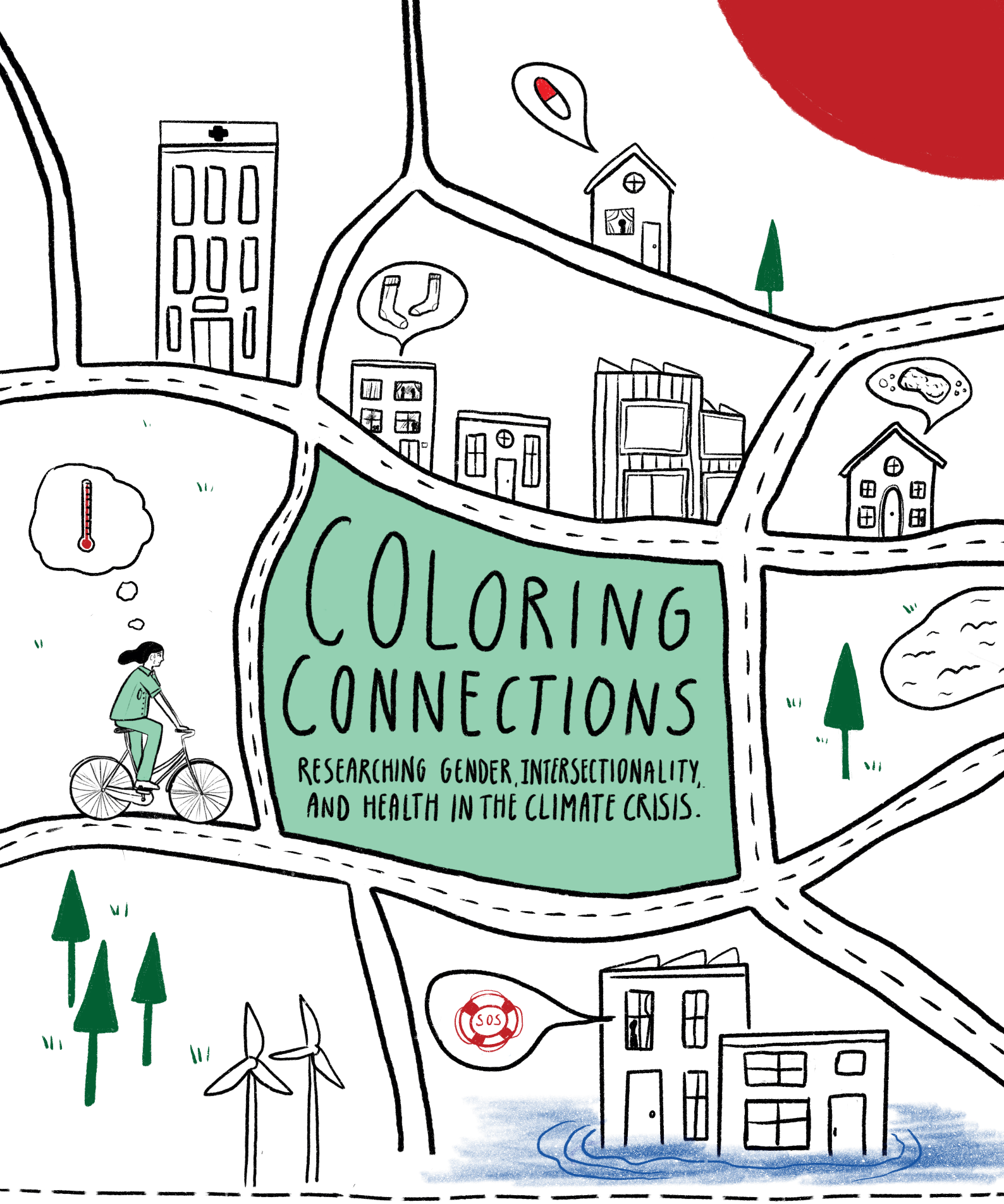

DUTCH SOCIETY GENDER & HEALTH, DECEMBER 2024
EDITED BY PETRA VERDONK
DESIGN & ARTWORK BY KATINKA FEIJS

NVG&G
Nederlandse Vereniging
Gender & Gezondheid

THIS BOOK BELONGS TO:

ADRESS:

COUNTRY:

PLANET:

GALAXY:

DRAW YOUR FAVORITE FLOWER:

DRAW YOUR FAVORITE VEGETABLE:

COLOFON

This report is commissioned by The Dutch Organisation for Knowledge and Innovation in Health, Healthcare and Well-being (ZonMw)

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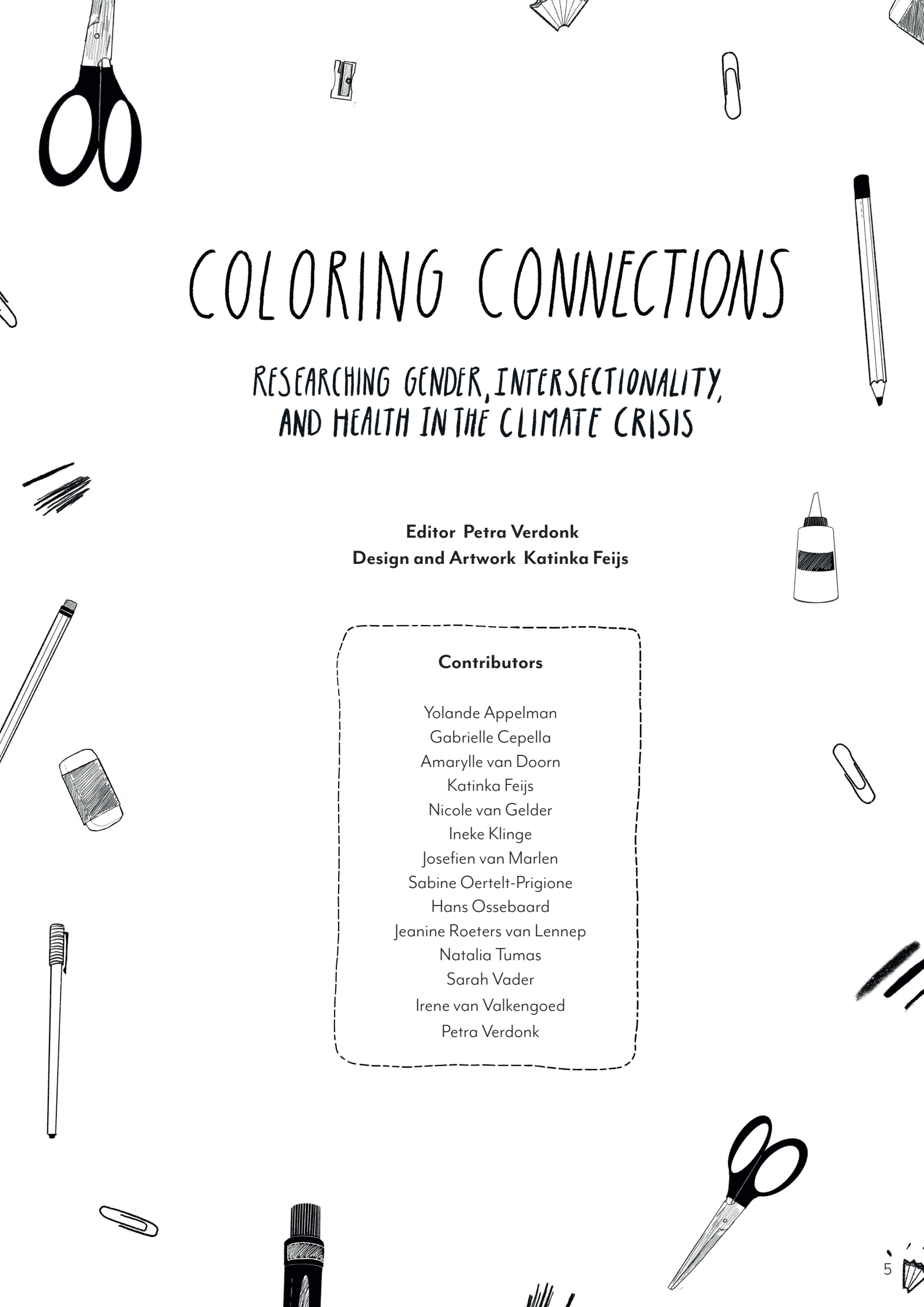

COLORING CONNECTIONS

RESEARCHING GENDER, INTERSECTIONALITY, AND HEALTH IN THE CLIMATE CRISIS

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INDEX

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Katinka Feijs is a designer who uses the power of visual storytelling to inspire action on complex societal issues. Her work translates critical transitions into engaging tools and visuals that drive awareness and tangible impact toward an equal, livable planet for all.

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REQUIRED TOOLS

Pencils (HB and coloured pencils)
for making sketches and working out ideas.

Eraser
for sketching and correcting notes.

Colored pens & markers
for colouring in drawings.

OPTIONAL TOOLS

Ruler
for drawing straight lines.

Post-its
for writing down additional notes, ideas or reflections.

Scissors & glue
for making visual collages.

Printer & paper
for printing additional worksheets or supplementary material.

Markers (thick and thin)
for marking or highlighting text or drawings.

PREFACE

This coloring book provides case studies and creative assignments for researchers focused on gender and health in the climate crisis. It outlines five key pillars of health research to showcase how the gender dimension can be integrated into health and care research. Within these pillars, we explore specific topics that clarify concepts, highlight methodologies, and provide examples designed to inspire the inclusion of gender considerations in health research.

In health research, the importance of sex and gender is increasingly recognized. 'Sex' refers to the biological aspects of having male, female, or intersex bodies, understood through the framework of 3G-gender: genes (XX, XY, or other), gonads (hormonal influences), and genitalia (reproductive organs). 'Gender,' by contrast, is a social construct that encompasses the roles, responsibilities, and traits assigned to individuals based on their perceived gender in a given society and era. Gender operates on multiple levels, from psychological to societal, structuring the social world. We acknowledge that a strict binary distinction between men and women is insufficient; biologically, people can be intersex, and socially, gender is a fluid concept manifesting across various dimensions and levels. Moreover, sex and gender are intertwined – biology cannot exist outside its social context, and vice versa. Gender is embodied and influences how we engage with the social world, while biological sex co-defines these interactions. And gender matters in health.

Sex and gender also matter in the context of the climate crisis. Innovative fields of health research such as genomics, 3D printing, the COVID-19 pandemic, and digitalization frequently overlook sex differences, gender equity, or systemic inequities. Research on human health in relation to the Planetary Health crisis is not only long overdue but also urgently needed. We must also avoid repeating past mistakes. Adopting a gender and intersectional perspective in health research can help identify and bridge existing knowledge gaps. The aim of this coloring book is to illustrate the relevance of gender considerations in research on Planetary Health and human health, as well as how gender can be effectively integrated into health research. The creative assignments presented in this book, whether used individually or in groups, are designed to foster a deeper understanding of gender, intersectionality, human health and care, and Planetary Health.

