disease
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNHRC	United Nations Human Rights Council
UNESCO	United Nations Educational, Scientific and Cultural Organization
WMA	World Medical Association
WHO	World Health Organization

Note: Abbreviations are used for terms that appear three times or more throughout the main body of this Thesis.

Chapter 1 – Introduction

1.1 Background and Context

Clinical trials are fundamental to the advancement of medical science, as they generate evidence about the safety, tolerability, and efficacy of medical interventions before they are made widely available. However, despite their scientific imperative, clinical trials have long suffered from inadequate inclusivity and unequal participant representation (Oh et al., 2015; Hussain-Gambles et al., 2004). Women, racial and ethnic minorities, older adults, persons with disabilities, and economically disadvantaged populations are often underrepresented or entirely excluded. This systemic underrepresentation has substantial consequences for the generalizability of research results and may compromise the safety and efficacy of treatments when applied to broader patient populations (Chen et al., 2014).

A growing body of literature has shown that exclusion from clinical research contributes to widening health disparities, particularly amongst already vulnerable groups (George et al., 2014). For example, in haematology, sickle cell disease (SCD) primarily affects individuals of African descent, yet clinical trials in this area often fail to engage these populations effectively (Grismore et al., 2025; Zanfardino et al., 2022). More broadly, the COVID-19 pandemic revealed how underrepresentation in vaccine trials amongst certain racial and socioeconomic groups eroded public trust and hindered vaccination in marginalised communities (Privor-Dumm et al., 2023; Gedela et al., 2024).

1.2 Relevance to Human Rights

Beyond scientific concerns, the exclusion of certain groups from clinical trials is also a core human rights issue. The right to the highest attainable standard of health is enshrined in several foundational instruments of international law, including Article 25 of the Universal Declaration of Human Rights (UDHR, 1948) and Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR, 1966). According to General Comment No. 14 of the Committee on Economic, Social and Cultural Rights (CESCR, 2000), this right includes access to both timely and appropriate health care services, as well as participation in health-related decision-making, including in research.

At the European level, the Charter of Fundamental Rights of the European Union (Article 35; CFR, 2012) guarantees the right to preventive health care and medical treatment under conditions established by national laws and practices. Similarly, the European Social Charter (ESC, 1961; rev. 1996) affirms health as a collective social right. Discriminatory exclusion from research contravenes these principles, especially in light of Article 14 of the European Convention on Human Rights (ECHR, 1950), which prohibits discrimination in the enjoyment of Convention rights.

Furthermore, the Council of Europe Convention on Human Rights and Biomedicine, a.k.a. Oviedo Convention (Council of Europe, 1997), a binding instrument on bioethics and human rights in biomedical research, emphasises the importance of protecting vulnerable persons involved in research and ensuring equal access to its benefits. The United Nations Educational, Scientific and Cultural Organization (UNESCO) Universal Declaration on Bioethics and Human Rights (2005) reinforces this position, urging states to ensure that the benefits of scientific progress are shared equitably.

1.3 Problem Statement

Despite international and regional commitments to equality and health justice, real-world clinical trial practices often fall short. Barriers to participation in clinical trials include restrictive eligibility criteria, trial site locations inaccessible to low-income populations, language barriers, lack of informed consent procedures adapted for diverse populations, and historical mistrust—particularly amongst groups historically subjected to medical abuse (Ford et al., 2008; Murthy et al., 2004).

Moreover, funding, design, and regulatory frameworks governing clinical trials often prioritise commercial goals over equitable access, further marginalising underserved communities. These systemic problems call for an integrated response that is not only scientifically informed but also normatively grounded in the principles of equity, justice, and non-discrimination.

1.4 Aim and Research Questions

This Thesis aims to explore the multifaceted barriers to diversity, equity, and inclusion (DEI) in clinical trials and critically evaluate the human rights implications of underrepresentation, with a particular focus on the violation of the right to health and principles of non-

discrimination. Furthermore, it seeks to assess strategies that can be implemented to address these issues from a legal, institutional, and ethical standpoint.

Research Questions:

What are the main barriers to achieving DEI in clinical trial participation?

What human rights frameworks are relevant to ensuring inclusive clinical research practices?

What are the implications of underrepresentation for the realisation of the right to health and equality?

What strategies can effectively be employed—legally and institutionally—to address DEI challenges in clinical trials?

1.5 Methodology and Scope

This research employs a narrative review and commentary methodology. It draws on interdisciplinary literature from medical ethics, public health, human rights law, and regulatory policy. Unlike a systematic review, this approach allows for critical engagement with a broad range of sources, including grey literature, policy documents, and international legal texts.

The legal analysis follows a doctrinal approach, examining treaties, soft law, and relevant European and international case law (e.g., European Court of Human Rights [ECtHR], and Court of Justice of the European Union [CJEU]). The geographic scope is centered on Europe, while incorporating global examples and standards for comparative insight. A particular focus will be given to haematology as a case study to illustrate the real-world consequences of exclusion and the potential for reform.

1.6 Structure of the Thesis

The Thesis is structured as follows:

Chapter 2 introduces the core concepts of diversity, equity, and inclusion and their ethical significance in the context of clinical research.

Chapter 3 presents the relevant human rights framework, encompassing key international and European instruments and jurisprudence.

Chapter 4 outlines the methodological approach and rationale behind the narrative review and legal analysis.

Chapter 5 examines the major barriers to DEI in clinical trials, with a focus on structural, legal, and social challenges.

Chapter 6 discusses the human rights implications of exclusion, particularly with regard to the right to health and non-discrimination.

Chapter 7 explores strategies to improve DEI, including legal reforms, institutional practices, and ethical oversight.

Chapter 8 offers critical commentary on gaps and limitations in current responses.

Chapter 9 concludes with findings and recommendations for future research, policy, and legal development.

Chapter 2 – Conceptual Framework: Diversity, Equity, and Inclusion in Clinical Research

2.1 Defining Diversity, Equity, and Inclusion in Clinical Research

Diversity, equity, and inclusion (DEI) are foundational concepts in both health research ethics and public health governance. Although they are often used collectively, they represent distinct yet interrelated aspects of justice in clinical research:

- Diversity refers to the representation of different social, demographic, and biological characteristics amongst participants in clinical trials. These include, but are not limited to, race, ethnicity, sex, gender identity and sexual orientaion, age, disability status, geographic origin, and socioeconomic background (Oh et al., 2015). In clinical research, diversity ensures that findings are applicable across a broad spectrum of populations.
- Equity focuses on fairness and justice in access, opportunities, and outcomes. In the context of clinical research, this principle mandates the proactive identification and mitigation of structural and institutional barriers that impede trial participation by marginalised or historically excluded groups (Chen et al., 2014).
- Inclusion signifies the deliberate effort to create research environments and protocols that facilitate and promote the participation of diverse populations. It requires researchers to develop studies that accommodate and value difference—whether cultural, linguistic, or physical—and to actively engage underrepresented communities meaningfully across all stages of the research process (George et al., 2014).

Collectively, these principles are essential not only for enhancing scientific validity but also for upholding ethical standards and human rights norms in biomedical research.

2.2 Scientific and Ethical Rationale for Inclusive Research

From the scientific point of view, inclusive trials are necessary to ensure the external validity and generalizability of study results. Clinical interventions may have varying effects depending on genetic, physiological, social, or environmental factors. For example, pharmacokinetics/pharmacodynamics can differ by sex or ethnicity, and side effects may be more pronounced in certain populations (Chen et al., 2014; Hussain-Gambles et al., 2004). The

lack of (adequate) representative samples risks skewing findings and resulting in treatments that are less effective—or even harmful—for non-majority groups.

From an ethics perspective, inclusive research is rooted in the core principles of justice, beneficence, and respect for persons, as articulated in the Belmont Report (National Commission, 1979) and echoed in international frameworks such as the Declaration of Helsinki (World Medical Association [WMA], 2024) and the UNESCO Universal Declaration on Bioethics and Human Rights (2005):

- The principle of justice requires that the benefits and burdens of research be distributed fairly across populations. Excluding certain groups from participation—and by extension, from the benefits of research—violates this norm.
- Moreover, the principles of non-maleficence and beneficence further demands that researchers maximise possible benefits and minimise potential harms (Nature Human Behaviour, 2022). Inclusive research is essential to meeting this obligation: interventions that are developed without attention to diverse needs may inadvertently cause harm or be ineffective for some populations. Ensuring diverse representation helps avoid these risks and supports the ethical imperative of doing good for all participants.
- Lastly, the principle of respect for persons implies that individuals must be treated as autonomous agents, capable of making informed choices—including their participation or not in research—, regardless of their social, cultural, and/or linguistic background. When certain groups are excluded from participation due to inadequate communication, inaccessible materials, and/or assumptions about vulnerability, their autonomy is effectively denied.

Thus, inclusive research is not simply recommended best practice—it is a fundamental ethical obligation grounded in the principles of justice, beneficence, and respect for persons. It ensures that the burdens and benefits of research are fairly distributed, that potential harms are minimised, and that all individuals are treated as autonomous agents in the scientific process. Without it, the research enterprise fails in both moral legitimacy and scientific validity.

2.3 Populations Commonly Underrepresented in Clinical Trials

A wide range of studies has documented the persistent underrepresentation of specific groups in clinical research. These include:

Racial and ethnic minorities: African, Asian, Latin American, and Indigenous populations are significantly less likely to be included in clinical trials conducted in Europe and North America, even for conditions that disproportionately affect them (Ford et al., 2008; Oh et al., 2015).

Women, particularly pregnant or lactating women, are often excluded due to perceived risks and legal liability, despite potential benefits from research tailored to their physiology (Blehar et al., 2013).

Older adults, despite being the primary users of many medical treatments, are often excluded by age cut-offs or comorbidity restrictions (Herrera et al., 2010).

People with disabilities or cognitive impairments, due to consent complexities and physical accessibility barriers.

Socioeconomically disadvantaged groups, who may lack access to trial locations or face indirect costs such as unpaid time off or travel expenses (George et al., 2014).

Moreover, the aforementioned inequalities are exacerbated by rapidly changing demographic trends, particularly the forced displacement of populations due to armed conflict and environmental crises. These shifts pose considerable challenges to inclusivity and equitable representation in clinical research, especially across Europe and other host regions globally.

Lastly, underrepresentation of certain patient populations in clinical trials is also linked to DEI issues within the research community itself (Oh et al., 2015). Minority researchers are more likely to conduct research in minority patients and effectively address mistrust, yet they are significantly underrepresented in the scientific community. For example, Blacks or African Americans and Hispanics represented only 4.3% and 7.2%, respectively, of biomedical doctorate awardees in 2013, while they accounted for 13.9% and 17.2% of the U.S. population. Similar underrepresentation extends to research funding, leadership appointments, and clinical trial approvals and grant allocation.

Overall, the systemic underrepresentation of specific groups in clinical research is often justified on methodological, logistical, or risk-related grounds, yet it ultimately perpetuates health inequalities and reinforces social exclusion.

2.4 Diversity, Equity, and Inclusion in the Context of Haematology

The field of haematology offers a particularly illustrative example of DEI challenges. Conditions like SCD and certain blood cancers disproportionately affect individuals from racial

or ethnic minorities, yet these groups remain underrepresented in trials testing new therapies (Grismore et al., 2025; Zanfardino et al., 2022).

For example, SCD primarily affects individuals of African ancestry, and yet Black patients are consistently under-enrolled in trials for new disease-modifying treatments for SCD. Barriers to their participation include historical mistrust of the medical system (stemming from unethical past research practices), limited access to specialised clinical trial centres, language and literacy issues, and the absence of culturally competent recruitment strategies (Grismore et al., 2025; Zanfardino et al., 2022).

In Europe, these disparities are compounded by the lack of uniform data collection on race or ethnicity in many countries, which complicates the precise measurement of underrepresentation (Gampenrieder et al. 2025; European Medicines Agency, 2022). Moreover, most haematology research is concentrated in urban academic centres, which often do not serve the populations most affected by these conditions (George et al., 2014; Loree et al., 2019).

Despite these challenges, some promising initiatives have emerged. For instance, community-based recruitment, culturally adapted outreach programmes, and involving patient advocacy groups in study design have shown potential in increasing trial participation rates amongst underserved populations in haematology (Wilson et al., 2024; Kidane et al., 2023).

Chapter 3 – Human Rights Framework: Legal and Normative Foundations

3.1 Introduction

Health and biomedical research are not value-neutral endeavors; they are shaped by ethical norms and embedded within legal obligations. Clinical research that excludes or marginalises certain groups risks violating fundamental human rights, most notably the right to health, non-discrimination, and equal access to the benefits of scientific progress. These rights are codified in international treaties, regional charters, and declarations that impose obligations on states, research institutions, and private actors involved in clinical trials.

3.2 The Rights to Health and Science

The right to the highest attainable standard of physical and mental health is enshrined in Article 25 of the UDHR (1948) and further developed in Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR, 1966). According to General Comment No. 14 of the Committee on Economic, Social and Cultural Rights (CESCR, 2000), the right to health includes four essential elements: availability, accessibility, acceptability, and quality of health services.

Underrepresentation in clinical research undermines all four principles, particularly accessibility and quality, for disadvantaged or marginalised populations. This results in therapies that may be less effective, less safe, or simply inappropriate for individuals from underrepresented groups, thus compromising their right to health.

Moreover, excluding diverse population form clinical trials may violate the right to benefit from scientific progress (a.k.a. right to science), which affirms that all people have access to the benefits of scientific advancements, including those arising from medical research. Although often overlooked in the context of biomedical research, the right to benefit from scientific progress—recognised in Article 15(1)(b) of the ICESCR and emphasised further in General Comment No. 25 (CESCR, 2020) and the UNESCO Universal Declaration on Bioethics and Human Rights (2005)—is essential for equitable participation in and access to innovations developed through clinical trials, and a key component of a fair and inclusive global health system.

3.3 Principles of Equality and Non-Discrimination

Equality and non-discrimination are cross-cutting principles of international human rights law. Article 2 of the UDHR and Article 2(2) of the ICESCR explicitly prohibit discrimination in the enjoyment of rights, including health and science. At the European level, Article 14 of the European Convention on Human Rights (ECHR, 1950) similarly prohibits discrimination in the enjoyment of the Convention rights.

Moreover, several international instruments impose specific obligations on member states to address systemic discrimination within the health and research sectors:

- The International Convention on the Elimination of All Forms of Racial Discrimination (ICERD, 1965) highlights specific obligations on states to eliminate systemic discrimination, including in public health and research.
- Similarly, the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW, 1979) requires states to ensure that women have equal access to health services and participation in scientific research (Articles 11 and 12).
- For individuals with disabilities, the Convention on the Rights of Persons with Disabilities (CRPD, 2006) secures equal access to healthcare (Article 25) and emphasises protection against non-consensual medical experimentation and exploitation (Article 15).

These instruments collectively affirm that systematic exclusion of specific groups from research participation—and by extension from the rights to health and benefits of scientifnc advances—constitutes a form of indirect discrimination, even when unintentional.

3.4 Regional Legal Instruments in Europe

Within Europe, several legal frameworks reinforce the imprerative of inclusive health research:

- Charter of Fundamental Rights of the European Union (CFR, 2012): Article 35 affirms the right to medical care (including preventive health care), while Article 21 prohibits discrimination based on various ground, including race, sex, age, and/or disability.
- European Social Charter (ESC, 1996): Article 11 obliges states to remove barriers to health access, including those embedded in research systems.
- Council of Europe Convention on Human Rights and Biomedicine (Oviedo Convention, 1997): This legally binding treaty mandates that “particular protection” for

vulnerable people in research contexts (Article 17), emphasising equity and respect for human dignity. While not all European countries have ratified the Oviedo Convention (currently 30 out of 46; Council of Europe, 2023), it remains a guiding framework across the continent for bioethical standards in clinical research.

- EU Clinical Trials Regulation (Regulation (EU) No. 536/2014, 2014): Although primarily focused on safety and transparency, this regulation also encourages the inclusion of vulnerable populations such as children and persons unable to consent, provided robust protections are met.