In this book, we provide case studies on Planetary Health through five major pillars to assist researchers in incorporating the gender dimension into their health research. We present examples of studies and elaborate on topics pertinent to gender, health, and the Planetary Health crisis, alongside a range of concepts, designs, and methodologies for integrating gender and intersectionality considerations in health research, with a focus primarily on health issues in the Global North. As researchers and health professionals from this region, we must:

- Be creative and use innovative research methods to study emerging challenges;
- Understand who bears the burden of heat stress and the underlying mechanisms;
- Investigate how masculinity can be linked to violence, particularly during times of climate crisis, and explore the broader social contexts at play;
- Address the root causes of the Planetary Health crisis, including colonialism, racism, capitalism, and inequalities that contribute to both ecosystem degradation and poor human health;
- Take responsibility for educating medical students on social responsibility and incorporating Planetary Health equity issues into medical education;
- Consider how to support an equitable transition in health care, which faces unique climate-related challenges;
- Finally, explore how to develop and analyze policies for gender-sensitive, equitable, adaptive, and climate-resilient cities to improve the health of the most vulnerable populations.

Only by addressing these interconnected issues can we ensure the development of inclusive and equitable responses to the most pressing health challenges of our time.

The Dutch Society for Gender & Health would like to thank the Dutch Organisation for Knowledge and Innovation in Health, Healthcare and Well-being (ZonMw) for commissioning this report. Exploring this urgent and emerging field has been a valuable learning experience

A heartfelt thank you to all contributors for their writing, illustrations, collaboration, and feedback. Thank you for your thoughtful reflections, insightful visuals, and for sharing your expertise. This collaborative process of interdisciplinary thinking, which extends beyond traditional disciplines and medical fields, is the kind of work we all need to pursue. This book is dedicated to all researchers ready to confront gender and other equity issues in health.

CHAPTER 1: INTRODUCTIONS

Petra Verdonk, Ineke Klinge

Background

The world is currently facing an unprecedented Planetary Health and public health crisis. Following numerous warnings from climate scientists since 1992 (e.g., Ripple et al., 2021; Ripple et al., 2024), the United Nations body that reviews climate change science, the Intergovernmental Panel on Climate Change (IPCC), has declared it is officially "code red" for life on Earth (IPCC, 2018; IPCC, 2021). Climate change, ocean acidification, land degradation (including desertification, deforestation, and pollution), water scarcity, overexploitation of fisheries, and biodiversity loss threaten the habitability of our planet and human health (Whitmee et al., 2015). In this case study, we use the term "Planetary Health crisis" to refer to this combination of climate and ecological crises and their impacts on human health (see Box: Planetary Health).

Box: Planetary Health

Planetary Health is defined as "… the achievement of the highest attainable standard of health, well-being, and equity worldwide through judicious attention to the human systems—political, economic, and social—that shape the future of humanity and the Earth's natural systems that define the safe environmental limits within which humanity can flourish. The concept of Planetary Health refers to the health of human civilization and the state of the life-sustaining systems on which it depends" (Whitmee et al., 2015, p. 1978).

Climate and the ecological systems are interdependent, with global warming resulting from greenhouse gases such as CO2 trapping heat in the atmosphere, thereby warming the Earth's surface, including land and oceans. Consequently, global and local weather systems change, leading to more extreme weather patterns such as droughts, flash floods, and heat waves. The ability to draw down greenhouse gases from the atmosphere into the soil, oceans, and forests cannot keep pace with emissions. The ecological crisis stems from the destruction and degradation of non-human nature. Phenomena such as deforestation and pollution are closely linked to changes in the climate system. Species are going extinct, disrupting a finely tuned system where life forms depend on one another in a delicate balance, where even small changes in temperature and weather patterns can have significant effects. For those in the health domain, an analogy with fever may help illustrate the implications of global warming.

The integration of sex and gender in (public) health research is long overdue (e.g., Van Hagen et al., 2021), and the Planetary Health crisis exacerbates existing inequalities, leaving marginalized groups more vulnerable to its health consequences. Addressing sex and gender in research is essential not only as a social justice requirement but also to improve the quality of research and healthcare, reduce research waste, and enhance impact (Witt et al., 2024). Although sex and gender considerations are gaining traction in health research, emerging and innovative fields such as genomics, 3D printing, digitalization, and COVID-19 often overlook these issues (e.g., Brady et al., 2021; Verdonk & Klinge, 2012; Van Daal et al., 2021; Figueroa et al., 2021). Researchers may systematically neglect the implementation of sex and gender across intersections with other aspects of diversity, finding it challenging to address these complexities. The necessity of preserving Planetary Health is grounded in the understanding that the health of individuals, communities, and human civilization relies on the state of natural systems (Whitmee et al., 2015) and that ecosystems are on the brink of collapse (IPCC, 2021). In this case study, we explore the rapidly emerging field of Planetary Health to provide inspiration and tools for researchers on how to incorporate gender into health and care research. Additionally, we identify knowledge gaps.

Within five domains—health inequalities, violence, healthcare and medical education, and health policy—we showcase empirical studies on specific topics, including heat stress, sexual and gender-based violence, medical education, healthcare, and healthy cities. These studies provide a range of designs and methodologies that integrate the gender dimension into health research. Our aim is to contribute to (a) the academic development of researchers studying gender in this innovative and emerging field; (b) the avoidance of research waste and the acceleration of knowledge creation; and (c) the generation of societally relevant knowledge that addresses humanity's and the planet's most urgent questions. In this case study, we focus on gender and its intersection with sex rather than on biological sex differences (see Box: Sex and Gender).

Box: Sex and Gender

Sex refers to the biological aspects of having male, female, or intersex bodies, understood as 3G-gender: genes (XX, XY, or other), gonads (hormones), and genitalia (reproductive organs).
Gender refers to the tasks, roles, responsibilities, identities, and characteristics assigned to men and women in a given society at a specific time. Gender is a fluid concept with many dimensions that manifest at various levels, including institutional and societal levels (e.g., Connell, 2012; Tannenbaum et al., 2016).

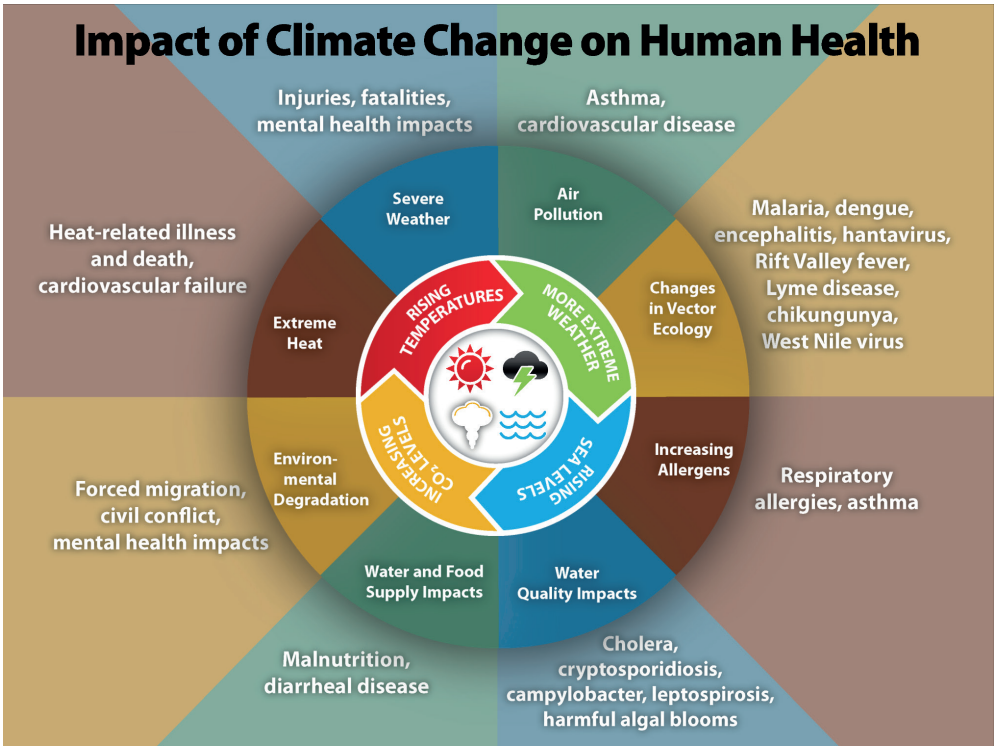
Social embodiment refers to how individuals experience their embodied existence; a strict distinction between men and women does not exist, and the concepts of sex and gender cannot be fully disentangled. In a co-determination between the biological and the social, gender is co-determined: gendered life experiences manifest in bodies, while sexed bodies co-define how individuals engage with the social world (Krieger, 2024). Gender can thus be seen as patterns of social practices, for instance, manifesting in how certain bodies have specific social possibilities for work, violence, and fatherhood. Such social practices may reference biological properties but are not determined by them (Connell, 2012). Gender is built on relationships that concern reproductive distinctions between human bodies, and gendered patterns produce bodies through sports, eating, work, and education, resulting in particular characteristics, exposures, and vulnerabilities to health problems (Connell, 2012).

Planetary Health

The health effects of climate change and the ecological crisis on human health include respiratory diseases, infectious diseases, mental health issues, cardiovascular diseases, and sexual and reproductive health (SRH) concerns. The United Nations Research Institute for Social Development has identified research programs driven by perspectives from the Global South that seek to replace business as usual and contribute to the development of a new eco-social contract. This contract is represented in societal compacts that are inclusive of all people, guarantee their participation, and advance social development within the natural boundaries provided by our planet and its ecosystems (UNRISD, 2021, p. 5). Addressing gender, and across its intersections with other social identities such as age and race, in Planetary Health research is more urgent than ever (see Box: Planetary Health and Human Health) (GGCA, 2016; IUCN, 2015).

Box: Planetary Health and Human Health

The US Centers for Disease Control provided an overview of health effects in the image below (CDC, 2016). Not explicitly included, yet highly relevant from a sex and gender perspective, is the relationship between the climate and ecological crisis and sexual and reproductive health (SRH). The Planetary Health crisis affects cisgender women and gender-diverse individuals more severely than cisgender men. For instance, concerning SRH, various health problems arise from the salinity of drinking water (and its relationship with preeclampsia) due to drought and sea-level rise, vector-borne illnesses (such as Zika, Dengue, and Malaria), disrupted care chains during extreme weather events and disasters, and supply shortages (Segal & Giudice, 2022).