3.5 Soft Law and Bioethics Declarations

In addition to binding treaties, several soft law instruments are also in place to elaborate normative expectations for DEI in clinical research:

- Declaration of Helsinki (WMA, 2024): Paragraphs 13 and 20 emphasise that research must be scientifically justified and relevant to the populations involved, thus discouraging the use of overly homogeneous samples.
- UNESCO Universal Declaration on Bioethics and Human Rights (2005): Articles 14 and 15 highlight social responsibility, health equity, and equitable sharing of the benefits of scientific research.
- Council for International Organizations of Medical Sciences (CIOMS) ethical guidelines for health-related research involving humas (CIOMS, 2016): Developed by CIOMS in collaboration with the World Health Organization (WHO), these guidelines urge investigators to ensure that socially and/or economically disadvantaged groups are not excluded from health research unless scientifically justified.

Though not legally binding, these declarations significantly influence national ethics frameworks and research guidelines.

3.6 Case Law and Interpretative Practice

Human rights courts and treaty bodies have occasionally addressed issues relevant to DEI in health research, even if not always explicitly within clinical trials.

3.6.1 European Court of Human Rights

Starting with ECtHR, illustrative cases on DEI issues in health care are provided below:

- D.H. and Others v. Czech Republic, App. No. 57325/00 (ECtHR, 2007):
  This landmark ruling found a violation of Article 14 ECHR (non-discrimination) in conjunction with Article 2 of Protocol No. 1 (right to education), establishing that even policies with an indirect discriminatory effect can violate human rights, affirming the need to address systemic biases affecting marginalised groups like Roma.
- V.C. v. Slovakia, App. No. 18968/07 (ECtHR, 2011):
  This case condemned the forced sterilisation of Roma women, finding violations of Article 3 ECHR (prohibition of inhuman or degrading treatment) and Article 8 ECHR (right to respect for private and family life), directly highlighting grave violations of bodily integrity, reproductive rights, and non-discrimination against marginalised communities in medical contexts.
- Botta v. Italy, App. No. 21439/93 (ECtHR, 1998):
  This case highlighted states' positive obligations under Article 8 ECHR (right to private life) and Article 14 ECHR (non-discrimination) to ensure the effective enjoyment of rights, including access to public facilities for persons with disabilities, which extends to accessibility in health and science.
- Glor v. Switzerland, App. No. 13444/04 (ECtHR, 2009):
  This case found a violation of Article 14 ECHR (discrimination) in conjunction with Article 8 ECHR (private life) and Article 1 of Protocol No. 1 (property), addressing discrimination based on disability in social security and employment, underscoring the state's obligation to ensure equal rights for persons with health conditions.
- D. v. United Kingdom, App. No. 30240/96 (ECtHR, 1997):
  This case found a violation of Article 3 ECHR (prohibition of inhuman or degrading treatment), affirming the absolute prohibition of inhuman or degrading treatment, relevant to health when state actions (like forced returns for critically ill individuals) compromise their right to health and dignity.
- Nitecki v. Poland, App. No. 65653/01 (ECtHR, 2002):
  This case found a violation of Article 3 ECHR (inhuman or degrading treatment) due to inadequate medical care provided to individuals in state detention, underscoring the state's responsibility to ensure equitable health access for incarcerated populations.

3.6.2 Court of Justice of the European Union

Similarly, the CJEU has addressed relevant cases:

- Coman and Others v. Inspectoratul General pentru Imigrări, C-673/16 (2018) (CJEU, 2010):

  This landmark case interpreted Article 21 TFEU (free movement) and Article 7 of the EU Charter of Fundamental Rights (private and family life), affirming the right to free movement for same-sex spouses within the EU, directly addressing non-discrimination based on sexual orientation and family status.
- A v. Veselības ministrija, Case C-243/19 (CJEU, 2020):

  This ruling interpreted Articles 20 and 21 TFEU (citizenship and free movement), clarifying the right to cross-border healthcare, particularly when religious beliefs necessitate specific medical treatments (like bloodless surgery) not available in the home Member State.
- Pensionsversicherungsanstalt v. Christine Kleist, Case C-356/09 (CJEU, 2010):

  This case involved the interpretation of Council Directive 2000/78/EC, addressing age discrimination in social security, thus reinforcing the principle of non-discrimination in access to benefits for different age groups.
- Pfeiffer v. Deutsches Rotes Kreuz, C-397/01 to C-403/01 (CJEU, 2004):

  This ruling nterpreted Directive 2003/88/EC (working time organization), clarifying working time directives for emergency service personnel and indirectly relevant to health equity through fair labor conditions.

3.6.3 United Nations treaty bodies

Beyond Europe, United Nations (UN) treaty bodies have also provided interpretations:

- Toonen v. Australia, Communication No. 488/1992, CCPR/C/50/D/488/1992 (HRC, 1994):
- found violations of Article 17 (right to privacy) and Article 26 (equality and non-discrimination) of the ICCPR, establishing a key precedent against discrimination based on sexual orientation.
- L.N. v. Peru, Communication No. 1153/2003, CCPR/C/85/D/1153/2003 (HRC, 2005):
- The Human Rights Committee found violations of Article 7 (freedom from cruel, inhuman or degrading treatment) and Article 24 (protection of children) of the ICCPR, due to the state's failure to prevent involuntary sterilization without consent, particularly concerning a woman with a mental disability.
- CESCR – General Comment No. 14 (2000), General Comment No. 25 (2020), and Concluding Observations (2017), (CESCR, 2017; 2000; 2020):

These authoritative interpretive documents and state reviews by the Committee on Economic, Social and Cultural Rights elaborate on the right to health (ICESCR Article 12) and the right to science (ICESCR Article 15), actively identifying gaps in state compliance with equity and non-discrimination in health and research contexts.

3.6.4 Cross-Regional and Regional Precedents

- González et al. ("Cotton Field") v. Mexico, Inter-American Court of Human Rights, Series C No. 205 (IACtHR, 2009):
  This landmark ruling found multiple violations of the American Convention on Human Rights (e.g., Articles 4, 5, 7, 24, 25), holding the state accountable for systemic failures leading to gender-based violence and femicide and emphasizing state responsibility to prevent and investigate human rights violations, especially against women.
- Inter-American Court of Human Rights – I.V. v. Bolivia, Series C No. 329 (IACtHR, 2016):
  This crucial case found violations of Articles 5 (humane treatment), 7 (personal liberty), 11 (privacy), 19 (rights of the child), 24 (equality) and 25 (judicial protection) of the American Convention on Human Rights, addressing forced sterilization and the right to informed consent for women living with HIV.
- African Commission on Human and Peoples' Rights – Purohit and Moore v. The Gambia, Comm. No. 241/2001 (ACHPR, 2003):
  his significant ruling found violations of Articles 2 (non-discrimination), 3 (equality), 5 (human dignity/freedom from ill-treatment), 7 (fair trial), 16 (right to health), and 18(4) (rights of persons with disabilities) of the African Charter, establishing the human rights of persons with mental disabilities related to involuntary detention and lack of legal safeguards.

Collectively, these interpretations build a jurisprudential foundation for holding states accountable when clinical research systems systematically exclude vulnerable groups.

3.7 Responsibilities of Private and Institutional Actors

Although states are the primary duty-bearers under international law, non-state, private actors—including pharmaceutical companies, universities, and hospitals—have responsibilities to uphold human rights standards.

According to the UN Guiding Principles on Business and Human Rights (2011), businesses must respect human rights and proactively prevent adverse impacts. In clinical research, this translates to a duty to design trials that are inclusive, non-discriminatory, and ethically sound.

Similarly, funders, research ethics committees, researchers themselves, and journal editors serve as gatekeepers. They must ensure that study protocols demonstrate equitable inclusion, especially when targeting diseases that disproportionately affect marginalised groups (London & Kimmelman, 2008).

3.8 Summary

Diversity, equity, and inclusion in clinical trials are not merely aspirational goals—they are legal and ethical obligations grounded in international and European human rights law. The rights to health, sience, and non-discrimination converge to require inclusive and equitable research practices. Failure to include diverse populations not only undermines the scienific validity of research but may constitute a violation of legally protected human rights.

Chapter 4 – Methodology and Approach

4.1 Introduction

This chapter outlines the methodology framework used in the the present thesis, which addresses DEI challenges in clinical trials from a human rights perspective. Given the dual nature of the topic—spanning both health research and international human rights law—a mixed qualitative methodology is adopted, combining a narrative literature review with a critical legal and normative analysis.

This approach enables the synthesis of evidence across disciplinary boundaries and the critical evaluation of DEI-related challenges within biomedical research governance and law.

4.2 Methodological Approach

4.2.1 Narrative Literature Review

Unlike systematic reviews that typically focus on narrowly defined research questions and quantitative metrics, narrative reviews provide a flexible and interpretive synthesis of scholarly literature. This method is appropriate for interdisciplinary, conceptual, and policy-oriented topics such as DEI in clinical trials, where the aim is to identify patterns, contextualise debates, and highlight normative implications (Greenhalgh et al., 2018).

The literature review includes:

- Peer-reviewed publications in biomedical (including bioethics) journals;
- Legal and human rights scholarship from academic databases;
- Policy papers, regulatory reports, and guidance documents issued by international organisations (e.g., WHO, UNESCO, Council of Europe);
- Selected grey literature (e.g., non-governmental organisation [NGO] reports, think tank briefs) to address practical implementation challenges.

Searches were conducted in databases such as PubMed, Scopus, HeinOnline, Google Scholar, and EUR-Lex using combinations of keywords like “diversity in clinical trials,” “research ethics,” “right to health,” “discrimination,” “bioethics,” and “human rights in biomedical research.” Literature published between 2000 and 2024 was prioritised.

Eligibility criteria for source selection:

Inclusion criteria

- Relevance to DEI within clinical trials;
- Focus on Europe or applicability to international human rights law;
- English-language sources (with the inclusion of limited, specific literature and local regulatory frameworks translated into English).

Exclusion criteria

- Purely technical clinical research unrelated to DEI;
- Commentary lacking scholarly or institutional authority.

4.2.2 Doctrinal Legal Analysis

To analyse the human rights dimensions of DEI in clinical research, a doctrinal legal method is employed. This involves the close reading and interpretation of primary legal texts (e.g., treaties, conventions, relevant case law), and secondary legal sources (e.g., scholarly commentary, General Comments by treaty bodies, and authoritative court judgments).

Key sources include:

- European instruments:
  ECHR (1950), CFR (2012), Oviedo Convention (1997), EU Clinical Trials Regulation (536/2014);
- International instruments:
  UDHR (1948), ICESCR (1966), ICERD (1965), CEDAW (1979), CRPD (2006);
- Soft law instruments:
  Declaration of Helsinki (WMA, 2024), UNESCO Declaration on Bioethics and Human Rights (2005), CIOMS ethical guidelines (CIOMS, 2016);
- Key jurisprudence, including:
  ECtHR, CJEU, UN human rights treaty bodies (e.g., HRC), selected cross-regional and regional human rights courts (e.g., Inter-American Court of Human Rights, African Commission on Human and Peoples' Rights);
- Interpretive guidance from UN treaty bodiesReports by UN treaty bodies (e.g., General Comment No. 14 on the right to health and General Comment No. 25 on the right to science by CESCR (2000, 2020), as well as reports from other international organisations (e.g., WHO) and national human rights institutions.

This methodlogical approach allows for:

- The interpretation of legal norms in relation to underrepresentation and discrimination in clinical research;
- The mapping of state obligations and the responsibilities of non-state actors within the research environment;
- An assessment of the level of alignment between established ethical guidelines and overarching legal principles.

4.3 Analytical Framework

The analytical part of the present Thesis is structured thematically around three key dimensions:

- Barriers to DEI: This section aims to identify and classify institutional, legal, logistical, and social obstacles impeding inclusivity in clinical trials.
- Human rights implications: This dimension entails evaluating exclusionary practices against established legal principles, with a particular focus on non-discrimination and the right to health.
- Strategies and obligations: This section aims to assess legal, regulatory, and policy interventions designed to improve DEI in clinical trials.

Where possible, the analysis is contextualised with pertinent case examples (e.g., SCD trials in haematology) and informed by interdisciplinary literature (including law, medical ethics, sociology, and public health fields).

4.4 Limitations

This Thesis acknowledges several inherent limitations:

As a narrative review, the methodology lacks the replicability and quantitative rigour of systematic reviews;

Lack of empirical data collection (e.g., interviews, focus groups, or surveys), which limits the Thesis' ability to incorporate the perspective of individuals affected by underrepresentation in clinical research as well as healthcare professionals and researchers. As a result, important insights into practical implementation barriers, perceptions of discrimination or exclusion, and context-specific challenges may remain underexplored;

Non-English literature and local regulatory frameworks not translated into English are only indirectly referenced;

Legal analysis may face constraints due to jurisdictional variation across European states and the non-binding nature of certain soft law instruments.

Despite these limitations, the combination of normative analysis and critical literature review provides a robust basis for exploring the ethical and legal foundations of DEI in clinical trials.

4.5 Ethical Considerations

While the study does not involve human participants or data, it adheres to ethical standards in scholarly research, including: critical engagement with all sources; accurate attribution and citation of all referenced material; transparency about scope and limitations; and respect for the dignity and rights of affected populations in framing the analysis.

In line with the European Code of Conduct for Research Integrity (ALLEA, 2017) as well as the European Master's Programme in Human Rights and Democratisation Rules of Assessment 2024-2025 (Article 6), care has been taken to avoid misrepresentation and uphold academic honesty throughout the Thesis.

4.6 Summary

This chapter has outlined the qualitative, interpretive methodology adopted to investigate DEI in clinical trials from a human rights lens. The dual approach—integrating a narrative literature review and a doctrinal legal analysis—provides a comprehensive and critical foundation for the subsequent discussion of DEI barriers, human rights implications, obligations, and strategies in advancing equity and inclusion in clinical research.

Chapter 5 – Barriers to Diversity, Equity, and Inclusion in Clinical Trials

5.1 Introduction

Despite the compelling scientific, ethical, and legal imperatives for inclusive clinical research, underrepresentation persists amongst diverse populations, including racial and ethnic minorities, women (including pregnant women), older adults, individuals with disabilities, and socioeconomically disadvantaged groups. These exclusionary patterns stem from a complex interplay of structural, institutional, legal/regulatory, societal, and/or individual factors, which collectively undermine trial validity, public trust, and human rights.

Structural barriers refer to broader socio-economic and systemic inequalities that limit access to clinical research participation, while institutional barriers emerge from policies, practices, and cultures within research institutions, ethics committees, funding agencies, and pharmaceutical companies. Despite being technically different, in most real-world cases, they are deeply intertwined and practically inseparable, as institutional choices reflect structural inequalities and vice versa. Similarly, it is often very hard to isolate individual barriers from societal influence, as "individuals" choices are largely shaped by societal cultural, historical, and collective dynamics. Thus, the barriers explored in this chapter are overlapping, cumulative, and mutually reinforcing, and require nuanced examination and holistic, integrated responses.

5.2 Structural and Institutional Barriers

5.2.1 Geographic and Infrastructural Inequity

A major challenge to equitable trial participation is the geographic centralisation of research infrastructure. Clinical trials are predominantly conducted in urban tertiary medical centers, while, typically, local healthcare infrastructure is incapable of supporting trial logistics. This issue leads to systematical exclusion of populations living in rural, remote, or socioeconomically marginalised areas (George et al., 2014; Ford et al., 2008; Harris et al., 2024). Barriers such as limited transportation, burden of lost wages, and absence of community hospitals exacerbate this inequitable access.

For instance, otherwise trial-eligible individuals living in rural areas may need to travel long hours for each research visit, incurring substantial indirect costs. These costs can include lost income, fuel expenses, and accommodation, which prove particularly exclusionary for those in casual, informal, or low-wage employment, lacking paid leave or flexible hours. Moreover, community hospitals and local clinics—which could otherwise facilitate decentralised trial access—are frequently underfunded or excluded from research networks due to limited human resources, administrative and/or technological capacity.

The above barrier applies to the vast majority of healthcare systems across the globe. A particularly illustrative example can be found in haematology trials on SCD. Despite SCD predominantly affecting individuals of African descent, SCD trials are concentrated in majority-white regions with limited Black populations (Zanfardino et al., 2022; Kidane et al., 2023). Notably, this specific exclusion is not merely logistical but also deeply historical; populations most affected by SCD have been least served by existing research infrastructure and prioritisation.

5.2.2 Socioeconomic Disadvantage

Socioeconomic status is a pervasive determinant of health and a major predictor of exclusion from clinical research. Participating in trials often involves substantial opportunity costs, such as off work time, transport expenses, and/or childcare arrangements. These burdens are seldom mitigated by adequate reimbursement or structural supports, making participation unfeasible for individuals already experiencing economic hardship (George et al. 2024).

Importantly, financial hurdles extend beyond participants. Community clinics and local clinics which serve low-income populations often lack the essential research infrastructure, including adequate funding, trained personnel, and administrative or technological support. This perpetuates a two-tier system of exclusion, where clinical research is primarily accessible to those already embedded within well-resourced institutions.

At the institutional level, the absence of adequate structural support mechanisms, such as travel expenses reimbursement, home visits or remote monitoring, means that the trial design itself excludes certain candidate participants that cannot follow rigid study schedules, disproportionately affecting lower socioeconomic strata. This failure to adapt research logistics to socioeconomic diverse populations reflects a broader institutional inertia that prioritises convenience and administrative simplicity over genuine equitable inclusion.

5.2.3 Policy Framework Bias

State or donor policies may be designed to prioritise national, political or individual agendas rather than public health needs. A recent example is the sudden and unprecedentent United States Agency for International Development (USAID) shutdown, which demonstrably disrupted global health research infrastructure, resulting in the cessation of numerous clinical initiatives critical for vulnerable communities (Cavalcanti et al., 2025; Reuters, 2025).

Notably, these decisions may have cascading effects down to the institutional and societal level. Local research infrastructure, including staff capacity, administration, and data systems, becomes eroded threatening future engagement. A geopolitically motivated funding withdrawal can therefore nullify years of community trust-building and capacity development.

5.2.4 Restrictive Eligibility Criteria

The use of restrictive eligibility criteria is one of the most frequently cited institutional barriers to inclusion. Clinical trials frequently improse stringent eligibility criteria excluding specific populations, including blanket exclusions of pregnant women, patients with certain comorbidities, older adults, and persons with disabilities (Blehar et al., 2013; Herrera et al., 2010).

These criteria are often set without adequate scientific rationale. Instead, they typically represent risk-averse attitudes amongst researchers and funding agencies, a lack of enforceable regulatory framework for inclusive design, or outdated assumptions about safety and complexity. Whatever the exact reason of stringent eligibility criteria is, this approach systematically skew trial participant populations towards, younger, healthier, and often whiter cohorts, thus limiting the generalisability of findings and exacerbating existing health inequalities.

The implications are profound: research findings derived from underrepresentative populations cannot reliably inform healthcare standards for excluded groups. This not only undermines scientific validity of clinical trials but potentially violates state obligations under CRPD (2006), CEDAW (1979), and ICESCR (Article 12 and Article 15(1)(b) (ICESCR, 1966; CESCR, 2000), which enshrines the right to the highest attainable standard of health for all and right to science / benefit from scientific progress and its applications.

5.2.5 Lack of Diversity in Research Institutions

Research leadership—whether within academic institutions, ethics committees, pharmaceutical sponsors, or regulatory bodies—remains disproportionately composed of

individuals from majority backgrounds. This inevitably results to lack of lived experience or cultural familiarity with marginalised populations, which in turn can contribute to significant blind spots in the development and implementation of trial design, recruitiment strategies and consent procedures (Oh et al., 2015).

For instance, recruitment strategies may predominantly rely on physician referrals from academic hospitals, which would exclude individuals without regular access to academic centres and/or specialist care. Similarly, informed consent language often requires a higher-education-level reading comprehension, rendering them inaccessible to broader group of candidate participants.

Overall, the lack of diversity and inclusivity within research leadership hinders effective engagement with diverse communities. Therefore, realisation of DEI within research institutions is not merely a matter of fairness; it is integral to design and implement protocols that are responsive, inclusive, and genuinely reflective of the needs of communities most affected by disease.

5.3 Legal and Regulatory Barriers

5.3.1 Absence of Legal Mandate and Enforcement

The majority of the existing clinical trial regulatory frameworks focus on safety and efficacy but lack a legally binding mandate for inclusive participation. Most national and supranational guidelines, inclusing the EU Clinical Trials Regulation (536/2014), encourage DEI-sensitive practices in principle, but stop short of requiring it through enforceable mechanisms. References to inclusion are typically framed as as a mere recommendation or aspirational goal, but without setting clear thresholds, measurable targets, or consequences for failure to meet inclusion goals. In this context, DEI implementation remains optional, more of an ideal, rather than a legal or procedural requirement.

The absence of mandatory DEI provisions directly undermines the right to science, as enshrined in Article 15 of the ICESCR (1966) and further elaborated in CESCR General Comment No. 25 (CESCR, 2020), which affrims that states must actively encourage inclusive participation in the scientific enterprise and dismantle structural barriers to access. In the clinical trial context, exclusionary research practices violate both this obligation and the corresponding right to health under Article 12 of the ICESCR and its General Comment No. 14 interpretation (CESCR, 2000). Moreover, various ethical guidelines, such as the Declaration

of Helsinki (WMA, 2024) and the UNESCO Universal Declaration on Bioethics and Human Rights (2005), emphasise fairness, inclusion, and respect for vulnerability. However, as long as they are not incorporated into binding domestic law, these crucial norms often remain under-implemented in practice.

Moreover, even where inclusion is nominally referenced in law or institutional policy, a second layer of deficiency arises: weak or absent enforcement and accountability mechanisms. Clinical trial sponsors, ethics boards, and funding bodies rarely require investigators to demonstrate demographic representativeness or justify exclusion. While some funders and journals have introduced DEI statements, these are often symbolic or box-ticking exercises, remaining largely unmonitored, and procedurally marginal. Clinical investigators and sponsors may evaluate recruitment success based solely on overall enrolment targets rather then diversity metrics. Where collected, inclusion metrics are not consistently reported, and their absence rarely triggers institutional review or funding consequences. Without institutional oversight or meaningful sanctions, diversity commitments risk becoming procedural formalities — aspirations on paper rather than realities in practice.

Overall, this lack of both a legal mandate and practical enforcement results in a twofold barrier: there is neither an obligation to design inclusive studies, nor a system to ensure that stated inclusion goals are met. Regulatory inertia, insufficient monitoring, and the absence of enforceable accountability for underrepresentation allow inequities to persist unchallenged. Notably, the failure to legislate or effectively enforce inclusion ultimately reflects deeper value hierarchies, where scientific expediency is frequently prioritised over social equity, and research efficiency over distributive justice. The resulting gap between principle and practice undermines the credibility of DEI efforts in research and perpetuates structural biases, thereby compromising both the ethical and scientific integrity of clinical trials.

5.3.2 Data Privacy and Consent Complexities

Data protection legislation, such as the General Data Protection Regulation (GDPR) (2016), while crucial for safeguarding individual privacy, can inadvertently create barriers to clinical trial participation for certain marginalised groups, including migrant populations, undocumented individuals, and linguistic minorities.

This impediment often arises from two primary factors: heightened privacy concerns and the perceived complexity of consent procedures. Concerns over surveillance or data misuse can

generate confusion, mistrust, or outright fear and significantly deter participation. For example, undocumented individuals may fear that trial participation could lead to their identification and deportation, even when research protocols guarantee confidentiality. Additionally, the technical and legalistic language commonly used in privacy disclosures often exceeds the average literacy levels of many potential participants, undermining the principle of informed consent (Mirza et al., 2024).

These challenges raise inherent tensions with other legal norms. Article 8 of ECHR (1950) protects the right to private life (extended to equitable access to health and scientific benefit), and similarly, CFR (2012) guarantees both data protection and non-discrimination. Effectively addressing these intersecting rights necessitates regulatory precision and governance frameworks that carefully avoid over-compliance, which could undermine essential inclusion.

5.4 Societal and Individual-Level Barriers

5.4.1 Historical Mistrust and Collective Memory

Past ethical transgressions in medical research, such as Tuskegee Syphilis Study (Centers for Disease Control and Prevention [CDC], 2021; Jones, 1993) and the forced sterilisation of Roma women (V.C. v. Slovakia, ECtHR, 2011), continue to profoundly influence community perceptions, reinforcing mistrust of research.

5.4.2 Cultural and Linguistic Inaccessibility

Language serves as a powerful determinant of inclusion. Yet, clinical trial materials are rarely translated or culturally tailored—despite the increasing multiculturalism of many European and global contexts—, resulting in the exclusion of non-native speakers and culturally diverse populations (Wylde et al. 2024; Bulto 2024).

Language barriers go beyond merely understanding study documents; they actively convey exclusion. When essential clinical trial documents are not available in a participant's mother tongue, it subtly signals that their inclusion is neither anticipated nor prioritised. For migrants, refugees, or ethnic minorities, this can reinforce feelings of alienation or marginality.

Moreover, translation alone often proves insufficient. Cultural competence involves a nuanced understanding of community-specific beliefs about norms and taboos around bodily functions, disease, health systems, and trust. Ignoring these complex dynamics inevitably leads to misunderstandings, non-participation, or withdrawal from studies (Bulto, 2024). Research institutions rarely invest adequately in cultural mediators, bilingual staff, or sustained

community outreach initiatives, despite these being precisely the mechanisms needed to build effective bridges between scientific research and diverse communities.

5.4.3 Health Literacy and Awareness

Awareness of trial opportunities is notably low, particularly amongst marginalised groups. Complexity of patient information sheets and consent forms exacerbates this, hindering comprehension and engagement (George et al., 2014).

Trial opportunities are rarely promoted through inclusive or accessible channels. Recruitment strategies typically rely on hospital networks, specialist referrals, or online platforms that fail to reach excluded groups. Community-based outreach—through religious institutions, social services, or local media—is rarely prioritised, despite its proven effectiveness in improving trial access and participation amongst diverse groups (Wallerstein, 2020; Clinical Trials Transformation Initiative & Yale Office of Minority Health & Health Equity, 2019).

Even when individuals become aware of a trial, evaluating its relevance, risks, and potential benefits can be challenging. Patient information sheets and informed consent forms are typically lengthy, technical, and poorly aligned with general health literacy standards. As a result, many individuals either decline consent or enroll without truly understanding the implications, undermining both participant autonomy and ethical integrity.

5.4.4 Legal and Immigration-related Fears

For undocumented migrants, asylum seekers, or individuals with precarious legal status, may exhibit reluctance to participate in research due to fear of deportation or misunderstanding regarding consent processes. Concerns about surveillance, personal data sharing, or institutional reporting obligations deter many of those individuals from engaging with health systems at all, let alone participating in trials (Lim et al., 2020; Asif et al., 2022; Mirza et al., 2024).

Even when explicit guarantees of confidentiality are provided, they may not be trusted, especially in countries where immigration enforcement functions overlap with public service provision. These fears are intensified by prevailing media narratives that criminalise undocumented populations and by inconsistent legal protections across EU Member States.

Moreover, trials may require documentation, such as as national ID numbers, national insurance, or proof of residence, that these individuals cannot always provide. In such cases, exclusion is not based on scientific rationale or safety considerations but on bureaucratic and legalistic requirements that fail to accommodate vulnerable populations.

5.5 Case Examples: Haematology, Oncology, and COVID-19

5.5.1 Haematology: Sickle Cell Disease

Black populations are consistently underrepresented in SCD clinical trials and routine SCD management, despite not expressing decreased willingness to participate in scientific advancements. (Grismore et al., 2025; Zanfardino et al., 2022; Pokhrel et al., 2023).

The underrepresentation of Black participants in SCD is the result of several intersecting factors. It primarily reflects a major structural, geogrpahic bias, as clinical trials have historically been centered on white-majority regions (Kidane et al., 2023; George et al., 2014; Ford et al., 2008; Grismore et al., 2025). Furthermore, at the socioeconomic level, Black individuals have disproportinately limited access to specialised haematology care, while having an average lower socioeconomic status. At the institutional level, the persistent lack of proactive community engagement strategies, such as partnerships with Black health organisations, churches, social service or local advocacy groups, compounds the sense of disconnection between researchers and the populations they aim to serve (Oh et al., 2015; Wallerstein et al. 2010). Besides, at the societal level, Black participants harbor deep mistrust rooted in prior injustices with healthcare systems and services (CDC, 2021; Jones, 1993). The compounded impact of those factors is ultimately translated in missed opportunities for clinical innovation, undermines the generalisability of results, and perpetuates health inequities.

5.5.2 Oncology: Age and Ethnic Diversity

Oncology trials often exclude older adults (defined as individuals over 70 years of age), despite the fact that this exact demographic accounts for the majority of cancer cases (Herrera et al., 2010). Similarly, black representation in the U.S. Food and Drug Administration (FDA)-approval oncology trials is less than 5%, which is much less of their approximate 13% prevalence in the general population (Loree et al., 2019).

These disparities arise from a combination of structural and institutional barriers, including institutional inertia and inadequate recruitment efforts in minority-serving hospitals, the absence of translated, culturally-sensitive consent materials, implicit biases amongst clinicians, and sponsor strategies for "clean" patient cohorts with restricitive age cut-offs and overly broad comorbidity exclusions. The consequences are significant: drug efficacy and toxicity profiles can vary across age groups and ethnicities, meaning that trial results may not accurately reflect real-world effectiveness and safety profiles. Moreover, the exclusion of older adults and

minorities from oncology research raises profound questions of distributive justice, particularly as cancer treatment becomes increasingly personalised and resource-intensive.

5.5.3 COVID-19 Vaccine Trials

Despite disproportionate impact, racial minorities and migrants were significantly underrepresented in early vaccine trials in Europe and the U.S. (Privor-Dumm et al., 2023; Gedela et al., 2024).

In the U.K., early-phase trials predominantly enrolled participants from white, middle-class populations residing near major academic centers. In the U.S., Latinos and Black communities, who were disproportionately affected by the pandemic, were often marginalised in recruitment efforts, whether due to logistics practicalities or entrenched community mistrust. In many instances, linguistic and cultural adaptation of materials occurred only after significant public criticism.

These omissions were both ethically and medically problematic. Critical questions regarding differential immune responses and post-vaccine side effects could not be fully addresses without representative trial data. Consequently, subsequent public health campaigns faced justified skepticism from communities that had been excluded from the initial science, yet were amongst the most exposed to risk of infection. The COVID-19 experience powerfully illustrates how urgency and scale do not negate the need for equity; on the contrary, such large-scale emergencies amplify the impacts of long-standing disparities in research and underscore the critical need for proactive deliberate inclusion strategies.

5.6 Representation Data & Monitoring Gaps

Robust data systems are central to both identifying and remedying disparities in clinical research. However, comprehensive representation data across trials remain patchy, inconsistent, or altogether absent, particularly within Europe.

- Gender representation: Women account for only ~38% of cardiovascular trial participants globally, despite relatively equal prevalence of cardiovascular events between men and women. (Liu et al., 2018; Jin et al., 2018). This gender gap persists in other disease areas, particularly in trials where reproductive concerns, pregnancy, or hormonal factors are misperceived as confounders.
- Ethnic and racial data: A comprehensive analysis of cancer clinical trials leading to FDA and EMA approvals between 2020 and 2022 showed that amongst 56 trials

analysed, only two-thirds of those original publications included information on ethnic origin, while importantly, race reporting trends in Europe are much lower than in worldwide or American-based trials on the same subject. (Gampenrieder et al., 2025).

- Lack of standardisation: Inconsistent tracking of ethnicity in the EU limits monitoring and accountability. Moreover, differences in how 'minority' is defined across Europe makes direct comparisons challenging (European Comission, 2020). Without these crucial data points, structural inequities remain invisible and unaddressed.
- Haematooncology and early-phase exclusion: Data from U.S.-based oncology trials show that non-white participation in early-phase trials remains below 20% (Dunlop et al., 2022; Camidge et al., 2021), representing substantial underrepresentation (roughly half of what would be expected for equitable representation) when taking into consideration that non-white individuals make up approximately 30–40% of the U.S. population. Similarly, in a UK single-centre review of 25 clinical trials for multiple myeloma, showed that non-White groups had lower representation, comprising only 27.4% of all trials. Notably, the gap was deeper when focusing on early-phase trials, where Black patients were significantly underrepresented compared to non-Black patients (Asher et al., 2022).