Source: https://toolkit.climate.gov/image/505, (CDC, 2016, downloaded 16 July 2024)

Inequality is not only at the root of the climate and ecological crisis; this crisis also amplifies existing health inequalities (Sultana, 2022; Sultana 2023; Sultana, 2024; Karpf, 2021). Therefore, for research to contribute to an eco-social contract, researchers must study how exposure, sensitivity, adaptive capacity, and resilience determine susceptibility, how climate change exacerbates pre-existing inequalities, and what interventions are necessary for health equity and inclusive healthcare. Women, particularly pregnant women, children, older adults, socially marginalized groups—including indigenous communities and those experiencing marginalization due to poverty or other intersections—exhibit higher susceptibility to climate-driven health impacts (Van Daalen et al., 2020; Atwoli et al., 2021; Thomas, 2022). The concept of intersectionality refers to the simultaneous interaction of social identities such as gender, race, class, religion, and age, as well as the analysis of power within these social dimensions (Crenshaw, 1991; Verdonk et al., 2019) (see Box: Intersectionality).

Box: Intersectionality

As a normative theory or metatheory, important tenets of intersectionality include a commitment to social justice, the understanding that individuals possess unique social positions that affect lives and their health in multiple ways, and the belief that researcher reflexivity rather than neutrality contributes to insights and meaningful research (Crenshaw, 1991; Hancock, 2007; Hancock, 2013; Verdonk et al., 2019). Figure 1 illustrates various aspects of identities that may intersect, including unidentified identities represented by the question mark. Furthermore, not all identities are simultaneously relevant in all situations and health issues, as depicted in the positioning of the figures in the center. For instance, for the individual wearing a hijab in the middle, their language, race, and sexuality may intersect in a particular health issue, affecting both their health problems and the provision of healthcare.

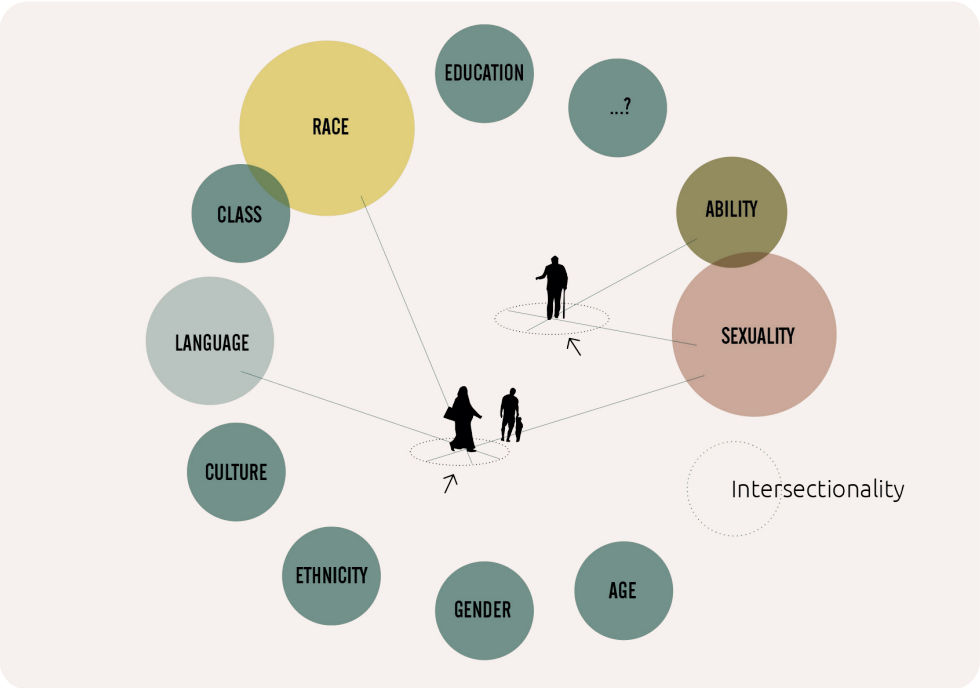


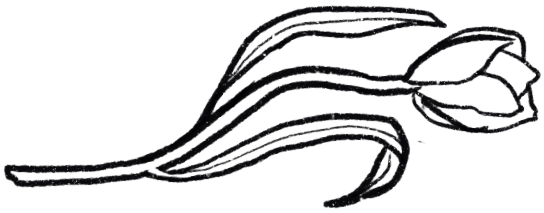
Figure 1: Intersectionality

In September 2021, more than two hundred medical journals, including the BMJ, The Lancet, and the Dutch NTvG, published an editorial urging governments to take climate action. The editors stated that only *fundamental and equitable changes to our societies* will reverse the current trajectory toward unprecedented harm and extinction (Atwoli et al., 2021). Regarding the role of health professionals, urgent, society-wide, and major adaptations are required in calling for action, educating the public, preparing the health care, and creating knowledge on health in relation to the climate crisis (Charles et al., 2021). This case study is therefore grounded in the concept of climate justice and addresses the health consequences of the climate crisis in relation to sex, gender, and other inequalities (see Box: Climate Justice).

Box: Climate Justice

There is global consensus that climate-driven health risks and impacts are unevenly distributed across groups, communities, and countries, and that inequalities and inequities must be considered in mitigation, adaptation, and resilience efforts (Atwoli et al., 2021; Robinson, 2018; Sultana, 2022; Sultana, 2023; Thomas, 2022). This concept is referred to as climate justice, which encompasses three types of justice (Jafry et al., 2019):

1. Intergenerational justice, which refers to the obligation to ensure justice for younger generations, acknowledging that older generations have contributed significantly more to the climate crisis than younger generations, and that polluters have a historical responsibility to address this imbalance.
2. Intragenerational climate justice, which recognizes that within the human population, wealthy individuals and those living in Western countries (often White men) have emitted more greenhouse gases, while poorer individuals and those in low- and middle-income countries (often women of color) suffer the most severe consequences.
3. Interspecies climate justice, which acknowledges that not only are humans threatening the life-sustaining systems they depend upon, but also recognizes that ecosystems possess intrinsic value and are at risk of extinction (Jafry et al., 2019).



NOTES

Links

Tools

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Gendered Innovations. Developing practical methods of sex, gender, and intersectional analysis for scientists and engineers, providing case studies as concrete illustrations of how these analyses lead to innovation https://genderedinnovations.stanford.edu/
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US Climate Resilience Toolkit. Health | U.S. Climate Resilience Toolkit https://toolkit.climate.gov/topics/human-health

Videos

Medical Journals: 'Call for Emergency Action to Limit Global Temperature Increases, Restore Biodiversity, and Protect Health; Wealthy Nations Must Do Much More, Much Faster' 2021 https://www.youtube.com/watch?v=ZMOHJ4ifKA0
Lancet Countdown on Health and Climate Change Video Series https://www.youtube.com/playlist?list=PLoHXnVng2SVBUuyMX17yFxYDUN7BCkw6E
Georgetown University Global Health Initiative in Collaboration with Women in Global Health Event: 'Gender, Health, and Climate' 2019 https://www.youtube.com/watch?v=vrwUQje9Vqc
Kimberlé Crenshaw: 'The Urgency of Intersectionality' Ted Talk 2016 https://www.ted.com/talks/kimberle_crenshaw_the_urgency_of_intersectionality

Podcasts

Leah Thomas: What is an Intersectional Environmentalist? TedxLondon 2023
https://tedxlondon.com/podcasts/what-is-an-intersectional-environmentalist/
Floor Cuijpers and Petra Verdonk on an Intersectional Analysis of Self-Silencing in Clinical Trials: FAB Gab Episode 26 2022
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Kimberlé Crenshaw Series: Intersectionality Matters! E.g., Black Women's Health Through the Twin Pandemics
https://open.spotify.com/episode/4HPCDYOvGIMVrp2KkSWNoQ?si=iqAQiAF8QMyR_pnpP_A9OA

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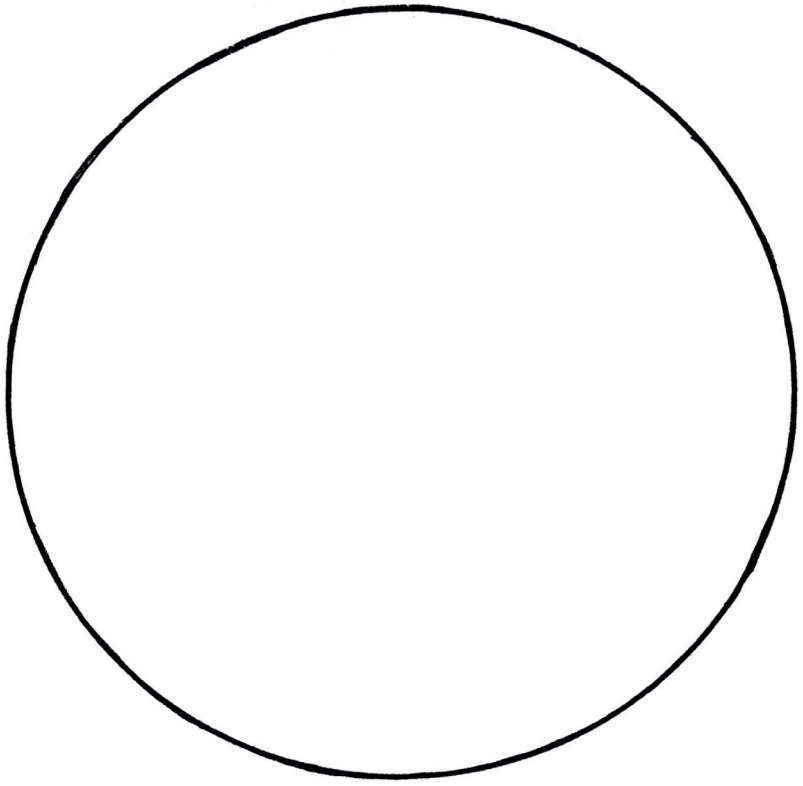
ASSIGNMENT 1

'ICEBREAKER'

HOW ARE YOU CONNECTED TO THE WORLD?

DRAW A MAP OF THE EARTH AND MARK THE PLACES WHERE YOU FEEL CONNECTED. EXPLAIN WHY THESE PLACES ARE IMPORTANT TO YOU.