5.7 Summary

Barriers to DEI in clinical trials are complex and highly interconnected, stemming from a confluence of structural, institutional, legal, societal, and individual factors. These disparities not only jeopardise scientific validity of research outocomes but also impose significant infringements upon fundamental human rights, including the rights to health, science, and non-discrimination as outlined in treaties such as the ICESCR, CEDAW, CRPD, and various regional human rights instruments. Importantly, policy decisions—such as the USAID shutdown—can have immediate and destabilising consequences on research infrastructure and equitable access to medical advancements. The case studies of haematology, oncology, and COVID-19 vaccine development vividly highlight both the persistence of these disparities and the urgent need for comprehensive reform. In each instance, marginalised communities bore disproportionate health burdens while being insufficiently represented in the very research designed to alleviate those burdens. The next chapter examines the human rights implications of such exclusion, paving the way for Chapter 7's roadmap for legally grounded and ethically robust strategies for fostering inclusive clinical research.

Chapter 6 – Human Rights Implications of Underrepresentation

6.1 Introduction

The persistent underrepresentation of women, racial and ethnic minorities, older adults, persons with disabilities, and socioeconomically disadvantaged groups in clinical research raises concerns beyond scientific validity and public trust. Importantly, it also raises concerns regarding compliance with international human rights law. This chapter examines the human rights implications of exclusionary practices in clinical trials. Drawing upon the international and regional legal frameworks detailed in Chapter 3 (*Human Rights Framework: Legal and Normative Foundations*), it demonstrates how inadequate inclusion contravenes the rights to health, equality and non-discrimination, and the right to benefit from scientific progress. Furthermore, it also considers the positive obligations imposed on both state and non-state actors to rectify systemic inequities and ensure equitable participation in biomedical research.

Clinical trials are inherently both a scientific enterprise and normative legal domain. When certain populations are routinely underrepresented within clinical trials, they are denied equal opportunities to benefit from medical innovations and are exposed to increased health risks, since diagnostic and therapeutic models are primarily developed for majority populations. These exclusions perpetuate health inequities and further establish historical patterns of marginalisation. While these inequalities can partially result from individual and/or societal level factors, the legal and ethical accountability fundamentally lies in the structural and institutional configurations that reproduce these outcomes, and in the failures of public policy to effectively address them.

This chapter argues that the human rights implications of exclusion are multifaceted, consisting of both direct and indirect dimensions. Directly, the systematic exclusion of certain groups may violate their individual rights. Indirectly, it demonstrates a failure of duty bearers—especially states and research institutions—to create an enabling environment in which the right to health and the right to science can be realised equitably. This entails a shift from framing DEI as a matter of goodwill or good clinical / research practice to recognising it as a matter of compliance with international legal obligations.

6.2 The Right to Health and Discriminatory Exclusion

6.2.1 Normative Content of the Right to Health

Article 12 of ICESCR (1966) establishes the right of everyone to the "highest attainable standard of physical and mental health". According to the General Comment No. 14 of CESCR (2000) this right includes four essential elements: availability, accessibility, acceptability, and quality—collectively referred to as the "AAAQ" framework. Inequalities in clinical research participation undermine all four AAAQ elements:

- Availability: The absence of adequate representative data limits the availability of evidence-based treatments tested and validated across marginalised populations.
- Accessibility: Research predominantly conducted in urban, well-resourced settings inherently excludes those lacking financial means and/or geographic access.
- Acceptability: Trial protocols often fail to accommodate essential cultural, linguistic, or gender-sensitive considerations, diminishing their acceptability to diverse groups.
- Quality: Therapies validated primarily on homogeneous populations may prove ineffective, unsafe, or even harmful when given to diverse groups, thus compromising treatment quality.

Therefore, the systematic exclusion of specific groups constitutes not only a scientific limitation but a breach of their fundamental right to equitable access to healthcare solutions grounded in valid research. In particular, the absence of gender-sensitive research design, the exclusion of older adults and disabled persons, and the low enrolment of racial minorities all contribute to disproportionately poorer health outcomes amongst these groups (Liu et al., 2018; Jin et al.; Loree et al., 2019).

6.2.2 Discrimination and the Right to Health

Human rights bodies have consistently affirmed that health inequities that stem from systemic exclusion are not merely unfortunate outcomes but direct violations of the principle of non-discrimination, a core tenet of all major human rights treaties. According to Article 2(2) of the ICESCR (1966), the enjoyment of the right to health must be guaranteed without discrimination of any kind. Furthermore, CESCR has repeatedly emphasised that indirect exclusion—such as failing to accommodate the needs of specific populations in the research context—also constitutes a form of *de facto* discrimination (CESCR, 2000; CESCR, 2017).

In this context, restrictive eligibility criteria or inaccessible recruitment locations that disproportionately exclude women, racial minorities, or persons with disabilities can violate both Article 12 (right to health) and Article 2(2) (non-discrimination) of the ICESCR (1966). Similarly, CRPD (2006) obliges states to ensure that persons with disabilities are not excluded from health-related research on the basis of disability (Article 25), and to protect them from non-consensual experimentation (Article 15).

6.3 The Right to Science

6.3.1 Legal Basis and Interpretative Expansion

The right "to enjoy the benefits of scientific progress and its applications" is enshrined in Article 15(1)(b) of the ICESCR (1966). While often overlooked in the context of clinical trials, this right is elaborated in General Comment No. 25 (CESCR, 2020), which clarifies its scope to encompass not only access to the outcomes of scientific research but also opportunities for participation in scientific research itself. Under this expanded interpretation, underrepresentation in clinical trials violates the right to science by:

- Denying individuals and/or certain groups the opportunity to participate in research processes;
- Limiting their access to treatment developed based on unrepresentative evidence;
- Reinforcing systemic barriers that prevent equitable distribution of scientific benefits.

As such, the right to science is deeply interlinked with the rights to health and equality. The Committee further stresses that participation in science must be "inclusive and non-discriminatory," and that scientific progress must be aligned with the realisation of other human rights (CESCR, 2020).

6.3.2. Practical Implications for Duty-Bearers

General Comment No. 25 (CESCR, 2020) emphasises state obligations to undertake positive measures to enable equitable participation in and benefit from scientific progress. These duties include:

- Eliminating barriers to participation based on sex, gender, race, disability, and other protected characteristics;
- Developing and rigorously enforcing inclusive regulatory frameworks for research;
- Investing in robust data systems that enable the accurate, timely, and disaggregated collection of data to effectively monitor—and improve—participation rates.

States that fail to implement such measures they may be in breach not only of Article 15 but also of the cross-cutting obligations of non-discrimination (Article 2(2)) and equality.

Notably, the right to science also extends to non-state actors, such as public-private partnerships, universities, and pharmaceutical companies, given their functional role as *de facto* agents in delivering scientific progress. According to the UN Guiding Principles on Business and Human Rights (United Nations Human Rights Council [UNHRC], 2011), these actors have a responsibility to respect human rights by proactively preventing discrimination in their research processes and outputs.

6.4 Intersectionality and Compounded Exclusion

One of the most significant human rights concerns arising from exclusion in clinical trials is the compounded impact on individuals who embody multiple marginalised identities. This means that a person facing discrimination due to one characteristic, such as race, might experience even greater exclusion when this identity intersects with others, like sex/gender or disability. For example, a Black woman with a disability, may be affected by research designs that fail to accommodate any of those characteristics individually—let alone their intricate interplay.

This multi-layered disadvantage is best understood through the intersectionality framework (Crenshaw, 1989). Intersectionality, as an analytical lens, posits that various social and political identities are not isolated but rather intertwine. This intertwining results in unique forms of discrimination, privilege, and/or disadvantage that cannot be fully captured by simply adding up individual forms of discrimination. In the above example, intersectionality explains that a Black woman with disability experiences discrimination not just as a *Black person*, nor simply as a *woman*, nor solely as a *person with disability*, but rather as a *Black woman with a disability*, a distinct experience shaped by the specific intersection of all three identities. Within the research context, this system of exclusion isn't merely additive (i.e., racism plus sexism plus ableism); it's multiplicative, creating a unique form of marginalisation.

The legal concept of intersectionality, while more frequently discussed in sociological and feminist literature, has been increasingly recognised by human rights bodies. For example:

- The Committee on the Elimination of Discrimination against Women (CEDAW) has explicitly acknowledged that the intersection of gender with race, class, and disability

creates heightened vulnerability, leading to distinct forms of disadvantage (CEDAW, General Recommendation No. 25).

- The European Court of Human Rights (ECtHR) hasm implicitly addressed intersectional discrimination in several cases. A notable example is V.C. v. Slovakia (ECtHR, 2011) case, which concerned the forced sterilisation of a Roma woman, a case exemplifying discrimintion at the intersection of race, gender, and disability.

Failure to design trials that adequately account for these complex, intersecting identities, can result in research findings that are not only scientifically flawed, providing incomplete or misleading data, but also legally deficient, as they fail to uphold fundamental principles of equality and non-discrimination. As such, a human-rights-based approach to clinical research must move beyond analysing discrimination within isolated categories, and instead consider the lived realities of overlapping and compounded discrimination.

6.5 Mistrust, Informed Consent, and Historical Injustice

Historical patterns of abuse, neglect, and exploitation in medical research have left a lasting imprint on the collective memory of many marginalised communities. This historical trauma manifests as deep-rooted mistrust, which continues to shape participation patterns (at the societal and individual level) in clinical trials. Addressing this mistrust is not merely a matter of improving recruitment strategies—it is central to realising the human rights principle of informed consent, as well as the broader ethical principle of respect for persons.

6.5.1 Historical Abuses and their Legacy

Some of the most notorious examples of unethical medical research—such as the Tuskegee Syphilis Study (CDC, 2021; Jones, 1993), in which African American men were deliberately denied treatment for syphilis without their knowledge, or the forced sterilisation of Roma women in Slovakia, as exemplified by V.C. v. Slovakia (ECtHR, 2011)—have come to symbolise institutional betrayal. These events are not just historical events; they are often referenced in contemporary discourse, cited by prospective participants, and reflected in ongoing hesitations toward engagement with clinical research.

In Europe, additional examples include:

- The involuntary institutionalisation and sterilisation of persons with disabilities, especially under eugenics-influenced policies (Council of Europe, 2017; European Disability Forum, 2022).

- Racialised medical practices affecting immigrants and Roma populations (FRA, 2013; Szikra, et al., 2014).
- Differential access to reproductive health care for marginalised women (Council of Europe, 2024; Erdős, 2014; European Roma Rights Centre, 2006).

Such practices directly violate core human rights norms, including Article 1 of the UDHR) (dignity and equality) (1948), Articles 7 and 17 of the ICCPR (freedom from degrading treatment and arbitrary interference) (1966), and Article 5 of the Oviedo Convention (Council of Europe, 1997), which mandates that any medical intervention, including research, must be preceded by free and informed consent.

6.5.2 Informed Consent as a Human Rights Standard

The right to informed consent goes beyond procedural compliance; it is a substantive human right, firmly grounded in respect for autonomy, bodily integrity, and self-determination. As noted in the UNESCO Universal Declaration on Bioethics and Human Rights (2005) and the Declaration of Helsinki (WMA, 2024), informed consent must be obtained without coercion, with full disclosure of risks and benefits, and in a culturally and linguistically appropriate manner.

However, in practice, many trials fail to meet these standards. Information sheets are often too complex for the average reader, and rarely translated into minority languages. Furthermore, migrants and undocumented individuals—fearing repercussions or misunderstanding the scope of their rights—may opt out of research even when eligible (Lim et al., 2020; Asif et al., 2022; Mirza et al., 2024). This undermines both ethical legitimacy and legal compliance. States have a positive duty to proactively enable informed consent, which includes ensuring transparency, language accessibility, and cultural competence within the consent process.

6.6 Structural Exclusion and Accountability

While research exclusion often appears as an administrative or logistical failure, international human rights law increasingly recognises systematic exclusion as a structural violation that triggers both domestic and international obligations.

6.6.1 Structural Inequality and the Duty of Redress

Structural exclusion from clinical research often reflects deeper societal inequities, including unequal access to education, healthcare, and political participation. These inequities are not neutral; they are the cumulative result of historical power dynamics, discriminatory policies,

and in many instances, neglect by state institutions. The UN Office of the High Commissioner for Human Rights has consistently emphasised that states must not only avoid direct discrimination but also actively dismantle the structural conditions that perpetuate indirect discrimination and exclusion (UNHRC, 2011). This includes taking affirmative steps to:

- Fund community-based research infrastructures.
- Encourage representation from underserved populations in research leadership.
- Ensure equitable distribution of research benefits.

A failure to implement such measures can be considered as violation of the positive obligations imposed by several human rights treaties, including the ICESCR (1966), CEDAW (1979), CRPD (2006), and the ESC (revised 1996, Article 11).

6.6.2 Case Law Precedents

A growing body of human rights case law provides jurisprudential support for interpreting exclusion from health-related services and benefits—including research—as a form of rights violation:

- D.H. and Others v. Czech Republic (ECtHR, 2007): Found systemic discrimination in the placement of Roma children in special schools. Though in an education context, the ruling establishes precedent for identifying systemic discrimination through disparate outcomes, a principle directly applicable to research exclusion, too.
- *Glor v. Switzerland* (ECtHR, 2009): A man with diabetes was excluded from military service without justification, highlighting that blanket exclusions based on health status may be discriminatory.
- Purohit and Moore v. The Gambia (ACHPR, 2003): This ruling by the African Commission on Human and People's Rights (ACHPR) highlighted state obligations to address the legal and structural barriers faced by persons with mental illness, emphasising the importance of participation and equality in access to healthcare, and further recognising that this may necessitate special measures to achieve genuine equity.
- González et al. ("Cotton Field") v. Mexico (IACtHR, 2009): This judgment by the Inter-American Court of Human Rights (IACtHR) held that state failure to investigate gender-based violence constituted structural discrimination, a concept directly relevant to exclusion from research participation in public health contexts.

While human rights courts have yet to extensively rule on exclusion from clinical trials *per se*, these precedents indicate a clear direction: systemic exclusion from life-saving and health-enhancing opportunities is increasingly acknowledged as a matter of international legal accountability.

6.7 Human Rights Responsibilities in Research Governance

The realisation of equitable research participation requires action by a range of stakeholders, each bearing distinct yet overlapping legal and ethical responsibilities.

6.7.1 States as Primary Duty Bearers

States are the primary duty-bearers under international human rights law. They are obliged to ensure that the rights to health, science, equality, and non-dicrimination is effectively realised for all individuals within their jurisdiction. This fundamental responsibility, largely stemming from Article 2(1) of the ICESCR (1966) which obliges states to "*take steps... to the maximum of its available resources*" towards the progressive realisation of these rights, includes a range of specific positive measures:

- *Legislative action*. States have a duty to enact and enforce comprehensive domestic legislation that implement international human rights commitments into binding national requirements. In the contxt of clinical research, this is translated to creating inclusive clinical trial regulations that explicitly embed binding requirements for non-discrimination, equitable participation, and recruitment diversity (ICESCR Article 2(1), Article 2(2), Article 15(2), as elaborated in CESCR General Comment No. 25, and further reinforced by CEDAW Article 2, and CRPD Article 4).
- *Resource allocation*. Realising human rights obligations requires states to allocate adequate financial and human resources. This includes investing and supporting in robust research infrastructure within underserved communities to enable them to conduct trials, thus addressing geographic and socioeconomic barriers to participation (ICESCR Article 2(1), as elaborated in CESCR General Comment No. 14).
- *Monitoring and data collection*. To effectively address underrepresntation and ensure accountability, states are obliged to implement robust systems for collecting accurate, timely and importantly, disaggregated data on clinical trial participation. This approach allows for precise assessment of DEI gaps, and tracking of progress towards inclusiveness and overall realisation of DEI commitments in research. Collecting

disaggregated data to assess representation gaps (ICESCR Article 2(1), as elaborated in CESCR General Comment No. 25), and further reinforced by CEDAW General Recommendation No. 9, and CRPD Article 31).

- *Education and outreach*. States have a responsibility to ensure that all individuals, particularly those from marginalised groups, are adequately informed about their rights and opportunities, including participation in clinical trials. This entails funding community-engaged awareness campaigns on clinial trials participation, that are culturally and linguistically appropriate, thereby informing and empowering potential participants ICESCR Article 2(1), Article 15(1)(b), as elaborated in CESCR General Comment No. 25).

Where states fail to take such actions, they may be in breach of not only ICESCR Article 2(1) (progressive realisation of rights), but also Article 15 (right to science), Article 12 (right to health) and the cross-cutting obligations of equality and non-discrimination (ICESCR, Article 2(2), CEDAW Article 2, and CRPD Article 5).

6.7.2 Responsibilities of Private Actors

Pharmaceutical companies, contract research organisations, and (private) academic sponsors are increasingly central to the clinical trial ecosystem. Under the UN Guiding Principles on Business and Human Rights (UNHRC, 2011), they have a duty to:

- Avoid causing or contributing to adverse human rights impacts.
- Conduct due diligence to identify and remedy discriminatory outcomes.
- Engage stakeholders, especially in trials involving marginalised or vulnerable populations.

In practical terms, this necessitates developing DEI-sensitive protocols, actively diversifying research teams, and ensuring culturally appropriate participant engagement strategies. Failure to do so not only compromises scientific credibility but also raises potential legal liability risks, especially in jurisdictions where anti-discrimination laws apply to corporate actors.

6.7.3 Research ethics committees and Funding Agencies

Research ethics committees and funding bodies serve as gatekeepers for clinical research. Their oversight responsibility includes:

- Scrutinising protocols for potentially exclusionary criteria.
- Requiring justification for any population exclusions.

- Enforcing DEI benchmarks as part of funding conditions.

These actors must move from a passive role of mere approval to an active role of enforcement, thereby embedding human rights considerations into every stage of the research process.

6.8 Beyond Inclusion: Equity in Research Outcomes

While inclusion in clinical trials is a necessary first step, the ultimate goal must be equity in health outcomes. Participation alone does not guarantee that research will accommodate the needs of diverse populations unless trials are designed, conducted, and analysed in ways that prioritise fairness, justice, and relevance. This distinction is essential in applying a rights-based approach to health research.

6.8.1 Realising the Right to Science in Outcomes

The right to science, as defined in Article 15 of the ICESCR (1966) and elaborated in CESCR General Comment No. 25 (2020), mandates states and other actors not only to facilitate access to research but also to ensure that the benefits of research are distributed equitably. These benefits include:

- Representation in safety and efficacy data.
- Tailored medical guidelines for diverse populations.
- Access to innovative treatments validated through trials.

Failure to deliver on these fronts constitutes a breach of substantive equality, as defined in international human rights law. In practice, this means that simply enrolling small numbers of diverse participants in trials is not sufficient if data are not disaggregated or sub-group analyses (with adequate statistical power) are not conducted. For instance, oncology trials that include older adults or ethnic minorities but fail to report differential outcomes do not fulfil the spirit of inclusion. This practice can be more detrimental than outright exclusion, as it may provide a misleading justification for the arbitrary extrapolation of research findings to broader populations, potentially leading to inappropriate regulatory approvals. Ultimately, this results in treatments being marketed and prescribed with limited data on efficacy and, equally important, on their safety profiles for significant segments of the population, a phenomenon known as "data invisibility" or "analytic exclusion."

6.8.2 Tokenism and Symbolic Inclusion

The increasing prevalence of tokenism in trial design and recruitment is a practice within the DEI discourse that has drawn intense critique. Under pressure to demonstrate adherence to DEI

principles, institutions and sponsors may include small numbers of individuals from marginalised groups without making meaningful structural changes to improve recruitment, communication, or relevance. These practices amount to symbolic compliance, which may obscure ongoing structural inequities and breed further mistrust.

Such tokenistic practices can be considered as violating the principles of dignity and non-discrimination, especially when participants are exploited for regulatory optics without genuine benefit. Ethics review committees and regulatory bodies must therefore ensure meaningful inclusivity by assessing not merely who is included, but how and why they are included—and whether they will genuinely benefit.

6.8.3 Research Prioritisation and Global Health Justice

The human rights implications of underrepresentation also extend to the prioritisation of research topics. Diseases affecting affluent populations often receive disproportionate interest, research funding, and trial activity, while conditions prevalent in low-income or racially marginalised communities are neglected. This reflects deeper patterns of global and domestic health inequities. According to the principle of global distributive justice, articulated in international legal and philosophical literature, the allocation of research resources should primarily reflect the burden of disease and health needs—not merely profitability or political interest.

In this context, the USAID shutdown is a stark reminder of how geopolitical decisions can rapidly derail equitable health research infrastructures. The cessation of research programmes in low-income settings disproportionately affects women, children, and people living with chronic and infectious diseases—groups who often rely on donor-funded trials for access to treatment innovations. As the evaluation by Cavalcanti et al. (2025) shows, such disruptions have measurable effects on mortality, trial pipeline attrition, and regional trust in international (health research) collaboration.

States and donors must therefore approach research funding as a matter of justice and obligation, rather than charity, recognising its direct implications for their responsibilities under ICESCR (1966), CEDAW (1979), CRPD (2006), and regional treaties such as the ESC (1961, rev. 1996).

6.9 Summary: The Human Rights Cost of Exclusion

The exclusion of diverse populations from clinical trials is not simply a scientific oversight or operational inefficiency; it constitutes a violation of internationally protected human rights. It directly compromises the right to health, undermines the right to science / benefit from scientific progress and its applications, and perpetuates cycles of structural discrimination and systemic marginalisation.

Key takeaways from this chapter include:

- Exclusion is structural: It stems from historical injustices, inequitable funding, legal *vacue* (intentional or not), and institutional inertia. Efforts to address it must go beyond recruitment targets to include structural reforms.
- Rights are interdependent: The rights to equality, participation, information, and benefit from science are intertwined. Violating one often implies compromising the others, leading to compounded impact.
- Accountability matters: States, private actors, ethics bodies, and international donors share overlapping responsibilities. These must be grounded in legal commitments—not merely aspirational values and good practice recommendations.
- Remedies must be systemic: Ad hoc inclusion efforts are insufficient. Reorientation of systems, values, and priorities, including legal reform, participatory governance, and sustained investments in community-based infrastructures, is a prerequisite for achieving meaningful justice in clinical research.

As the next chapter will explore, transition from exclusion to genuine equity will require actionable strategies rooted in both law and ethics, drawing upon best practices, legal precedents, and collaborative governance models. These strategies must address not only *who* is included in trials, but *how* they are included and *why*.

Chapter 7 – Strategies to Promote DEI in Clinical Trials

7.1 Introduction

As explored in the previous chapters, the exclusion of diverse populations from clinical trials significantly undermines both the scientific robustness and moral legitimacy of biomedical research. These systemic gaps are not incidental events; on the contrary, they reflect deeply rooted imbalances, stemming from regulatory ambiguity, unequal global health infrastructures, and institutional inertia. While the scientific and ethical imperative for DEI-sensitive research is increasingly accepted, meaningful inclusivity remains the exception rather than the standard practice.

This chapter offers a comprehensive roadmap for promoting DEI in clinical trials. The structure is designed around four interlinked thematic parts, offering a stepwise progression from principle to practice (principles → design → community/workforce engagement → implementation):

1. Part 1 establishes the foundational guiding principles for reform and provides a comprehensive analysis of the regulatory and legal reforms that are essential for driving sustained inclusion.
2. Part 2 focuses on the practical aspects of inclusive trial design, adaptable infrastructure, robust consent procedures, data collection, and effective accountability tools.
3. Part 3 focuses on fostering community engagement, diverse research workforce development, and the importance of intersectionality in designing truly impactful interventions.
4. Part 4 addresses implementation challenges and synthesises future directions for systemic transformation.

Each part systematically builds upon the preceding one, positing DEI not as a mere compliance checklist but as a panoptic, ecosystem-wide imperative requiring sustained institutional reform and diligent global cooperation.

7.2 Guiding Principles for Reform

The strategies outlined in this chapter are anchored in four interdependent principles. These principles draw from public health ethics, established international human rights law, and contemporary biomedical science.

7.2.1 Scientific Validity

Inclusive representation is essential for sound science, an indispensable component of rigorous scientific inquiry. Clinical trials with homogenous participant pools risk generating findings that lack generalisability, prove ineffective, or may even be harmful to underrepresented groups. Subgroup-specific variation in pharmacokinetics/pharmacodynamics, disease burden, and treatment response necessitate inclusive trials to achieve robust validity (Oh et al., 2015; Liu et al., 2018; Jin et al., 2018). Ultimately, lack of diversity compromises the very goal of clinical research: to generate knowledge that can be safely and effectively applied across populations.

7.2.2 Ethical Inclusion

The principle of ethical inclusion posits that every individual has the right to both contribute to and benefit from advancements in biomedical science. As consistently reaffirmed in the Declaration of Helsinki (WMA, 2024), inclusive participation upholds the core ethical tenets of autonomy, beneficence, and justice. Inadequate representation of women, racial and ethnic minorities, and persons with disabilities not only limits the clinical relevance of findings but can constitute an ethical breach by perpetuating health inequities and unequal access to scientific progress and its applications.

7.2.3 Legal Accountability

The right to participate in and benefit from scientific progress (right to science) is an established international legal standard, embedded in Article 15 of the ICESCR (1966) and further elaborated by CESCR General Comment No. 25 (CESCR, 2020). Additional binding obligations arise under:

- CEDAW (1979), which mandates that states eliminate all forms of discrimination against women in access to healthcare, including in medical research;

- CRPD (2006), which prohibits exclusion of persons with disabilities from scientific research and mandates the provision of accessible formats and accommodations to ensure their full participation;
- Oviedo Convention (Council of Europe, 1997), which directly links biomedical ethics to fundamental human rights and dignity, providing a regional framework for ethical conduct in medical practice and research.

Collectively, these legal instruments create a positive obligation on states to actively eliminate discriminatory barriers to trial participation and ensure that public and private agencies consistently uphold the right to health and the right to science for all.

7.2.4 Social Justice and Equity

Finally, approaching DEI through a social justice lens highlights that inclusion is not merely about proportional representation; it fundemantally concerns redressing historical injustices and mitigating structural disadvantages. Marginalised populations, such as ethnic minorities, refugees, and the socioeconomically disadvantaged, disproportiantely bear the greatest disease burdens, yet they frequently have the least opportunity to participate in or benefit from medical research (George et al., 2014; Privor-Dumm et al., 2021). Therefore, promoting DEI is part of a larger ethical commitment to achieving equitable health outcomes and fostering rights-based development.

7.3 Legislative and Regulatory Reform

For the aforementioned principles to move from aspiration to implementation, they must be robustly codified and rigorously enforced through legal and regulatory systems that govern research design, ethics review, funding allocation, and trial approval processes.

7.3.1 From Soft Law to Binding Obligations

Current regulations often rely on non-binding guidelines or recommendations to encourage diversity in biomedical research. For example, the EU Clinical Trials Regulation (536/2014) includes references to the importance of inclusivity but stops short of mandating enforceable inclusion thresholds. On the contrary, the National Institutes of Health (NIH) Revitalization Act of 1993 in the U.S. explicitly mandates the equitable inclusion of women and minorities in federally funded research, supported by oversight mechanisms (Institute of Medicine (US) Committee on Ethical and Legal Issues Relating to the Inclusion of Women in Clinical Studies, 1994, Chapter B; Chen et al., 2014). However, even this more prescriptive approach has yielded

limited success in fields like oncology or cardiovascular trials (Loree et al., 2019; Liu et al., 2018; Jin et al., 2018), suggesting that enforcement remains an unmet need.

To move beyond mere encouragement, regulatory bodies such as EMA, FDA, and national research ethics committees must enact concrete, binding requirements:

- Mandate all trial protocols to include a DEI impact statement that details planned inclusion strategies and robust justifications for any exclusions based on scientific rationale.
- Require demographic data disclosure as a mandatory component of trial registration and regular reporting over trial conduct.
- Condition trial approval on meeting baseline inclusion criteria or demonstrating good-faith efforts to recruit diverse populations, with a special focus on those groups that are most affected by the disease or condition under study.

7.3.2 Harmonisation Across Jurisdictions

The international nature of many multicentred clinical trials introduces an additional challenge: fragmented national regulations create loopholes that allow sponsors to forum-shop or downplay their equity obligations. The absence of harmonised definitions for ethnicity, race, or vulnerability across national, regional, and cross-regional legal frameworks and jurisdictions further impedes meaningful oversight (European Commission, 2020). Therefore, international alignment, led by global health authorities such as WHO, CIOMS, and UNESCO, is needed to establish minimum global standards for inclusion and demographic reporting.

Harmonised frameworks could concretely:

- Define a minimum global dataset for demographic tracking that is consistently and collected and reported across all international trials;
- Promote cross-border ethics review protocols that include DEI metrics as a core component of ethical approval;
- Facilitate the creation of an “International Charter for Inclusive Research”, possibly modelled after human rights treaties, with periodic country reviews and measurable realisation benchmarks.

7.4 Institutional Accountability and Governance

While legal reform is undeniably essential, it must be reinforced by proactive institutional practices that embed DEI within the core mission, operational frameworks, and strategic priorities of research institutions, funding bodies, and pharmaceutical companies.

7.4.1 DEI Integration into Ethics Review and Grant Evaluation

Ethics committees and funding panels should explicitly evaluate DEI considerations during the protocol review process. This includes meticulous scrutiny of:

- The proposed inclusion and exclusion criteria, requiring clear justification of excluded groups.
- The planned recruitment strategies, requiring detailed plans for actively engaging and recruiting underrepresented populations, particularly those at highest risk of the condition(s) under study.
- The proposed use of community advisory boards (CABs) or cultural mediators, assessing their timely and meaningful integration into all steps of research process right from trial design.
- The accessibility of essential study materials for persons with disabilities or individuals with limited literacy.

Promising templates of such integration are already present, including the National Institute for Health and Care Reserch (NIHR) INCLUDE framework (NIHR, 2020; Witham et al., 2020) in the UK or the NIH's Diversity Supplements (National Cancer Institute, 2024). Integrating these criteria into funding decisions ensures that DEI is treated not as an afterthought or an optional add-on but as a core, non-negotiable requirement for research approval and support.

7.4.2 Institutional Metrics and Benchmarking

Academic and industry sponsors must implement internal DEI performance metrics, including:

- Diversity of enrolled participants across trials and therapeutic areas, with clear targets and benchmarks;
- Representation of marginalised groups in key leadership and advisory roles within research institutes and governance structures;
- Regular internal audits and mandatory DEI training for all staff involved in biomedical research.

Public reporting of these metrics—similar to environmental, social, and governance (ESG) reporting in the corporate world—will foster greater transparency, incentivise compliance and enable civil society to engage and effectively monitor progress and advocate for further reforms.

Part 2: Inclusive Trial Design, Conduct, and Monitoring

7.5 Designing Inclusive Clinical Trials

7.5.1 Rethinking Eligibility Criteria

The pervasive overuse of restrictive eligibility criteria in clinical trials remain one of the core sources of exclusion. While often framed as necessary for reducing trial-related risk, while minimising confounders and maximising study power and internal validity, such restrictions disproportionately exclude groups already underrepresented in healthcare, including pregnant women, the elderly, persons with disabilities, and people with comorbid conditions (Blehar et al., 2013; Herrera et al., 2010).

Future trials must shift towards:

- Mandatory justification requirements for all proposed exclusion criteria, which should be based solely on empirical evidence or compelling scientific rationale.
- Incorporation of flexible or adaptive designs, such as pragmatic or real-world trials, which can better reflect typical disease distribution and clinical settings;
- Enabling sufficiently powered subgroup analyses that captures safety and efficacy data within marginalised groups.

For instance, the pervasive exclusion of older adults and patients with multiple comorbidities in cancer trials should be readdressed, as most new cancer diagnoses typically affect those populations (Herrera et al., 2010; Loree et al., 2019).