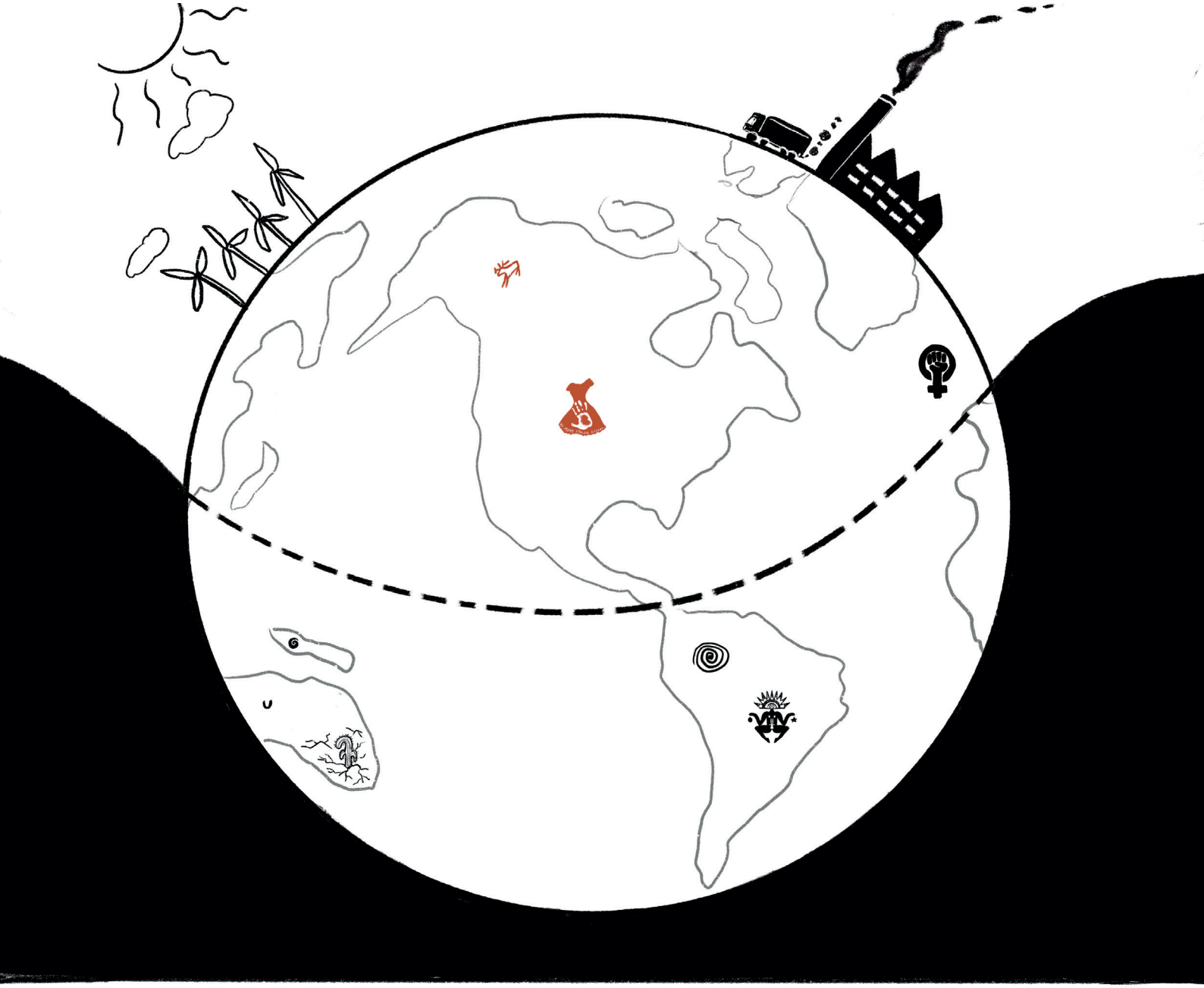
WHAT WOULD YOU LIKE TO SHARE?

DRAW A TIMELINE FROM WHEN YOU FIRST BECAME INTERESTED IN HEALTH AND CARE. WHERE ARE YOU NOW, AND WHERE DO YOU SEE YOURSELF IN THE FUTURE?

ASSIGNMENT 2

THINKING IN BLACK-AND-WHITE ABOUT CLIMATE AND HEALTH

BLACK-AND-WHITE THINKING LIMITS OUR ABILITY TO FIND SOLUTIONS TO INEQUALITY, CLIMATE, AND HEALTH CHALLENGES. THINK BEYOND THE EXTREMES - IMAGINE THE AREAS BETWEEN THE BLACK AND WHITE SIDES OF THE GLOBE. HOW DO YOU PERCEIVE THE WORLD IN TERMS OF CLIMATE, GENDER, AND HEALTH? WHAT DO YOU SEE IN WHICH PLACES, AND WHY? VISUALIZE THAT IN YOUR WORLD. IS IT A STEREOTYPE OR A CLICHÉ?



HOW CAN WE DEVELOP THOUGHTFUL SOLUTIONS TO ADDRESS THE COMPLEX, INTERCONNECTED CHALLENGES BETWEEN CLIMATE, GENDER AND HEALTH?

CHAPTER 2: HEALTH INEQUALITIES IN HEAT STRESS

Petra Verdonk, Sarah Vader, Yolande Appelman, Jeanine Roeters van Lennep

In This Chapter

- Health (in)equities in relation to climate change, particularly heat stress
- Methodological approaches, tools, and frameworks to guide equitable research on heat stress
- Statistical approaches to analyze sex- and gender-related differences in health and heat
  - Utilizing and developing Sex-And-Gender-Based Variables (SAGBV)
  - Analyzing gender across intersections; intersectional analysis
    - Intersectional inequalities using the MAIHDA approach

Background

Heat waves increasingly threaten human health, particularly for vulnerable groups such as children, older adults, and individuals with chronic health conditions (Ndlovu & Chungag, 2024). Due to climate change, heat waves have become more frequent, and their intensity and duration may also increase. A heat wave is defined as a period of local excess heat over a sequence of abnormally hot days and nights (https://wmo.int/topics/heatwave, 17 July 2024). During a heat wave, body temperature rises due to high environmental temperatures and metabolic changes. Thermoregulation refers to the process of maintaining a core body temperature of 37°C. When the body's core temperature rises to a level where it cannot dissipate heat adequately, heat stress or heat illness occurs. Many physiological responses to heat are related to cardiorespiratory events (Silveira et al., 2023).

Heat stress can range from discomfort to severe health issues, including heat rash, heat exhaustion, muscle cramps, heat syncope, and heat-related cardiovascular events (such as myocardial infarction or death, and heat stroke (both classic and exertional) (Alele et al., 2020). Blood vessels dilate, leading to fluid loss through rapid breathing, sweating, and increased blood flow to the skin, which places higher demands on cardiac output. Individuals with pre-existing health conditions such as cardiovascular disease, hypertension, obesity, type 2 diabetes, and chronic kidney disease may be particularly vulnerable to heat stress. As people age, their ability to detect significant temperature changes may decline, and other thermoregulatory functions, such as regulating skin blood flow, may also diminish (Ndlovu & Chungag, 2024). Older adults generally have more comorbidities, and medications such as diuretics and ACE inhibitors may further increase the observed risk of cardiovascular disease (CVD) outcomes in response to heat (Kalisch Ellett et al., 2016). Heat-related morbidity and mortality may also be influenced by individuals' (gendered) life circumstances, such as working in the armed forces or other occupations with high heat exposure. For these individuals, exertional heat stress can be a significant cause of morbidity and mortality (Alele et al., 2020).

Sex Differences in Heat-Associated Risk

Epidemiological and thermophysiological research has revealed differences in the effects of extreme heat on men and women (Alele et al., 2020; Folkerts et al., 2022; Greenfield et al., 2023; SEforAll, 2021). Regarding reproductive health, heat stress has been linked to temporary infertility in both men and women (Segal & Giudice, 2022). Pregnant women have only recently been recognized in research and heatwave response policies as a vulnerable group. However, a systematic review and meta-analysis by Chersich et al. (2020) found that pregnant women have a reduced ability to tolerate heat stress, possibly due to already elevated core temperatures and the complex nature of thermoregulation during pregnancy. Heatwaves and extreme temperatures may also adversely affect the fetus: for every 1°C increase in environmental temperature, the risk of preterm delivery increases by 1.16 and stillbirth by 1.05. Dose-response associations were observed with increasing temperatures or heat exposure, with effect sizes often higher for women of color. Sensitivity

to heat may also depend on the sex of the fetus, as higher temperatures have been associated with stillbirth in male fetuses (Chersich et al., 2020).

Differences in recovery from heat stress have been reported, with women exhibiting slower thermal recovery times (SEforAll, 2021). Mortality outcomes show inconclusive results; some studies indicate that heat and heat waves have a greater impact on cardiovascular morbidity and mortality in men, while others suggest the opposite (Ballering et al., 2023; Liu et al., 2015; Salvador et al., 2023; Silveira et al., 2023). An extensive all-cause mortality study of the Dutch population, analyzing temperature statistics and mortality rates over 23 years, found that while mortality due to cold was greater than that due to heat for both sexes, heat-related mortality increased by 8% for men and 14.3% for women. Exposure-response associations were identified between daily mean temperature and daily mortality. Although the most significant differences were observed in the oldest age group (> 80 years), overall, women were more susceptible to extreme heat than men. The authors suggested that the distinct effects of heat on men and women could be attributed to higher cardiovascular strain in women and differences in sweat loss, as women generally sweat less than men, and older women sweat less than younger women (Folkerts et al., 2022). A continuum exists for maintaining thermal homeostasis, from behavioral measures (seeking warmth or shade) to autonomic factors (e.g., sweating), and sex and gender factors may play a role. For instance, heightened thermal awareness is observed in women, possibly due to sex differences in early vasomotor responses to environmental stress and changes in blood flow (Greenfield et al., 2023). In Alele et al.'s (2020) systematic review on gender differences in the epidemiology and risk factors of exertional heat illness and heat tolerance in the armed forces, the researchers found that men have a slightly higher incidence of heat stroke compared to women, while women exhibit a slightly higher incidence of other heat illnesses. Furthermore, the incidence of exertional heat stroke has been steadily increasing for both sexes.

The Role of Age in Sex Differences

Globally, cardiovascular diseases (CVD) are the leading cause of mortality, accounting for one-third of all deaths and significantly contributing to disability (WHF, 2023). Due to the aging population and rising obesity rates, future scenarios predict an increase in CVD morbidity and mortality. Consistent findings have been reported regarding the positive associations between heat exposure and CVD morbidity and mortality. Liu et al. (2022) conducted a meta-analysis of 266 studies assessing high temperatures and/or heatwaves, reporting that every 1°C increase in temperature was significantly associated with a 2.1% increase in CVD-related mortality and a 0.5% increase in morbidity. The heightened cardiovascular risk associated with heat was linked to factors such as age, female sex, societal influences, comorbidities, and lifestyle factors.

A study conducted in Brazil assessed the effects of heat waves (defined by a temperature threshold of the daily mean temperature during the hot season, estimated for each participant) on cardiovascular and respiratory mortality (Silveira et al., 2023). The researchers observed higher mortality rates on heat wave days compared to non-heat wave days, with more pronounced effects on respiratory mortality than cardiovascular mortality. The effects intensified with increasing heat wave intensity. For cardiovascular mortality, older women were found to be more vulnerable to the effects of heat waves than men, except during the most intense heat waves. Women in the oldest age category (> 65 years) were most vulnerable to cardiovascular mortality during less intense heat waves (90th and 92.5th percentiles), while older men were more vulnerable during more intense heat waves (> 95th percentile) (Silveira et al., 2023). This suggests that heat wave intensity is associated with sex differences in cardiovascular mortality, and both sex differences in thermoregulation and gender differences may play a role. However, these findings should be interpreted with caution as they were not statistically significant. A study conducted in Madrid assessed the heat-related cardiovascular event (CVE) rate in a younger population: 6,514 middle-aged individuals aged 40-70 years (61.1% men and 38.9% women, with mean ages of 62 years and 65 years, respectively) who experienced a first CVE during the summer months between 2015 and 2018 (Salvador et al., 2023). The researchers found higher CVE rates for all diagnoses analyzed—cerebral ischemia, ischemic heart disease with angina, acute myocardial infarction, heart failure, and stroke—except for ischemic heart disease without angina. Men were significantly more affected than women (OR 1.248 for men and 1.039 for women), with a higher risk observed in more deprived groups. Proposed hypotheses for the observed sex differences include the possibility that middle-aged men may engage in fewer preventive behaviors during extreme heat events, resulting in higher exposure and risk, or that they may have a higher prevalence of cardiovascular risk factors (obesity and smoking are more prevalent

among Spanish men compared to women). Lifestyle factors were not assessed in the study. A dose-response pattern was found across deprivation levels, with larger risks in groups with high deprivation (Salvador et al., 2023).

Ballester et al. (2023) studied heat-related mortality in Europe during the summer of 2022, which was the hottest summer on record, characterized by a series of heat waves and unusually high excess mortality reported by Eurostat. The researchers aimed to estimate the sex- and age-specific (in three age groups: 0-64, 65-79, and 80+ years) mortality burden associated with high temperatures during a 14-week period from May to September 2022. They reported the highest risks for heat-related mortality in countries near the Mediterranean Sea, with older individuals and women experiencing higher rates (56% more heat-related deaths). When examining intersections, sex differences varied significantly with age, with higher heat-related mortality in younger and middle-aged men (0-64 years and 65-79 years) and higher heat-related mortality in older women (80+ years). As women develop CVD later in life compared to men and have a higher life expectancy, the ratio of women to men among patients with CVD increases with advancing age. Impaired health status, including comorbidities and advanced age, may contribute to women's greater vulnerability to extreme heat (Liu et al., 2015).

Gender and Heat

Research on sex differences and heat stress yields inconclusive results; sex differences in heat-related cardiovascular mortality depend on age, deprivation, and other factors such as lifestyle and pre-existing conditions. The mechanisms underlying sex differences in thermoregulation are not yet fully understood. For instance, in addition to physiological differences in coping, women may face greater challenges in dissipating heat due to fitness levels, a higher percentage of body fat, or differences in skin conductance (Alele et al., 2020). Study findings may also be influenced by regional or population-specific factors. For example, men are more likely to engage in outdoor jobs and activities, such as construction and extraction, which may increase occupational exposure to excessive temperatures. Thus, differences between men and women in the impact of heat-associated cardiovascular risk and mortality may also be explained by gender, including gendered differences in age structure, occupational and socioeconomic status, mobility, and exposure patterns (SEforAll, 2021; SEforAll, 2022). The daily lives of millions of women are structured around gendered norms and practices that may perpetuate both exposure to heat and barriers to cooling resources. Across the globe, women face barriers to accessing healthcare and nutritious diets, both of which rely heavily on cooling. Generally, women disproportionately spend time in kitchens, which are often the hottest areas of the home. Limited decision-making opportunities within families and communities, lower literacy rates, mobility restrictions, and discrimination from healthcare providers further hinder access to cooling services. In their study on mortality differences following heat waves, Van der Steen et al. (2019) suggest that gendered aspects of individuals' lives, such as living alone and being responsible for household chores, could also contribute to older women's increased vulnerability to extreme heat (Van der Steen et al., 2019). Folkerts et al. (2022) propose that gender differences in clothing patterns between men and women may also contribute to variations in sweat loss and heat discomfort. This underscores the importance of incorporating a gender perspective into studies on heat-related risks and conducting intersectional analyses, as illustrated in the following examples.

To provide insight into how the gender dimension can be integrated into studies on heat and heat stress, we showcase three studies below that exemplify: (I) the development and use of gender measures based on pre-existing health data; (II) a study of heat stress and the gendered living environment; and (III) applying a MAIHDA statistical analytical approach to study neighborhood deprivation and intersectional inequalities.

Example I: Studying Gender Using Pre-Existing Health Data

To date, no in-depth research has been conducted on the gender dimension concerning heat waves and their health impacts. Other studies on gender in relation to health outcomes have presented various possibilities for integrating gender into health research. Gender variables and gender indices may be utilized in thermophysiological research to enhance understanding of sex and gender in relation to heat stress (see Box: Measuring Gender). Both sex and gender are relevant to health, yet specific gender measures are often lacking in large-scale studies.

Box: Measuring Gender

The development of quantitative tools for analyzing the influence of gender on health outcomes has proven challenging, and sex and gender continue to be conflated. Measures of sex, gender, and sexual orientation are frequently absent in quantitative research. Operationalization of sex is often based on a binary measure, failing to account for intersex individuals and non-binary identities (see Box: Sex and Gender). Ballering et al. (2023) propose adding measures to assess gender identity by incorporating participants' feminine and masculine identities on two-dimensional scales. Combining sex assigned at birth with current gender identity allows for the identification of participants whose sex assigned at birth does not align with societal norms regarding gender identity. Sexual orientation is also a multidimensional concept encompassing identity, behavior, and sexual attraction. These dimensions may not all be equally relevant in every context and are related to specific health issues of interest in the study. Ballering et al. (2023) suggest adding items related to sexual attraction (gynephilia and androphilia) and combining these with a sexual identity item, using unipolar scales to facilitate continuous analysis and reduce the need for categorization.

Recently, several tools have been developed, either as new 'gender variables' or as gender indices based on existing survey datasets. Nielsen et al. (2021) developed the *Stanford Gender-related Variables for Health Research (GVHR)* for use in clinical and population research, including survey studies. The researchers adopted a multidimensional instrument to capture how intrapersonal, interpersonal, and institutional aspects of gender intersect to shape health outcomes. Core characteristics were identified in 74 scales used in gender-related measures, and composite gender constructs were distilled. Ultimately, an instrument measuring seven gender-related variables (25 items) was developed: caregiver strain, work strain, independence, risk-taking, emotional intelligence, social support, and discrimination. Associations were found between these seven gender variables and health outcomes, such as between caregiver strain, discrimination, and physical and mental health. The GVHR has been adapted for the Spanish population, where the independence and emotional intelligence factors did not achieve adequate reliability (Díaz-Morales et al., 2023). As gender is a social construct, aspects of gender can vary across cultures. In the Spanish population, caregiving strain and discrimination were associated with poor health indicators (general, mental, and physical).

Pre-existing health data are also used to develop gender scores when gender measures are absent (e.g., Lacasse et al., 2020; Smith and Koehoorn, 2016; Vader et al., 2023; Ballering et al., 2023). In a review of gender indices, Ballering et al. (2023) identified 26 indices across 24 studies, all developed in Europe or North America. Most indices combine elements from data-driven and theory-driven approaches, referring to whether items were based on the distribution of psychosocial factors or selected based on theory or expert opinion. One of the first gender indices was developed by Smith and Koehoorn (2016). Using data from the Canadian Labour Force survey, they created a four-dimensional Labour Force Gender Index (LFGI) focusing on feminine and masculine gender roles and institutionalized gender among labor force participants: responsibility for caring for children, occupational segregation, hours of work relative to a partner, and education level relative to a partner. In the next step, the gender index scores of men and women were examined, as well as changes in gender roles over time among male and female labor force participants, using multivariable linear regression analysis. The LFGI demonstrated good variation among men and women, indicating that it measured a different concept than sex and was responsive over time, identifying changes in gender roles.

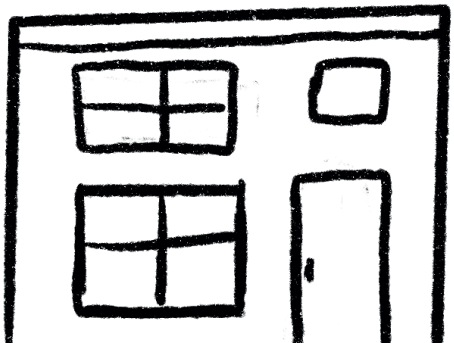
A few critical notes on using gender indices:

1. Avoid creating different gender indices for every dataset; Tannenbaum (2020) advises looking for common variables and concepts that can be generalized across data sources and populations.
2. Keep in mind that institutional and interpersonal aspects of gender may be more significant in shaping health than individual characteristics and norms (Nielsen et al., 2021).
3. Gender indices do not allow for constant redefinition of gendered components (Ballering et al., 2024).
4. Consider sex and gender in the initial stages of study design to facilitate a relevant, reproducible, and person-centered approach (Ballering et al., 2023; Ballering et al., 2024)

Using cross-sectional data from the Doetinchem Cohort Study, Vader et al. (2023) developed a masculine gender score based on 'traditional masculine-connotated aspects of everyday life' and explored how masculinity may affect sex differences in the prevalence of chronic health problems. To calculate a masculine gender score (range 0-19), information on work, informal care, lifestyle, and emotions was utilized. Multivariable logistic regressions, including age and socioeconomic status (SES), were employed to examine the role of masculine gender on sex differences in the prevalence of diabetes, coronary heart disease, stroke, arthritis, chronic pain, and migraine. The authors found that men had higher masculine gender scores than women (12.2 vs. 9.1), and that for both sexes, a higher masculine gender score was associated with a lower prevalence of chronic health problems. Diabetes, chronic heart disease, and stroke were more prevalent in men, and gender adjustment resulted in greater sex differences. Conversely, arthritis, chronic pain, and migraine were more prevalent in women, and gender adjustment resulted in smaller sex differences. The authors concluded that gender, measured as 'everyday masculinity,' was associated with lower prevalence of chronic health problems in both men and women, and that commonly observed sex differences in the prevalence of chronic health problems have a substantial gender component (Vader et al., 2023).