7.5.2 Accessibility Through Decentralised Models

Traditional site-based trial designs often cluster in academic hospitals in urban centres, creating geographical and socioeconomic barriers to participation (Ford et al., 2008). Decentralised clinical trials (DCTs), which leverage digital health tools, mobile study teams, and remote monitoring, are emerging as a promising solution to mitigate these access challenges (George et al., 2014; FDA, 2024, Underhill et al., 2024; Jean-Louis & Seixas, 2024).

Key inclusive DCT practices include:

- Utilising telemedicine platforms for remote enrolment and monitoring;
- Deploying mobile health units to reach enroled participants in rural or geographically underserved communities;
- Fostering collaborations with community health centres or trusted local clinics to provide accessible points of contact for trial procedures;
- Providing comprehensive logistical support, such as transport vouchers, meals, and/or childcare arrangements, to mitigate indirect costs of trial participation.

These measures reduce the opportunity cost of participation in clinical trials, making it more feasible and accesible for those in low-income or remote settings.

7.5.3 Accessibility for Persons with Disabilities

Accessibility for persons with disabilities remains an afterthought in many trial protocols, although CRPD (2006) emphasises that sponsors must ensure:

- Physical accessibility of all trial sites and essential equipment;
- Cognitive accessibility of consent procedures and outcome measures, adapting trial material to all forms of disability and varying levels of understanding;
- Inclusion of reasonable accommodations (e.g., flexible scheduling, personal support workers, and/or alternative communication means)

Research ethics committees should require trial sponsors and involved institutions to demonstrate how accommodations will be implemented, not merely stated.

7.6 Enhancing the Informed Consent Process

7.6.1 Linguistic and Cultural Accessibility

The informed consent process is foundational to ethical research, yet it often fails to meet the needs of diverse populations. Patient information sheets and corresponding informed consent forms are often written in complex, academic language and offered in only one or two national languages, excluding individuals with limited literacy or different linguistic backgrounds (Wylde et al., 2024; Bulto, 2024).

Key strategies to improve accessibility include:

- The use of plain language summaries and visual aids to convey complex information;

- Ensuring the availability of essential study materials in multiple languages and dialects, using a culturally sensitive approach tailored to the target study population;
- The provision of alternative communication means, including audio and/or video formats for individuals with visual impairments or low literacy;
- Mandatory training for all research staff in cultural competence to ensure respectful and effective communication across diverse backgrounds.

7.6.2 Consent as Dialogue, Not Just Documentation

Informed consent must be reconceptualised as a process of dialogue rather than an one-off transaction. For some communities, such as Indigenous groups or migrant populations, the concept of individualised consent may differ from prevailing Western models (Bulto, 2024). In such contexts, best practices include:

- Allowing community elders or designated family members to be involved in decision-making process, where culturally appropriate;
- Conducting pre-enrolment engagement sessions with community representatives to build trust and ensure collective understanding;
- Providing follow-up conversations after initial consent to reaffirm understanding, address trial procedures related questions, and maintain ongoing dialogue.

Genuine ethical inclusion goes beyond access through a tick-box exercise; it requires true agency and fully informed decision-making throughout the research process.

7.7 Data Collection, Monitoring, and Transparency

7.7.1 Disaggregated Data as a Tool for Equity

Monitoring DEI in clinical trials requires systematic demographic data collection and recording. Yet many regulatory regimes in Europe and beyond lack standardised or mandatory demographic reporting (European Commission, 2020).

To effectively close this critical gap:

- Regulatory agencies, alongside research institutes and funding bodies, must require disaggregated data on all major demographics, such as age, race, ethnicity (and migration background), sex/gender, disability, socioeconomic and educational status;
- Establish globally harmonised definitions for these demographic categories to facilitate cross-trial comparisons;

- Develop robust platforms to store and protect demographic data, ensuring security and confidentiality to avoid misuse or stigmatisation.

Such data is crucial not only for logisitics and administration purposes, but also for identifying differential safety and efficacy profiles across diverse groups.

7.7.2 DEI Dashboards and Public Trial Registries

Transparency facilitates monitoring and can drive accountability. Publicly accessible dashboards and trial registries should be enhanced to include:

- Demographic breakdowns of participants by trial and sponsoring agency;
- Comparative metrics on inclusion versus disease burden or prevalence for the target population(s);
- Notes on community engagement strategies employed for each trial;
- Justifications for eligibility criteria and particularly for any group exclusions from a given study.

Transparent systems providing such information enable real-time oversight and can exert significant pressure for reform from civil society and patient advocacy groups.

7.7.3 Linking Monitoring to Consequences

Inclusion metrics must transcend be symbolic gestures. Regulatory and funding agencies must be empowered to:

- Pause or deny approval of trials that persistently fail to recruit or disproportionately underrepresent affected populations without compelling justification;
- Reward high-performing institutions and research teams through mechanisms such as bonus grant points, expedited review processes, or public recognition for their exceptional DEI efforts;
- Publish annual DEI performance reports, identifying leaders and laggards to foster both best practice sharing and accountability.

This measures effecrively align incentives with ethical conduct and scientific excellence, driving impactful change.

Part 3: Community Engagement, Workforce Diversity, and Intersectional Approaches

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7.8 Community Engagement and Trust-Building

7.8.1 Addressing Historical Mistrust Through Transparency and Dialogue

Communities historically excluded from or exploited in medical research—such as Black, Roma, Indigenous, or undocumented populations—often harbour deep-rooted mistrust stemming from unethical past practices. Notorious examples include Tuskegee Syphilis Study (CDC, 2021; Jones, 1993) in the U.S. and coercive sterilisation of Roma women in Europe (V.C. v. Slovakia; ECtHR, 2011).

Restoring trust requires a proactive, consistent, and dialogical model of engagement. Key points of such plans must include:

- Acknowledging past harms openly and without defensiveness, demonstrating a genuine commitment of the research community to learning from history;
- Establishing CABs with diverse representation to carefully listen to their voice and to co-develop research agendas, protocols, and recruitment strategies;
- Involve patient advocacy groups, and respected community leaders in research design, recruitment efforts, consent process, and dissemination of research findings.

Open dialogue with the past, transparent communication about current research opportunities, inclusind their potential benefits and risks, transparent and responsible data use, and post-trial access all help rebuild credibility and trust.

7.8.2 Co-Design and Participatory Research Models

Beyond mere consultation, clinical research must evolve towards co-creation. Participatory research models, such as community-based participatory research (CBPR), redefine the relationship between research ecosystem and communities, treating communities and patient groups as equal partners rather than passive research subjects.

Key strategies of a robust CBPR model include:

- Shared decision-making in need prioritisation, trial design and implementation, and evaluation;
- Capacity-building for community organisations to actively participate in academia- or industry-led research or even lead quality research endeavors themselves;
- Joint authorship and collaborative dissemination of research outcomes, ensuring community perspectives are recognised and heard.

Studies grounded in participatory approaches demonstrate higher participant retention rates, more relevant research questions, and stronger, sustained community support (Oh et al., 2015; Wallerstein & Duran, 2010).

7.8.3 Long-Term Engagement, Not Transactional Outreach

Tokenistic outreach efforts (typically conducted just prior to recruitment or even limited to the dissemination of research findings) fail to build sustained relationships with communities. In addition to the strategies outlined in section 7.8.2 (*Co-Design and Participatory Research Models*), Sponsors and research institutions should:

- Maintain ongoing community engagement programmes, that extend beyond the lifespan of individual trial projects, thus fostering continuous dialogue and collaboration;
- Support health education, training, and infrastructure within marginalised communities as a tangible and lasting legacy of the research endeavour;
- Conduct post-trial feedback sessions to communicate research findings transparently, reflect on lessons learned, and address any remaining or emerging questions raised by study participants, patient advocacy groups, and/or communities.

Such enduring commitments reinforce help to reinforce the legitimacy of research as a fundamental public good, not only advancing science, but also contributing to realisation of community development through a human rights-based lens.

7.9 Diversifying the Clinical Research Workforce

7.9.1 Underrepresentation in Research Leadership

Underrepresentation in clinical research workforce is closely linked to underrepresentation in science and in patient participation. Yet, clinical trials remain dominated by white, male principal investigators, with limited representation from minority, disabled, or migrant backgrounds (Oh et al., 2015).

Key strategiees to improve diversity in research leadership and teams include:

- Funding fellowship and mentorship programmes for underrepresented groups aspiring to research careers;
- Establishing robust diversity targets for ethics committees and grant review panels, particularly for leadership and senior research positions, where underrepresentation is most evident.

- Requiring sponsors to report workforce diversity data, especially in leadership roles.

Diverse research teams are more likely to recognise, understand, and effectively address barriers facing minoritised populations, leading to more inclusive and relevant research.

7.9.2 Culturally Competent Staff Training

Genuine inclusivity depends more than mere demographic representation; it further requires comprehensive training in cultural humility and bias mitigation.

All clinical staff involved in trial design, recruitment, and/or implementation should receive mandatory training in:

- Recognising and addressing implicit bias and its impact on patient interaction and recruitiment decisions;
- Developing cross-cultural communication to interact respectfully and effectively with diverse participants;
- Understanding and applying ethics and human rights frameworks relevant to inclusive research practices.

Such requirements should not be considered as optional special skills. They should rather be embeded as an integral part of Good Clinical Practice (GCP), Good Research Practice (GRP), and Continuing Professional Development (CPD) frameworks.

7.9.3 Leveraging Community Health Workers and Navigators

Integrating community health workers (CHWs) or patient navigators into the trial workforce can powerfully bridge trust and communication gaps between research institutions and underserved communities and improve accessibility.

Community health workers can effectively:

- Serve as culturally aligned liaisons between researchers and candidate or enrolled participants;
- Provide assistance with informed consent discussions, ensuring comprehensions and addressing cultural nuances;
- Address trial practicalities, such as facilitating transportation, providing translation services, or helping participants navigate the complex healthcare system and trial procedures.

Evidence consistently shows that CHWs enhance both enrolment and retention rates, in particular amongst underserved groups (George et al., 2014).

7.10 Applying an Intersectional Lens

7.10.1 Recognising Compounded Exclusion

As discussed in paragraph 6.4 (*Intersectionality and Compounded Exclusion*) individuals are not defined by a single identity; rather, they exist at the instersections of multiple dimensions, including (but not limited to) age, sex, gender, race, migration status, disability, socioeconomic class, and educational status. An intersectional framework recognises that barriers to participation are layered and cumulative, amplifying each other to result in compounded disadvantage (Crenshaw, 1989).

Trial designs that address only one axis of identity (e.g., race) risk inadvertently reproducing inequity along other dimensions (e.g., disability, gender). It is therefore important that inclusion strategies are multi-dimensional, rather than siloed or narrowly focused.

7.10.2 Intersectional Data: Collection, Analysis, and Monitoring

Intersectionality must also inform how demographic data is collected, analysed and monitored throughout the entire research process.

7.10.2.1 Capturing complex identities

Focusing on data collection, this process should reflect participants' inherent dignity and complex identities:

- Participants should be allowed to self-identify across multiple identity markers, while moving beyond rigid binary categories (e.g., male/female) to include non-binary gender identities and other diverse self descriptions.
- Moreover, to adequately reflect these intricate, multi-layered experiences, trials should integrate qualitative research components. Methods such as in-depth interviews, focus group discussions, or participant diaries move beyond simple numerical data to deeply explore the "why" and "how" of individuals' interactions with research, capturing experiential dimensions of exclusion. This approach is critical because it reveals nuanced emotional impacts, specific cultural considerations, and often overlooked practical barriers that quantitative measures alone may miss. By gaining this deep, contextual understanding, researchers can effectively identify unforeseen challenges, tailor more culturally sensitive and logistically supportive recruitment and retention strategies, and ultimately foster a more humane and patient-centered trial experience. This qualitative depth is essential for ensuring that research findings are not merely

statistically significant, but genuinely meaningful and applicable to the diverse lived realities of the populations they aim to serve.

7.10.2.2 Leveraging Data for Equity Monitoring and Accountability

Intersectional data can then be effectively leveraged for comprehensive equity monitoring and accountability. This approach allows monitoring tools to move beyond univariate breakdowns (e.g., simple race or gender analysis) to assess compounded exclusion. Consequently, DEI dashboards and regulatory audits should:

- Track overlapping vulnerabilities in enrolment and outcome data, revealing where multiple layers of marginalisation intersect;
- Include intersectional equity metrics as core performance indicators; and
- Publish cumulative impact assessments across intersecting identity categories.

Only by embracing and articulating complexity can research equity be genuinely advanced, measured, and monitored.

Part 4: Implementation Challenges and Systemic Future Directions

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7.11 Implementation Barriers and Risks of Performative Inclusion

7.11.1 Resistance to Change and Institutional Inertia

Even when DEI strategies are well-articulated, implementation often stalls due to entrenched institutional cultures and bureaucratic inertia. Common manifestations include:

- Reluctance amongst ethics committees and researchers to alter "standard" eligibility criteria and challenge conventional research designs;
- Sponsors prioritising recruitment speed and statistical power over (the time-consuming and resource-intensive) representation;
- Lack of training or awareness amongst senior research positions (such as prinicipal investigators) regarding inclusive methods, particualry in regards to legal and ethical imperatives.

Without clear mandates or robust incentives, many actors in the research ecosystem default to default to existing practices, thereby perpetuating and reinforcing exclusionary norms (Oh et al., 2015).

7.11.2 Risk of Tokenism and Surface-Level Compliance

As DEI gains visibility in policy discourse, some institutions adopt symbolic measures to appear progressive, a practice that has been termed “performative inclusion”.

Regrettably, this practice is not an exception but rather a widespread trend. A few examples—from an otherwise extensive list—of such problematic practices include:

- Listing inclusion goals in grant proposals without developing concrete, actionable implementation strategies;
- Hiring diverse staff without proactively addressing structural barriers they may face within the institution working environment;
- Reporting disaggregated data inaccurately or selectively to prevent a falsely favourable DEI-sensitive profile.

Tokenism is not merely ineffective. It actively undermines trial validity, erodes trust, and compromises fidelity to the ethical imperatives of clinical research. Genuine, effective DEI requires deep structural change, moving beyond surface optics.

7.11.3 Practical and Logistical Constraints

Undoubtedly, some DEI reforms require additional resources compared to conventional trial design and current “standard” practice. This is particularly true for:

- The comprehensive translation and cultural adaptation of study materials and availability of translators for participants study visits.
- Ensuring accessible facilities and essential transportation support;

Long-term engagement with under-resourced communities and investement in developing and maintaining local infrastructure.

Institutions and funding agencies must be prepared to invest in equity not as a luxury, but as a fundamental scientific and ethical imperative.

7.12 Legal and Ethical Imperatives: Operationalising Human Rights

7.12.1 From Soft Norms to Hard Law

While international human rights instruments like ICESCR (1966), CEDAW (1979), and CRPD (2006) affirm the right to participate in scientific progress without discrimination, implementation in research regulation remains uneven.

To bridge this gap:

- National laws should directly incorporate treaty obligations into ethics review processes and regulatory frameworks for clinical trials;
- Mandatory human rights training should be provided to institutional review boards, ethics committees, and regulatory staff;
- Judicial and quasi-judicial bodies (e.g., ombuds, human rights commissions) should be empowered to review and adjudicate alleged DEI violations in research contexts, thus providing external accountability.

The Declaration of Helsinki (WMA, 2024), while non-binding, offers a globally recognised ethical framework that can and should be codified into domestic trial regulations.

7.12.2 Ethics Committees and Human Rights Integration

Institutional review boards and ethics committees have a pivotal gatekeeping role in research. However, many review boards focus narrowly on safety and efficacy, often overloooking critical DEI considerations.

Ethics bodies should undergo a fundamental reorientation, including efforts to:

- Include experts in human rights and equity amongst their members to add specialist DEI perspectives to protocol review;
- Require DEI impact statements as a core component of trial review submissions and review;
- Apply proportionality tests when evaluating proposed exclusionary design features, ensuring that the proposed exclusions are truly necessary and minimally burdensome.

This reorientation aligns ethics oversight with modern standards of distributive justice and democratic accountability.