Example II: Heat Stress and The Gendered Environment

Mashhoodi (2021) studied environmental justice and gender inequality in exposure to high temperatures (land surface temperature, LST) and whether levels of overexposure differ across locations and socioeconomic groups in the Netherlands. LST significantly impacts thermal comfort during heatwaves and is disproportionately distributed across human settlements. Studies show inconclusive results: gender differences occur in mortality rates during heatwaves, with the female-to-male ratio varying across age groups, and gender differences exist in the ratio of heat-related to non-heat-related visits to emergency departments. A knowledge gap persists regarding gender inequality and heatwaves, and it remains unclear to what extent gender inequalities stem from unequal exposure to LST. In this study, summertime LST accounts for the average temperature over 40 days and nights in June, July, and August. The Netherlands is located in a 'temperate without dry season and warm summer' climate zone, characterized by flat terrain with most land situated 5m above sea level. More than 75% of the land is covered with agricultural areas, forests, grasslands, moors, marshes, dunes, and sandy lands, while the built environment accounts for 13% of the land, including urban areas, roads, ports, and urban greens. Water covers 8% of the land, and 3% consists of seas and ocean waters. The neighborhood serves as a fine-scale spatial unit. The independent variable is gender imbalance in these residential zones, calculated by subtracting the percentage of men registered in a zone from the percentage of women. Controlling for ethnicity, age, income per capita, and real estate market conditions in the zones, Mashhoodi found that the gender composition of residential zones alone explained about 10% of LST variations—indicating that a 1% increase in gender imbalance corresponds to a rise of more than 0.1°C in LST. Regardless of socioeconomic characteristics, women were overexposed to LST in more than half of the residential zones. Being a migrant affected both women and men differently across locations, but gender imbalance in a residential zone, older housing, low property value, low income, and the presence of an older age group (> 65 years) accounted for LST exposure. In over 40% of these zones, women living in older buildings were overexposed to LST across the country, including in urbanized areas in the coldest regions (Southeast). This overexposure of women living in low-value properties reflects a lack of water bodies, green spaces, and trees in those zones, as well as older women outnumbering older men and being more likely to reside in urbanized areas. Dutch older women are also more likely to live in metropolitan regions than their male counterparts. During warm seasons, Mashhoodi (2021) concludes, LST is a spatial manifestation of gender inequality, and land surface temperature is feminized. As climate change may introduce new forms of gender inequality, access to cooling—such as protection from heatwaves, refrigeration for food, or cold chains for medication—becomes an issue of equity. Not only heat and heatwaves, but also access to cooling appliances may affect women and men differently (SEforAll, 2021; SEforAll, 2022). Cooling services, including shading and ventilation, or measures such as wearing lighter clothing or prioritizing indoor housework to avoid heat peaks and electricity demand, may enhance safety, particularly for women. More knowledge is needed on gender and the impacts of cooling to develop gender-responsive cooling solutions, not only in workplaces but also in neighborhoods and housing (see Chapter 6).



Example III: Neighborhood Deprivation and Intersectional Inequalities Using MAIHDA Analysis

Health inequalities persist over time and across various health outcomes. Place-related effects may vary across population subgroups, and health outcomes may differ among subgroups living in the same or similar locations. In his book on the Chicago heatwave, Klinenberg (2015) analyzed mortality in the city, concluding that the weather itself was not necessarily lethal; rather, neighborhood characteristics played a significant role. In an effort to holistically understand how spatial context affects health beyond individual circumstances, neighborhoods are intriguing environments (Holman et al., 2022). They are not only geographical spaces but also social environments, combining factors such as traffic, public transportation, walkability, housing, green spaces, and access to services—including health services—with factors such as cohesion, trust, segregation, crime, and safety. Pathways through which environments affect health may include psychosocial stress or behavioral pathways with direct health effects (e.g., walkability), as well as structural mechanisms such as segregation and resource inequalities. Individuals' social positioning also shapes their experiences and is co-defined by social and spatial characteristics, such as access to power and status, resources, or exposure to discrimination. In this study, Holman et al. (2022) integrated 'place' as an aspect of intersectionality, as social identities operate within neighborhoods, shaped by city, regional, and national processes, and studying how 'social causes of disease get under the skin.' Place is therefore not merely 'another intersectional axis' but an axis with an ecological basis. The main aim of the study was to analyze the association of neighborhood deprivation (measured using the Index of Multiple Deprivation) with health inequalities in later life, measured by biomarkers of healthy aging (e.g., HbA1c blood glucose associated with type 2 diabetes, waist circumference, and grip strength). Analyzing their data using a MAIHDA approach for inter-categorical intersectionality, the researchers observed social gradients in HbA1c by deprivation and education, while the nature of inequalities varied by gender and ethnicity (see Box: MAIHDA Approach).

Box: MAIHDA Approach

Recently, multilevel analysis of individual heterogeneity and discriminatory accuracy, or MAIHDA statistical analysis, has gained traction, particularly in combination with intersectionality (I-MAIHDA) (Evans et al., 2024; Lee et al., 2023). Social justice is a fundamental tenet of intersectionality, which emerged from the scholarship of Black women. Intersectionality entails understanding that individuals are defined by complex combinations of identities, and that differences and inequalities arise from these combinations. Systems of oppression, such as sexism and racism, are interlocking inseparable, and mutually constituting one another (Crenshaw, 1991; Collins, 1990; Evans et al., 2024).

In quantitative studies, this is often modeled by analyzing main effects in standard regression models to study the effects of separate characteristics on health, followed by adding interactions. However, MAIHDA assumes that individuals are nested within intersectional strata, which are unique combinations of individuals' intersections. Main effects are included, and two models are tested: (a) an empty/null model, and (b) one with main effects for the intersectional variables. Inequalities across strata can then be analyzed, such as identifying which groups are most (dis)advantaged, which strata deviate from expected outcomes, and how much is explained by main effects. This statistical approach helps identify invisible strata with disadvantages. MAIHDA does not necessarily seek significant interactions but rather aims to identify disadvantaged groups. It can help uncover inequalities among multi-category subgroups, considering the distribution of strata and allowing for effect of the main effects in estimation, even for subgroups with relatively small sample sizes. While MAIHDA does not inherently focus on social justice, it serves as a statistical approach to examine (invisible) inequalities and understand complexity (Evans et al., 2024). Researchers are encouraged to situate their interpretations within theories of social determinants and power structures, avoiding the depoliticization of intersectionality to mere estimation of interaction effects rather than an analysis of unequal power structures and systems of oppression. Geographical MAIHDA may be employed to incorporate environmental justice scholarship. Environmental justice scholars are extending the MAIHDA approach to examine geospatial and social inequities in environmental health hazards, for instance, nesting block groups or area-level descriptors at level 1 instead of individuals. This Eco-Intersectional Multilevel (EIM) approach opens new avenues for research (Evans et al., 2024).

According to Holman et al. (2024), gender differences in waist circumference and grip strength may be explained by biological sex differences. White British ethnic groups exhibited the narrowest deprivation and education inequalities and the lowest levels of HbA1c. However, nearly all Pakistani intersections reached the cut-off for diabetes on average. For most outcomes, an additional health penalty was observed for individuals from minority ethnic backgrounds combined with lower socioeconomic positions (SEP).

Conclusions

Increased ambient temperatures and heatwaves are becoming more common. Consequently, more individuals are experiencing heat-related problems, ranging from mild discomfort to severe health issues. Although gender differences remain inconclusive and further research on the gender dimension regarding the impact of heat stress is necessary, studies indicate potential gender differences in the health effects of extreme heat. These differences depend not only on biological sex but also on age and gendered environmental factors. The role of gender, including factors related to housing, poverty, socioeconomic position, occupation, mobility, and caregiving responsibilities, has been insufficiently studied. Given the increasing number of people exposed to extreme heat globally, more research is essential, particularly in gender-sensitive health research.

Next Steps

- Conduct in-depth research on sex and gender differences in the health effects of increased ambient temperatures and extreme heat.
- Incorporate the gender dimension, including gender variables, at the initial stages of study design.
- Further) develop tools to investigate the multiple health effects of extreme heat in men and women across various intersections (intersectional perspective), including geospatial and ecological variables.

Dose-response associations were observed with increasing temperatures or heat exposure, with effect sizes often higher for women of color. Sensitivity to heat may also depend on the sex of the fetus, as higher temperatures have been associated with stillbirth in male fetuses (Chersich et al., 2020).

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NOTES

ASSIGNMENT 3

CONNECT THE DOTS

DRAW A CONTINUOUS YELLOW LINE CONNECTING THE FOLLOWING ELEMENTS:

NEEDED:
COLORED PENCILS.

START HERE!

1 CLOTHING REGULATIONS

LIVING ENVIRONMENT

WHICH GROUPS ARE LEAST LIKELY TO BE IMPACTED BY HEAT?
USE THE ELEMENTS TO IDENTIFY THESE GROUPS.

2

3

4 AGE

4

5

GENDER

7 WORKSPACE

DRAW A CONTINUOUS BLACK AND RED LINE CONNECTING THE FOLLOWING ELEMENTS:

PREGNANCY 5

6 AGE

WORKSPACE 4

INCOME 3

HEALTH 2

DAY AND NIGHT TEMPERATURES 1

START HERE!

HOUSING 7

8 CLOTHING REGULATIONS

9 ACCESS TO COOLSHELTERS

10 INCOME

11

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WHICH GROUPS ARE MORE LIKELY TO BE IMPACTED BY HEAT STRESS?
USE THE ELEMENTS TO EXPLAIN THIS.

HOW DO THESE ELEMENTS INTERSECT WITH EACH OTHER?

HOW CAN WE REDUCE NEGATIVE IMPACTS?

CHAPTER 3: VIOLENCE AND MASCULINITIES

Petra Verdonk, Nicole van Gelder, Sabine Oertelt-Prigione

In This Chapter

- Planetary Health and research on (a) sexual and gender-based violence (SGBV) and (b) masculinity, climate denialism, and climate activism;
- Concepts, methodological approaches, tools, and frameworks to guide research on gender relations and violence
  - Concepts
    - Masculinities
    - Sexual and gender-based violence (SGBV)
    - Intimate Partner Violence (IPV)
    - Environmentalism
  - Methodological and ethical approaches
    - Ethics and approaches to studying SGBV
    - Reflexivity and positionality in research
    - Studying men and masculinities

Background

In this chapter, we explore research approaches that study gender, particularly masculinities, across intersections with other social identities. We will discuss researching sexual and gender-based violence (SGBV) and health, masculinity and refugees, and masculinity in relation to climate denialism and activism. In the debate about the Planetary Health crisis and gender, the concept of 'gender' often equates to 'women as victims,' particularly in the Global South (Karpf, 2021). However, the relationship between masculinities, especially in the Global North, and climate change requires more attention—masculinities have been widely associated with domination and violence (Zielke et al., 2023). Recently, masculinities have emerged as a subject of study in relation to health care (e.g., Verdonk et al., 2010; Van Wees et al., 2024), pollution, greenhouse gas emissions, climate denialism, environmentally (un)friendly behaviors, and climate or environmental activism (Chan & Curnow, 2017; Daggett, 2018; McCright & Dunlap, 2011).

Awareness of the consequences of the Planetary Health crisis, as well as measures taken to mitigate its most harmful impacts, is likely to give rise to new waves of social unrest, from climate activism to resistance against these measures. Understanding the role of masculinities and transforming gendered power relations is crucial—not only by including marginalized groups, such as women, in decision-making but also by developing effective interventions to transform resistant masculinities (gender-transformative interventions). Social identities such as gender, age, and race are not merely associated with health behaviors, decision-making power, environmentalism, activism, violence, or the consequences of the Planetary Health crisis; rather, identities and their intersections are also shaped by phenomena such as fossil fuels, climate denialism, or environmental activism (see Box: Masculinities).