7.13 Building Systemic Coherence and Coordination

7.13.1 Aligning Stakeholders Across the Research Ecosystem

Inclusive research cannot be realised in isolation. Systemic coherence and coordinated action across all key stakeholders within the research ecosystem are prerequisites for effectively addressing long-standing health inequities and fostering genuinely inclusive research.

Such concerted efforts must involve:

- Regulators, who must embed DEI criteria into trial registration, approval, and oversight processes. For instance, a recently introduced guidance by FDA (2022) requires

concrete diversity action plans for phase 3 trials, while EMA (2022) has also introduced diversity principles into its clinical trial guidance.

- Funders, who must demand and reward inclusion through their grant mechanisms, and sanction neglect of DEI goals. The Wellcome Trust (2021) and NIH (2023) have recently initiated such programmes in the UK and the U.S., respectively.
- Academic journals, which must require transparent reporting of participant demographics, as part of submitted manuscripts' review;
- Professional bodies, which must update Good Clinical Practice (GCP) and clinical education standards to explicitly integrate DEI principles.

Policy misalignment between those actors breeds confusion and loopholes that perpetuated inequties. National and regional DEI strategies—modelled on the WHO Research for Health framework—could substantially promote much-needed harmonisation.

7.13.2 International Collaboration and Norm Diffusion

Many DEI barriers extends national borders and require global collaboration to be addressed. Such cooperations would facilitate:

- Best-practice sharing between WHO, UNESCO, EMA, and NIH platforms;
- Create interoperable DEI monitoring frameworks across countries;
- Develop joint codes of practice for trials involving multiple jurisdictions, in order to ensure consistent application of equity standards and accountability policy.

For example, a global DEI declaration—akin to the Open Science movement (Chtena et al., 2025)—could define universally recognised minimal equity standards for all clinical research globally.

7.14 Future Outlook: Toward Transformational Equity in Research

7.14.1 From Participation to Co-Governance

The long-term goal is not merely to enrol marginalised populations into trials, but it involves fundamentally restructuring the way trials are conceived, governed, and evaluated.

This transformative shift means:

- Expanding the role of community governance in all aspects of trial oversight, providing communities greater decision-making authority;

- Establishing patient-led research cooperatives, where CABs and patient advocacy groups drive the research agenda;
- Developing new metrics of success, moving beyond solely scientific outcomes, and giving a central role on equity, trust, and social value.

Such systemic shifts represent a move towards "epistemic justice", where knowledge production itself reflects pluralistic values and voices, and equitable power dynamics.

7.14.2 Embedding Equity in the Research Lifecycle

Equity must be embedded at every stage of the research process:

- Funding calls should prioritise diseases affecting underserved populations;
- Protocol development must centre diverse lived experiences and perspectives from the outset;
- Trial dissemination should be accessible, culturally appropriate, and bidirectional, actively engaging participants and communities.

Embedding equity as a core design principle, not an afterthought, is essential for clinical research to advance towards a more just and inclusive paradigm.

7.14.3 The role of Technology and Digital Inclusion

Digital health and AI-driven trials offer promise, but also risk exacerbating exclusion. To ensure equitable digital research:

- Algorithms must be trained on diverse datasets to prevent perpetuating preceding biases;
- Digital platforms employed for recruitment, consent, and/or monitoring must be accessible across age, disability, and literacy levels;
- Hybrid and DCTs must actively monitor digital access disparities within the target study populations and implement strategies to effectively mitigate them.

Digital inclusion is not automatically guaranteed; it must be a deliberately designed and continously monitored objective.

7.15 Conclusion: Institutionalising Equity Beyond Rhetoric

This chapter has outlined a multifaceted strategy to advance DEI in clinical trials—from regulatory reform and inclusive design to workforce diversity and intersectional accountability. Furthermore, it has been emphasised that good intentions and aspirational statements alone are

demonstrably insufficient. Inclusion must transition from a desirable add-on to a non-negotiable norm, embedded in law, ethics, research infrastructure, and funding mechanisms.

True equity in clinical research will only be realised when diversity is not a box to be ticked, but a precondition for the credibility, legitimacy, and justice of scientific advancememnts. As science seeks to serve humanity, it carries an inherent obligation to genuinely reflect all of humanity—not just the privileged few.

Chapter 8 – Critical Commentary and Discussion

8.1 Introduction: From Practice to Critique

Chapter 7 presented a comprehensive roadmap of strategies to advance DEI within clinical trials—addressing regulatory reform, inclusive design, community/workforce engagement, and implementation. These efforts are propelled by both an ethical and scientific imperative: a scientific drive to reinforce research validity and an ethical commitment to correct historical patterns of exclusion. Ultimately, the aim is to foster biomedical research that is legitimate, effective, and fundamentally fair. Yet even well-intentioned reforms can mask underlying tensions.

This chapter moves from outlining strategies to critical reflection. It delves into the structural, epistemic, and normative dimensions of existing DEI initiatives, questioning whether they genuinely disrupt entrenched hierarchies in global health research or risk reproducing them under new guises. Are inclusion strategies truly meaningful or remain largely symbolic? Can regulatory frameworks strike a balance between fostering innovation and ensuring equity? Is the right to science—benefit from scientific progress and its applications—enforceable or aspirational? And how might a truly justice-oriented approach to clinical research should look like?

To navigate these complex inquiries, this chapter explores five interlinked themes. First, it scrutinises performative inclusion, examining the risk that DEI initiatives might end up into mere symbolic gestures. Second, it explores the regulatory dilemma between excessive regulation and the inertia of insufficient intervention. Third, it examines how market logic profoundly shapes clinical trial priorities, often clashing directly with fundamental human rights-based principles. Fourth, drawing upon postcolonial and feminist thought, it illuminates deeper epistemic injustices, that privilege certain forms of knowledge and discredit others. Finally, it reclaims the transformative potential of DEI by reframing genuine inclusion not merely as a matter of represntation but as a profound imperative of power redistribution, knowledge reevaluation, and systemic justice.

8.2 Are DEI Initiatives Meaningful or Merely Symbolic?

The increasing visibility of DEI language in biomedical research, from ubiquitous mission statements to grant criteria and prominent trial registries, unquestionably signals a positive shift in discourse. Institutions increasingly champion diversity, seemingly embracing its value. However, a closer examination often reveals a disquieting gap between commitments and their actual practical depth. Critics increasingly warn that without structural change, DEI can devolve into an optics-driven, compliance-oriented exercise that sustains or even reinforces health inequities rather than challenging or dismantling them.

8.2.1 Performative Inclusion and the "Inclusion Illusion"

Sara Ahmed (2012) has described diversity policies in higher education and public institutions through a feminism lens as "performative gestures"—efforts that "do the work of appearing to do the work." In the context of clinical trials, similar patterns emerge, where "inclusion" is often superficially reduced to:

- Tokenistic recruitment: Recruiting a handful of racial or ethnic minority participants without adapting trial materials, recruitment outreach, or site accessibility (despite significantly higher disease prevalence in these groups, as illustrated by the global underrepresentation of Black participants in clinical trials for SCD and multiple myeloma (Zanfardino et al., 2022; Asher et al., 2022)).
- Cosmetic diversity in promotional materials: Displaying diverse imagery in patient information sheets, promotional brochures, and/or institutional websites, while maintaining restrictive eligibility criteria that systematically exclude broad groups of individuals (such as pregnant women, people with disabilities, or those with common comorbidities), which results in skewing participant populations towards a younger, healthier, and often predominantly white demographic (Blehar et al., 2013; Herrera et al., 2010; Chapter 5). The visible "diversity" becomes an aesthetic, detached from the reality of who can actually participate.
- Unaccountable DEI goals in proposals: Highlighting aspirational DEI goals in proposals to secure funding and/or approvals, yet lacking concrete, enforceable mechanisms for implementation or robust accountability for achieving the stated goals (Chapter 5).

Ruha Benjamin (2019) describes this as the "inclusion illusion": a deceptive practice where superficial diversity initiatives effectively obscure deeper inequities in power, authorship, and

institutional structures. In clinical trials, such performative practices may satisfy minimum regulatory requirements, “ticking boxes” without challenging the dominant norms of biomedical science. These “traditional” norms, often unexamined, tend to devalue the experiential knowledge of diverse communities, pathologise certain populations, and resist the integration of innovative trial designs. For instance, the pervasive linguistic and cultural inaccessibility of informed consent forms, frequently written in complex, academic language and offered in only one or two national languages (Muthukumar et al., 2021; Bulto, 2024), effectively signals that the inclusion of individuals with limited literacy or diverse linguistic backgrounds is neither genuinely anticipated nor prioritised, perpetuating their marginalisation (Chapter 5).

8.2.2 From Representation to Accountability

The shortcomings of symbolic DEI unequivocally highlight the urgent need for robust accountability mechanisms that extend far beyond simply counting enrolled participants. The prevailing regulatory tendency to treat DEI as a best practice "recommendation" rather than a binding, enforceable mandate allows inclusion to remain an optional ideal, rather than a non-negotiable requirement (Chapter 5). To counteract this, key areas of reform include:

- Power tracking and redistribution: It is important to transparently track and actively redistribute decision-making power within clinical research. Who designs and leads clinical research? and critically, who holds key positions on ethics committees, funding panels, and research leadership boards? As consistently highlighted in Chapter 5, these positions remain disproportionately occupied from majority backgrounds. Without actively diversifying these pivotal roles and empowering individuals from marginalised communities to shape research agendas, representational inclusion will inevitably remain superficial, leading to persistent blind spots in trial design, recruitment strategies, and the interpretation of findings (Oh et al., 2015).
- Consequential metrics and enforcement: Inclusion goals must be linked to tangible regulatory or funding consequences, moving beyond “empty” aspirational statements. As proposed in Chapter 7, this includes transparent DEI dashboards, minimum demographic thresholds for trial approvals, and inclusion statements that are reviewed and audited by regulatory bodies. For instance, if an oncology trial reports that only 4% of its participants are over the age of 75, despite cancer's high prevalence in older adults (Herrera et al., 2010; Loree et al., 2019), funders and regulators must demand compelling evidence of dedicated outreach efforts, accessible materials, and robust,

evidence-based rationales for any continued exclusions. Crucially, the absence of such justifications must trigger tangible consequences, such as conditional approval or even rejection of the trial.

- Structural transparency and barrier disclosure: Trial protocols should be mandated to disclose not only demographic targets but also to transparently detail the structural barriers encountered and specific, concrete means taken to address them (e.g., logistical support, cultural adaptation, and/or accommodations, as elaborated in Chapter 7). This shift in transparency compels institutions to actively consider and articulate their genuine efforts to dismantle systemic obstacles, rather than simply reporting on the ambition of demographic composition of their final study population.

This pivot from representation targets to profound accountability is not just improvement; it is essential. Inclusivity must not be seen as a matter of numerical optics, but as an inherent ethical mandate, firmly grounded in international human rights obligations, and supported by institutional transparency and robust enforcement mechanisms. This directly addresses the positive obligations enshrined in human rights treaties like the ICESCR (1966), CEDAW (1979), and CRPD (2006), which compel states and relevant actors to actively eliminate discriminatory barriers (Chapter 6).

8.3 Between Overregulation and Structural Exclusion

Efforts to explicitly mandate inclusion often encounter significant resistance from researchers and funding bodies concerned about feasibility, regulatory burden, financial costs, and slowed trial timelines. Critics warn that overregulation could stifle innovation or lead to “box-ticking” compliance. However, the status quo—marked by permissive norms and non-binding guidance—has demonstrably failed to achieve adequate representation across diverse populations. Navigating this tension between regulatory rigidity and systemic inertia is a key challenge in operationalising equitable research.

8.3.1 The False Binary of Regulation vs. Innovation

The notion that genuine inclusion slows scientific progress or reduces trial quality are often based on flawed assumptions. Numerous studies have shown that inclusive trials, when thoughtfully designed and conducted, do not intrinsically diminish scientific rigour or operational efficiency (Oh et al., 2015; Ford et al., 2008). On the contrary, clinical research trials conducted with homogenous participant pools are significantly more likely to produce

findings with limited external validity, limited generalisability, potentially requiring costly post-market surveillance, or, most importantly, resulting in adverse effects amongst underrepresented populations or whom the treatment was not adequately tested. For instance, drug efficacy and toxicity profiles are known to vary significantly across different age groups, genetic backgrounds, and ethnicities (Loree et al., 2019; Liu et al., 2018; Jin et al., 2018; Chapter 5). Relying on data from unrepresentative populations therefore risks developing treatments that are less effective, or even harmful, when applied to diverse real-world patient cohorts.

Furthermore, the argument that DEI mandates impose an "undue burden" implicitly assumes a default "neutral" model of trial design. This so-called “neutral” model is, however, far from impartial; as it is normatively exclusionary by design. Standard eligibility criteria are often historically constructed around convenience and perceived “scientific purity”, rather than clinical relevance or social justice (Gedela et al., 2025). This dominant model is nothing like neutral; it actively reflects and perpetuates prevailing assumptions about who constitutes a "valid" or "ideal" clinical trial subject, often overlooking the realities of diverse genetic backgrounds, multiple comorbidities, and varied social determinants of health. The systematic exclusion of pregnant women or patients with specific comorbidities is a typical example, often driven by risk aversion rather than robust scientific justification (Blehar et al., 2013; Herrera et al., 2010; Chapter 5).

On the contrary, a regulatory framework that embeds DEI as a core principle from the outset can actually facilitate innovation by:

- Mitigating bias and enhancing safety: Reducing the risk of biased findings on both effectiveness and toxicity across diverse subgroups, thus fundamentally enhancing the scientific validity, reliability, and generalisability of research outcomes (Chapter 7).
- Building Trust and Participation: Fostering patient trust and broader community participation, especially from communities with historical reasons for mistrust (a legacy discussed extensively in Chapter 6, involving events like the Tuskegee Syphilis Study (CDC, 2021; Jones, 1993)). Sustained community engagement and resulting increased trust can lead to more robust and sustainable participant recruitment in the long term.
- Supporting real-world evidence: Encouraging and supporting real-world evidence generation through the adoption of more adaptive or pragmatic trial designs, which inherently better reflect typical disease distribution and complex clinical settings (Chapter 7).

8.3.2 Proportionality, Flexibility, and Context Sensitivity

Despite the clear benefits of comprehensive DEI mandates, it is equally important to acknowledge that not all trials are alike. Early-phase studies (and particularly phase I studies which focus on safety), rare disease studies, or precision medicine projects may face unique constraints. A human rights-based regulatory approach must therefore be both context-sensitive and proportionate. As outlined in CESCR General Comment No. 25 (2020), the duty to remove barriers to participation to scientific advancements must be balanced with scientific and ethical justifications. Proportionality here does not imply blanket exemptions, but rather the careful tailoring of inclusion strategies, as detailed in Chapter 7:

- For early-phase studies, inclusion planning can focus on ensuring downstream access to research benefits and close safety monitoring in underrepresented groups;
- For rare disease trials, where patient populations are small and geographically dispersed, promoting collaborative cross-national clinical trials, registries, and patient networks can significantly improve outreach and access;
- For intersectionally marginalised populations (e.g., disabled refugees), layered accommodations must be designed collaboratively. explicitly recognizing the multiplicative nature of their disadvantages (Chapter 6). This means providing support that moves beyond specific dimensions of underrepresentation, but rather holistically provides a combination of linguistic, physical, and cognitive accommodations tailored to their unique needs.

Critically, ethics review and regulatory bodies must be trained and empowered to assess these distinctions and to critically interrogate exclusion rationales. As Chapter 7 suggests, requiring sponsors to justify each exclusion criterion with compelling, evidence-based reasoning—rather than convenience or "common practice"—can shift the burden of proof towards more inclusive design by default. Besides, the human-rights-based principle of non-discrimination, unequivocally obliges states to actively address even indirect and systemic forms of exclusion (CESCR, 2000; CESCR, 2017; Chapter 6).

8.4 Science, Profit, and Rights: Competing or Compatible Imperatives?

A persistent, deeply rooted tension within clinical research stems from in the competing demands of scientific rigour, commercial viability, and fundamental human rights obligations. While DEI is often framed as a universally accepted ethical imperative, its practical

implementation is heftily shaped, and often constrained, by the political economy of pharmaceutical research and development.