Box: Masculinities

Masculinities are defined as patterns of practice—actions that allow the continuation of men's dominance over women (Connell, 2005; Connell & Messerschmidt, 2005). This concept of masculinities as patterns of practice is interconnected with hegemonic masculinity, which refers to the most honored way of being a man in a given context and time. Thus, it defines normative standards for 'being masculine' and establishes hierarchies categorizing who has access to hegemonic masculinity and who does not. Although not many men actually meet these normative standards, hegemonic masculinity compels all men to position themselves in relation to it. Hegemonic masculinity does not imply that all men possess power while all women do not; it is enacted by a small minority of men. However, such patterns of practice legitimize patriarchy as a system. The majority of men benefit from hegemonic masculinity through what is termed the patriarchal dividend, which refers to the honor, prestige, and authority that men derive from patriarchy (Connell, 2005, p.12). The patriarchal dividend manifests in three forms: (1) hegemonic masculinity organizes gender relations among men; (2) it serves as a material dividend; and (3) it arises from the subordination of women.

The organization of gender relations among men is evident in contemporary Western societies, where cultural dominance and subordination manifest between groups of men. For instance, gay men are policed and dominated by heterosexual men, and hegemonic masculine power is exerted in material ways, including economic, social, cultural, and political exclusion. Members of the privileged group may even resort to overt violence to maintain dominance, which includes violence against women. Violence is also evident in gender politics among men, including armed conflict, homicide, armed assault, and acts of institutional and individual violence that occur among men. The concept of hegemonic masculinity is utilized in a wide range of scientific studies across disciplines, including health care research (Van Wees et al., 2024; Verdonk et al., 2010; Zielke et al., 2023). Other social identifiers, such as race and class, also interact in shaping masculinities. Masculinity is not an essentialist characteristic of men; rather, it is a configuration of practices accomplished through social action (Connell & Messerschmidt, 2005).

Researchers have also elaborated on several other types of masculinities, such as Elliott's 'caring masculinity,' which refers to the rejection of domination and the integration of caring values and practices (Elliott, 2016). It is assumed that new framings of masculinities would contribute to gender equality rather than perpetuate patriarchy.

The Planetary Health crisis reinforces preexisting gender and other inequalities (Desai & Zhang, 2021; Karpf, 2021; Thomas, 2022). The impacts of climate change on women's health may vary from nutritional deficiencies due to food insecurity to vector-borne diseases, as women are often more likely to be in proximity to water sources, such as wells and ponds, when collecting water. Reproductive health issues may also arise; for instance, women exposed to extreme weather events may face higher risks of poor maternal health, such as lower birth weight or hypertension due to rising sea levels causing water salination. Existing gender inequalities contribute to women's vulnerabilities, such as limited rights to land ownership and exclusion from decision-making. Women, people of color, and Indigenous groups have largely been excluded from decision-making about climate action (CRD, 2023; Karpf, 2021; Nakaté, 2021; Thomas, 2022; Watts-Coultier, 2015). Mitigation and adaptation strategies may overlook women's input, ignoring how local adaptive capacity may benefit from women's perspectives (Desai & Zhang, 2021). Millions of people are expected to be forcibly displaced due to climate change, habitat loss, and the conflict and persecution that often result. Scientists anticipate significant losses of livelihood, forced displacement, and diminished support and care resources globally as the Planetary Health crisis worsens, including in Europe. In societies experiencing conflict, natural disasters such as droughts, pandemics, and economic hardships increase the risk of violence, ranging from protests to civil unrest to armed conflicts. The consequences of gradual climate change, incidental extreme weather events, and destruction of the living environments on people's lives are substantial, manifesting as disruptions to daily routines and resulting in short- and long-term health consequences, including injuries, loss, or psychological trauma.

Crisis Enables Violence

The Planetary Health crisis also creates an enabling environment for violence. Disasters are often perceived as discrete events; however, they frequently overlap, resulting in multiple disaster exposures (Leppold et al., 2022). Compound disasters may occur, as seen in 2005 when New Orleans faced Hurricane Katrina, followed by floods and a heat wave, or cascading disasters, such as in 2011 when the Great East Japanese Earthquake led to a tsunami and subsequently a nuclear disaster. What qualifies as a disaster is open to discussion, but underrecognized disasters, such as slow-onset disasters like drought or neglected disasters that do not fit clear categories, may also have public health effects. Some disasters receive more attention than others, and the health effects of certain disasters are studied more extensively. In their review of 150 articles analyzing the health effects of exposure to multiple disasters, violence was not mentioned (Leppold et al., 2022). It is possible that violence was not incorporated into the reviewed studies; alternatively, the authors may have excluded violence from their analysis. However, sexual and gender-based violence (SGBV), including intimate partner violence (IPV), may increase following climate disasters (see Box: Sexual and Gender-Based Violence SGBV) (Karpf, 2021).

Box: Sexual and Gender-Based Violence (SGBV)

Sexual violence is defined as 'any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, or acts to traffic or otherwise directed against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work' (Krug et al., 2002, p. 149).

Gender-based violence (GBV) encompasses a spectrum of violence that includes gendered elements and is rooted in gender inequities, harmful norms, and power dynamics (Simon-Butler & McSherry, 2019, p. 5). GBV includes partner violence, human trafficking, harmful traditional norms (e.g., female genital mutilation, forced marriages, and honor crimes), as well as emotional, physical, and economic abuse.

SGBV is a significant public health issue due to its prevalence and severity. Health consequences of SGBV include sexual and reproductive health problems, such as unintended pregnancies and abortion, pregnancy complications, a high risk of sexually transmitted infections (STIs), and mental health issues, including post-traumatic stress disorder (PTSD) (Robbers & Morgan, 2017).

Environmental degradation places (mostly) women and girls at risk of SGBV from (mostly male) perpetrators: instability, hunger, and violence displace women from their communities, rendering them vulnerable to exploitation and further violence. Once they become refugees, women, in particular, are disproportionately at risk of experiencing SGBV after disasters and in relation to armed conflict (Borges & Faria, 2020; Keygnaert & Guieu, 2015; Robbers & Morgan, 2017). SGBV ranges from being a weapon of war and a crime against humanity to being an intimate relational problem, combining both sexual violence and gender-based violence (Simon-Butler & McSherry, 2018). Factors contributing to SGBV span individual levels (e.g., education, adverse childhood events), relationship dynamics (e.g., financial and living situations, gender roles), community contexts (e.g., social support, family, peers, community violence), and societal structures (e.g., patriarchal organization, legislation, norms) (Stöckl & Sorenson, 2024).

In resettlement countries, refugee women's vulnerability to SGBV often persists. Changing gender norms may increase vulnerability to intimate partner violence (IPV), as inadequate responses to altered gender relations may leave men feeling disempowered and seeking to regain power over women (Habib et al., 2022; Boukema et al., 2023). Additional factors contributing to refugee women's risk of experiencing SGBV may include PTSD experienced by partners, stress from a long and dehumanizing immigration process, and language and acculturation-related challenges (Keygnaert et al., 2012).

When institutions and social spaces that support men's sense of masculinity and power collapse—such as loss of social status and employment—men may resort to violence against vulnerable individuals, including their partners, to restore

their sense of masculinity. Violence is often employed as a means to maintain power over women, land, and resources or as a reaction to the loss of that power. Medzhitova et al. (2023) describe risk factors at all levels of social ecology, noting that IPV is not only reinforced by existing inequalities but these also create a unique context of risk (see box Intimate Partner Violence IPV). The prevalence of SGBV, including IPV, is alarmingly high (Stöckl & Sorenson, 2024). In 2018, it was estimated that the lifetime prevalence of experiencing physical and/or sexual intimate partner violence worldwide is 1 in 4 women; this figure rises to 1 in 3 when including physically forced sex by strangers. High-income countries (HIC) reported lower past-year rates than low- and middle-income countries (LMIC). Measurement issues, such as reporting on attempted and completed physically forced intercourse while ignoring other forms of sexual violence, suggest that these figures are likely a substantial underestimation (Stöckl & Sorenson, 2024).

Box: Intimate Partner Violence (IPV)

IPV encompasses all types of violence (physical, psychological, sexual, economic) between current partners and ex-partners within the context of marriage, cohabitation, or any other formal or informal union (Medzhitova et al., 2023; Stöckl & Sorenson, 2024). Women are uniquely vulnerable to experiencing IPV, sustaining serious injury or even death as a result: when comparing men and women survivors and perpetrators, it is predominantly men who commit violence and women who are victimized (Stöckl & Sorenson, 2024). IPV is not only criminal and a legal issue; it is also a health issue, with long-term consequences for survivors' health, including mental health problems. IPV perpetrated by male partners against women occurs more frequently and is more severe and structural in nature. It also results in more severe physical injuries and is more likely to end fatally compared to experiences of male victims of violent female partners. However, IPV can occur in all relationship constellations, and survivors and perpetrators can be of any gender, including violence perpetrated by women against men, although many gender differences between men's and women's violence are evident in behaviors and motivations (Medzhitova et al., 2023; Swan et al., 2008). Overall, sexual minorities are at a higher risk of experiencing IPV than those who identify as cisgender and heterosexual, and their experiences are further influenced
by specific factors such as stigma, concealment, and discrimination, particularly at the intersection with other marginalized backgrounds (e.g., Jaffray, 2021; Porsch, et al., 2023).

Increased risk for IPV is associated with numerous disaster-related factors at different levels of social ecology (individual, relationship, community, and structural), such as displacement, injuries and property damage, loss of family members, lack or loss of resources that may force women to return to abusive partners, loss of social networks, lawlessness, lack of police presence, and ignorance of their rights (Medzhitova et al., 2023; Stöckl & Sorenson, 2024). For women in violent relationships, natural disasters may exacerbate the severity of violence or may initiate it, as they can challenge individuals' sense safety of and threaten men's roles as providers and protectors. Violence following disasters is not confined to women and men in the Global South; IPV also increased after floods in a New Zealand town and following Hurricane Katrina in New Orleans in 2005. Heatwaves, droughts, extreme weather conditions, and other disasters, such as famine, oil spills, or pollution, are also associated with an increase in IPV in countries in the Global North (Karpf, 2021; Medzhitova et al., 2023). White[1] supremacist beliefs about violent 'Other' men from the Global South may contribute to the neglect of IPV in the aftermath of disasters in the Global North (Parkinson & Zara, 2013, p. 33): *"We [society] accept that violence against women increased after earthquakes in Haiti and cyclones in Bangladesh, but nobody wants to hear that men who embody the spirit of resilient and heroic Australia are violent towards their families."*

It took a long time for SGBV, including IPV, to enter the global public health agenda. However, once it did, it quickly gained recognition, partly due to the availability of internationally comparable data, concerted advocacy from women's groups, its acknowledgment as both a criminal justice and health issue, and evidence for the preventability of IPV in particular (Stöckl & Sorenson, 2024). Understanding and studying SGBV, including IPV, may not only challenge long-held (and mistaken) beliefs about who is violent and who is not, but it also presents several ethical and methodological

1 In this chapter, we capitalize White and Black to refer to the construction of racial categories that have a history of racism, colonialism, slave trade, and biological essentialism (Krieger, 2024). By using capitals, we aim to situate these categories and to distinguish them from black and white as colors, we acknowledging the debate about using capitals and understand that deliberations are ongoing (Appiah, 2020).

challenges (Deps et al., 2022). These challenges include ensuring participants' safety and emotional well-being, determining how and where to recruit participants (e.g., shelters, refugee camps), navigating gender dynamics and

power imbalances between participants and researchers, defining SGBV/IPV, and addressing the context in which violence occurs. In situations of acute climate-induced crises and potential displacement, these issues become even more pronounced.