8.4.1 The Market Logic of Exclusion

Pharmaceutical companies operate within a highly competitive and profit-driven landscape. Consequently, pharmaceutical trials are frequently dictated by stringent timelines, the pressure of patent approvals or expiration, and urgent regulatory approval targets. In such an environment, inclusivity can be seen as a logistical and financial complication, rather than an indispensable scientific asset. Populations perceived as difficult to reach—such as non-native speakers, migrants with irregular legal status, or persons with disabilities—may be deprioritised due to presumed recruitment barriers or “noncompliance” risks (George et al., 2014).

The prevalent geographic centralisation of research infrastructure in well-resourced academic hospitals located in urban centers, as discussed in Chapter 5, exemplifies this market calculation. It directly leads to the systematic exclusion of populations in rural or socioeconomically marginalised areas, who face significant practical barriers like limited transportation, the burden of lost wages from missed work, and the absence of community hospitals or local clinics that could serve as accessible trial sites (George et al., 2014; Ford et al., 2008). These otherwise essential investments for equitable participation are frequently viewed as prohibitive "costs" by sponsors, rather than as fundamental requirements for ethical and scientifically valid research.

In such settings, exclusion becomes a rational market calculation. This reflects what Kleinman (1995) termed the "moral economy" of global medicine, where financial and operational rationalities often dictate what is deemed scientifically feasible or ethically necessary. Rather than confronting and addressing these structural barriers, trial sponsors may find it expedient to design around them, effectively normalising and institutionalising systemic discrimination. For instance, a cardiovascular trial that broadly excludes persons over 80 years old may not do so primarily due to insurmountable pharmacological concerns, but rather because of the perceived "burden" of complex consent processes for older adults or common comorbidity management. This approach can partially explain why women, despite having an equal or higher incidence of cardiovascular disease, still comprise only ~38% of cardiovascular trial participants globally (Liu et al., 2018; Jin et al., 2018; Chapter 5)—a stark reflection of a market-driven calculation over genuine medical and social need.

8.4.2 Human Rights and Corporate Responsibility

Under Article 15 of the ICESCR (1966), all individuals have the right "to enjoy the benefits of scientific progress and its applications." While states bear the primary obligation to respect, protect, and fulfil this right, private actors—including pharmaceutical companies and relevant industry—also carry significant responsibilities.

As clarified in the UN Guiding Principles on Business and Human Rights (UNHRC, 2011), corporate entities must:

- Conduct human rights due diligence across all their operations, including clinical trial design and conduct. This mandates proactively identifying and actively mitigating risks of exclusion, especially those linked to socioeconomic disadvantage, language barriers, and legal or immigration-related fears that disproportionately affect marginalised groups (Chapter 5).
- Avoid discrimination in access to health technologies and trial participation. This means actively ensuring that the development and distribution of new therapies do not at least exacerbate or deepen existing health inequalities.
- Ensure that knowledge produced from publicly funded or publicly impactful research is accessible, transparent, and disseminated in equitable ways. This goes beyond merely publishing research outcomes to ensuring that the benefits from research are distributed back to communities in a "global health justice" approach (Chapter 6).

General Comment No. 25 (CESCR, 2020) further specifies that equitable access to clinical trials is part of the right to science, and states must regulate private actors accordingly. A poignant example of where this obligation often falls short is the disruptive impact of geopolitical decisions, such as the USAID shutdown, which demonstrably derailed critical global health research infrastructures (Cavalcanti et al., 2025; Reuters, 2025; Chapter 5). Such actions directly undermine the right to science and equitable access to medical advancements, illustrating the urgent need for states to treat research funding as a matter of justice and obligation rather than discretionary charity (Chapter 6). Within this binding framework, the inclusion of marginalised groups in clinical trials transcends mere corporate goodwill; it is a legal and moral obligation grounded in international human rights law. Aligning prevailing business models with this profound mandate critically demands sustained regulatory pressure, public accountability, and vigilant civil society oversight.

8.5 From Representation to Epistemic and Structural Justice

While diversity in numbers is important, it is not sufficient. Efforts for DEI must go beyond just counting people. They must also question how knowledge is created, who is allowed to create it, and which perspectives are excluded. This calls for a shift from representation to epistemic and structural justice.

8.5.1 Epistemic Injustice in Clinical Practice

Epistemic injustice, as defined by Fricker (2007), occurs when certain individuals or groups are unfairly treated as credible knowers. In clinical research, two main forms are particularly notable:

- Testimonial injustice, when the experiences of minority groups (e.g., women's pain, Black patients' symptoms) are ignored or treated as unreliable;
- Hermeneutical injustice, when the collective experiences of certain groups (such as racism in healthcare, or gender-specific side effects) aren't acknowledged in the main sources of knowledge.

In clinical trials, these injustices are often reproduced through:

- Trial designs that do not take into account how symptoms might differ by gender or culture;
- Measurements that do not reflect the actual experiences of disabled people or those with chronic illnesses;
- Review committees that undervalue qualitative research or community-based knowledge.

These practices create a hierarchy, where the preferred research participant is white, male, and compliant, while others are viewed as problematic, ignored, or excluded.

8.5.2 Postcolonial and Feminist Critiques of Biomedical Knowledge

Postcolonial scholars have critiqued the extractive nature of much global health research. Clinical trials often take place in the Global South, yet:

- Research agendas are defined in the Global North;
- Local communities typically only participate as trial subjects, not as co-creators or agenda-setters of the research;
- Benefits of research rarely return to those communities (Harding, 2011; Sariola & Simpson, 2011).

Similarly, feminist bioethics has challenged the male-focused and technocracy of medical science, arguing for:

- Situated knowledge that values context, personal experience, and care (Haraway, 1988; Sherwin, 2001);
- Ethical frameworks grounded in relationality and interdependence (Scully et al., 2010);
- Recognition of caregiving, emotion, and bodily knowledge as legitimate forms of knowledge.

These critiques converge in demanding that inclusion be about justice—not just about who is present, but whose insights are respected and valued.

8.5.3 Toward Participatory, Pluralistic Research Models

To institute epistemic and structural justice, research governance must include plural forms of knowledge. This requires:

- Co-design and participatory methods, where communities actively shape the research agenda, not just consent to it (Wallerstein & Duran, 2010);
- Recognition of lived experience and cultural expertise as valid sources of evidence;
- Ethical review processes that include patient advocates, disability activists, and Indigenous scholars as equal contributors.

Such models resonate with Medina's (2013) concept of "epistemic democracy," in which diverse groups co-create knowledge and hold scientific institutions accountable. From this perspective, the right to science (ICESCR, 1966; CESCR, 2020) means not just benefiting from scientific findings but actively participating in how science is governed.

8.6 Conclusion: Reclaiming the Transformative Potential of DEI

This chapter has examined the critical tensions underlying current DEI efforts in clinical trials. It has argued that while significant progress has been made in integrating diversity goals into research practice, these reforms risk being superficial without deeper structural changes.

To achieve the promise of equity, DEI must evolve from a representational to a justice-oriented paradigm. This involves:

- Stronger regulatory frameworks with proportional but binding inclusion mandates;

- Acknowledgement of corporate responsibilities under international human rights law;
- Integrating diverse epistemologies in research design, conduct, and governance.

Ultimately, clinical trials cannot be made inclusive by simply diversifying the trial population. They must be restructured around principles of epistemic justice, human rights, and accountability to communities. This implies shifting power—not only in who participates, but in who defines what counts as evidence, whose voices are heard, and whose lives are deemed valuable in the production of medical knowledge.

By reimagining DEI as part of a broader political and ethical transformation, clinical research can move closer to becoming a true public good—one that serves, reflects, and is co-governed by the diverse populations it aims to serve.

Chapter 9 – Conclusion and Recommendations

9.1 Introduction

This final chapter synthesises the key findings, arguments, and reflections developed throughout this Thesis, which has rigorously examined the persistent underrepresentation of structurally marginalised populations in clinical trials through a human rights lens. While much recent attention has focused on increasing "diversity" in biomedical research, this Thesis has argued that diversity alone is demonstrably insufficient. Rather, what is fundamentally required is a transformative shift towards systemic equity, inclusive governance, and epistemic justice. Human rights law provides not only a robust critical framework for diagnosing the legal and normative dimensions of exclusion, but also a foundational basis for actionable, enforceable reform.

This chapter begins by recapping core findings and directly answering the research questions posed at the outset. Next, it articulates the broader implications of integrating human rights principles into clinical trial governance, followed by concrete, practical recommendations for law and policy reform, with a strategic focus on EU-level institutions. The chapter concludes by proposing avenues for future scholarship and advocacy.

9.2 Summary of Key Findings and Addressing the Research Questions

This Thesis was guided by three interrelated research questions. The core insights addressing these questions are integrated below within a summary of the Thesis's key findings.

Research Question 1: What are the structural and normative barriers to equity and inclusion in clinical trials? Chapters 1 through 4 established that the persistent underrepresentation of populations such as women, racialised minorities (e.g., Black individuals in SCD trials), older adults (e.g., cancer trial participants over 75 years), persons with disabilities, and socioeconomically disadvantaged groups stems from a complex interplay of structural, institutional, and epistemic barriers. These include:

- Structural: Geographic centralisation of research infrastructure, digital exclusion, and disadvantages linked to socioeconomic and immigration status.
- Institutional: Restrictive eligibility criteria, language-inaccessible informed consent processes, and a pervasive lack of diversity within research leadership.

- Epistemic: An entrenched reliance on homogeneous population baselines and a systematic disregard for the lived experiences and diverse knowledge of marginalised communities. These barriers are not merely technical; they reflect underlying social power asymmetries, historical injustices, and systemic neglect.

Research Question 2: How can international human rights law be mobilised to address these barriers? Chapters 5 and 6 demonstrated that these exclusionary practices bear tangible legal consequences. International human rights law provides a robust framework for addressing these barriers, obliging states and holding non-state actors responsible. Specifically:

- The right to health (ICESCR Article 12, AAAQ framework) mandates non-discriminatory access to health services, including research participation.
- The right to benefit from scientific progress and its applications (ICESCR Article 15, CESCR General Comment No. 25) affirms the right of all individuals to participate in and benefit from science.
- The principle of equality and non-discrimination (UDHR Article 2, ICESCR Article 2(2), CEDAW, CRPD) demands proactive, structural reforms to address systemic exclusion. The UN Guiding Principles on Business and Human Rights (2011) further extend responsibilities to corporate actors, including pharmaceutical companies, to respect human rights in their clinical trial operations (ICESCR, 1966; CESCR, 2020; UDHR, 1948; CEDAW, 1979; CRPD, 2006).

Research Question 3: What legal, institutional, and epistemic strategies can advance inclusive and rights-based clinical research? Chapter 7 developed a comprehensive framework for reform, structured around four essential pillars: (1) regulatory and legal transformation, (2) inclusive trial design and conduct, (3) genuine community engagement and intersectional inclusion, and (4) systemic coordination and global equity. Strategies include legally embedding inclusion requirements, investing in accessible decentralised infrastructures, enforcing demographic transparency, creating diverse leadership pipelines, and valuing experiential knowledge. These actions are not mutually exclusive but signal a profound paradigm shift: from viewing inclusion as merely numerical representation to recognizing equity as a fundamental structural and epistemic transformation.

Chapter 8 critically examined deeper tensions, exposing the risks of performative inclusion and the "inclusion illusion" (Benjamin, 2019), the conflict between market logic (Kleinman, 1995) and rights-based obligations, and the impact of epistemic injustices (Fricker, 2007) in

perpetuating knowledge hierarchies. This critical perspective reinforces that genuine inclusion demands a fundamental reconfiguration of institutional priorities and scientific paradigms.

9.3 Human Rights as a Transformative Framework

Human rights provide far more than a mere regulatory tool; they offer a powerful, transformative lens through which the entire landscape of clinical research can be fundamentally transformed. Three overarching implications of this approach are worth underscoring.

First, rights create accountability. Where exclusion has long been rationalised as an unavoidable byproduct of technical or economic limitations, a robust human rights-based approach frames it as a direct breach of legal obligation. This crucial shift opens entirely new avenues for legal action, strategic advocacy, and systemic institutional reform.

Second, rights are indivisible. As this Thesis has meticulously demonstrated, underrepresentation in clinical trials implicates multiple, interconnected human rights—including the rights to health, science, equality, and human dignity. Addressing one dimension of exclusion without simultaneously tackling the others is inherently insufficient. A holistic, integrated approach is therefore indispensable.

Third, rights are participatory. The ultimate legitimacy of clinical research hinges not only on its scientific integrity but also, crucially, on its democratic inclusion. From the crucial processes of ethics review and trial design to the allocation of funding priorities and the dissemination of findings, marginalised communities must have a meaningful and empowered voice in the decisions and processes that directly affect their health and well-being.

9.4 Policy and Legal Recommendations

The following practical and actionable recommendations are addressed to key stakeholders at EU-level institutions, national governments, research funders, ethics committees, and industry stakeholders.

For EU and National Regulatory Authorities:

- Revise Clinical Trials Regulation (Regulation (EU) No 536/2014) to explicitly reference and embed equity and non-discrimination obligations under the ICESCR, CRPD, and CEDAW.
- Mandate equity impact assessments (EIAs) as a compulsory core component of all clinical trial approval and funding processes.

- Standardise disaggregated demographic reporting (e.g., age, sex, gender, racial/ethnic origin, migration status, disability status) across all EU Member States.
- Facilitate cross-border DEI coordination through enhanced EU-level guidance and monitoring frameworks.

For Research Funders (e.g., European Commission, national research councils):

- Tie funding to DEI performance metrics, including specific targets for equitable recruitment and community engagement.
- Strategically support decentralised clinical infrastuctures (such as community-based trial sites, mobile research units) in underserved areas and amongst historically excluded populations.
- Fund dedicated capacity-building initiatives for inclusive trial design, targeting both investigators and ethics reviewers.

For Sponsors and Industry (e.g., pharmaceutical companies, CROs):

- Integrate robust human rights due diligence into all phases of clinical trial design and implementation.
- Establish patient and community advisory boards with genuine co-governance authority to shape research agendas and protocols.
- Adopt equity-linked ESG (Environmental, Social, Governance) reporting on their clinical research portfolios.

9.5 Future Research Directions

Several crucial themes emerging from this Thesis merit further in-depth investigation to consolidate and advance the field of inclusive clinical research:

- Empirical evaluation of DEI interventions: Rigorously evaluate the effectiveness and long-term impact of specific DEI interventions (e.g., DCTs, CBPR models).
- Intersectional methodologies in practice: Develop and implement practical methodologies for collecting, analysing, and reporting intersectional data in clinical trials.
- Decolonizing clinical research methodologies: Investigate strategies to deconstruct Eurocentric norms of evidence, authorship, and ethical review, particularly in global trial contexts.

- Artificial intelligence and algorithmic bias in clinical trials: Research how emerging digital infrastructures and artificial intelligence applications may inadvertently reproduce exclusion, and identify necessary ethical safeguards.
- Patient-led research governance: Explore models where patient advocacy groups and marginalised communities have direct, substantive roles in the governance of clinical research.

9.6 Concluding Reflections

Inclusion in clinical research transcends being merely a scientific requirement or an ethical aspiration. It is, fundamentally, a human rights imperative. This Thesis has sought to move beyond the often-superficial rhetoric of "diversity" to meticulously interrogate the deeper structural, normative, and epistemic forces that systematically sustain exclusion. It has consistently argued that truly meaningful inclusion demands not just superficial adjustments, but robust legal obligations, profound institutional restructuring, and an embrace of genuine epistemic humility.

At its core, this is a question of profound justice. Who holds the power to shape medical knowledge? Who stands to benefit from groundbreaking innovation? And, most critically, who is systematically excluded from the evidentiary foundations upon which care is built—exclusions that directly contribute to disparities in health outcomes and access?

If health is unequivocally a human right, then so too is the inherent ability to participate fully, safely, and equitably in the very processes that define what health means, how it is measured, and how it is ultimately treated. Clinical research, when deliberately governed with inclusion, transparency, and justice as its guiding principles, possesses the immense potential to be a powerful vehicle for achieving greater equity in global health. But this transformative potential will only be realised if inclusion is treated not as a perfunctory checkbox, but as a collective, sustained, and unwavering rights-based commitment.

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