Box: Ethical and Methodological Considerations for SGBV Research

Measurement - Gender-disaggregated data are essential for addressing SGBV at the highest policy levels, as are agreed-upon act-based measures of violence that assess experiences of being pushed, slapped, threatened, or hurt with a weapon, and being physically forced to engage in sexual intercourse (Stöckl & Sorenson, 2024). Participants must be able to respond in ways that do not require them to identify as victims, and questionnaires must not assume that participants understand terms like 'sexual assault.' Research must be conducted and questions tailored to marginalized groups particularly targeted by violence, such as women with disabilities, older women, refugees, and sexually diverse communities.

Safety - Individuals currently experiencing or having previously experienced SGBV are in particularly vulnerable positions on multiple levels (Bender, 2017). In addition to the physical and psychological health consequences of experiencing SGBV, they often face housing and job insecurity, threats to their legal status, threats to their family situation, financial uncertainty, and an overall lack of long-term means and perspectives. Therefore, the ethical aspects of conducting research with survivors must be carefully evaluated. For instance, conducting such research may be distressing for the researcher, but more importantly, it can put participants at risk. Disclosure of private and intimate information about their experiences and about perpetrators may pose a direct risk to participants' safety. Disclosure can also lead to re-traumatization (Alessi & Kahn, 2022). Taking time to build rapport, collaborating with community organizations, and minimizing power imbalances in dialogue with participants are crucial (Bender, 2017; Khazai et al., 2022; Khazai, Muntinga & Verdonk, forthcoming).

Recruitment - Survivors of violence may be a hidden group (Njie-Carr et al., 2021). After experiencing IPV, they may encounter additional complications in seeking help, such as language barriers, discrimination, limited knowledge of support options, and vulnerability in residency status (e.g., undocumented status) (Khazai et al., 2022). Njie-Carr et al. (2021) describe strategies to involve immigrant and refugee women survivors of IPV in research. For instance, employing diverse recruitment methods and techniques is necessary to reach a broad population and avoid neglecting specific subgroups. Such methods can include using (online) media, phone calls, in-person recruitment, flyers, and online platforms. Various locations can be targeted, such as health centers, shelters, places of worship, or community centers. Building trust is essential in the recruitment process, and involving community members and religious leaders can facilitate this trust. Being present in the community or refugee camp before the study begins and maintaining frequent contact with partners and participants can significantly increase willingness to participate and retention (Khazai et al., 2022). IPV is a sensitive topic, and recruitment strategies should consider cultural perceptions, taboos, and fears (Ragavan et al., 2020). Ideally, recruitment strategies should be pilot-tested with community members and possibly survivors themselves.

Interviews - Appropriate training in trauma-informed interviewing and awareness of additional risks participants may face is crucial (Weare & Hully, 2023). When conducting interviews, working with interpreters and a bilingual and bicultural research team connected to the community may help reduce communication barriers (Ragavan et al., 2020). When explaining the study, research materials for participants must be translated with cultural sensitivity, especially for sensitive topics like GBV/IPV (Mechanic & Pole, 2013). It is essential that participants are clearly informed about the voluntary nature of their participation in research, particularly as this group is at high risk of having experienced human rights violations and breaches of trust by authorities and health care professionals. Ensuring confidentiality of data to enhance participants' sense of safety and reduce their fear of identifiable information being shared with immigration services and the risk of deportation is of utmost importance. Participatory research approaches are suitable

for promoting equity in decision-making and mutual accountability throughout all phases of the research process (Ragavan et al., 2020).

Multilevel approach - Studying SGBV, including IPV, at multiple levels (individual, relationship, community, and structural) is challenging. A social ecological model examining risk for violence may help organize existing knowledge at each level and guide policy development for prevention and interventions for survivors, perpetrators, or both (Bender, 2017; Medzhitova et al., 2023; Stöckl & Sorenson, 2024).

Other take-home messages - The investment of time and energy required for participation should be adequately compensated through travel and meal allowances, as well as financial compensation for participation. Lastly, participants may disclose specific needs during interviews that extend beyond the addressed topic. Interviewers should be prepared to refer participants to appropriate support when necessary, such as healthcare or psychological assistance (Njie-Carr et al., 2021; Khazai et al., 2022). However, the prevention, intervention, and treatment of mental health consequences and their effectiveness remain understudied (Bender, 2017).

Masculinities Under Pressure

Studies on violence primarily focus on (female) survivors. To understand violence in relation to the Planetary Health crisis, we must also comprehend how masculinities are established and perpetuated. In 2018, Daggett coined the term petro-masculinity, defined as a set of related beliefs, emotions, and behaviors manifesting in a combination of racism, misogyny, and climate change denial. Petro-masculinity particularly refers to the masculine support for fossil fuels within the rising right-wing and authoritarian movements in the United States and other countries. For men adhering to this ideology, fossil fuels have become a conservative symbol representing hegemonic masculinity, autonomy, and self-sufficiency. Consequently, violence may escalate as fossil violence, evident in retrofitted cars that consume more diesel and trucks used in right-wing demonstrations and road blockades, which represent hyper-masculinist practices manifested in loud noise, odors, and pollution from fossil fuels, targeting cyclists, Black Lives Matter protesters, or individuals driving hybrid cars (Daggett, 2018). In Europe, such practices have been observed in some farmers' protests, such as in the Netherlands, where large combines were used, waste was burned, and protests occurred against anti-racist campaigners. As climate denialism, misogynist violence, and a desire for authoritarianism appear to converge, Daggett argues that petro-masculinity combines gender anxiety with climate anxiety.

In relation to disruptions of living environments, extreme weather events, or climate policies, violence is also likely to manifest in social uprisings and riots. Climate change will impact communities locally, disrupt global supply chains, diminish access to resources such as food, water, and energy, and lead to increased poverty due to rising prices and growing social inequalities. These events will affect different communities in varying ways, with socially and economically vulnerable groups experiencing more severe consequences. Particularly, the younger generation feels betrayed by governments in light of global inaction, as they bear the consequences yet hold the least political decision-making power (Hickman et al., 2022). Youth climate activism is on the rise (e.g., Fridays For Future, Sunrise Movement, Zero Hour), and an eco-gender gap in sustainable choices in the private sphere has been identified, with women more frequently limiting meat consumption, using public transportation, or consuming fewer goods (El Khoury et al., 2022). In Germany, a survey study indicated that women were also more likely to participate in climate marches than men (Noth & Tonzer, 2022), although an eco-gender gap in pro-environmental political behaviors, such as marching and petitioning, diminished with age in a Swiss population (El Khoury et al., 2022).

In this chapter, we provide four examples of research. First, we will showcase (I) research on how addressing the climate crisis in policies may impact girls' safety, and next, (II) we summarize a thematic narrative analysis of interviews on how refugee men negotiate masculinity. In the second part of the chapter, we address climate denialism and climate activism, providing two examples of studying the intersection of Whiteness and masculinity.

Example I: Climate policies Impact Girls – The Example of Ethiopia

Droughts, displacement, and famines place a growing strain on families in Sub-Saharan Africa, India, and other affected areas globally (Devonald et al., 2020; Shiva, 2010). These climate-induced phenomena often increase the risk of exploitation and violence against girls and women by heightening overall vulnerability and increasing household stressors and dependence on third parties. In particular, droughts can affect the risk of violence against women in multiple ways. For instance, many women are 'water pilgrims' (Karpf, 2021). Fetching water is traditionally a chore assigned to women, considered their duty. Droughts lead to the drying up of nearby water sources, forcing women and girls to travel longer distances or wait in queues. To return home in time, they may need to set out earlier in the morning when it is still dark, leaving them more vulnerable to sexual attacks. Longer travel times also reduce the resources available for in-house chores, potentially increasing the risk of SGBV and IPV at home due to punishment based on traditional gender roles and sanctioning of violence. For girls, this may also result in less time for education and homework, with climate-related shocks amplifying the risk of dropping out of school (Fry & Lei, 2021). A lack of rainfall can lead to shifts in family economics and potential engagement in nomadic lifestyles, further complicating access to formal education. If only one or a few children can be sent to school, boys are often preferred, reinforcing existing gender inequalities. A recent report based on a socio-ecological model framework that highlights the connections between young people's capabilities, contexts, and change strategies estimated that by 2025, climate change events such as changes in daily temperature, drought, and flooding will contribute to at least 12.5 million girls globally not completing their education each year (Fry & Lei, 2021).

Ethiopia has one of the highest rates of drought worldwide and relies heavily on agriculture. Several Ethiopian policies, including the country's Productive Safety Net Program (PSNP), a large safety program developed to provide economic support for those living in poverty and vulnerable to droughts, recommend gender-specific adaptation options and priorities (Atani, 2019; Devonald et al., 2024). In 2019, Ethiopia initiated a national greening campaign, the Green Legacy Initiative, which focused on planting 20 billion new trees over four years and limiting ongoing deforestation for charcoal production. By reducing desertification, increasing the availability of land for agriculture, preventing soil erosion, and enhancing underground water availability, the distances women must travel to collect water could be reduced, thereby decreasing the risk of experiencing violence. A participatory research project aimed to understand age- and gender-responsive approaches within climate change mitigation and adaptation projects. Interviews were conducted with a total of 388 adolescents across gender, age, disability, displacement, and relationship status (married or not). The researchers found that drought meant longer travel distances for girls and women to collect water and firewood. Girls faced risks of sexual exploitation after displacement, and resource scarcity, including water and land scarcity, led to tensions between ethnic groups, resulting in high levels of physical and sexual violence. Awareness of deforestation and its impact increased among boys. For girls, who were often less educated and lacked confidence, better access to decision-making spaces and support for developing skills and confidence in discussing solutions was needed. For married girls, decision-making power within the household could be low, and husbands sometimes prevented them from participating in meetings. Community groups responding to climate change were primarily composed of male youth. Thus, climate mitigation and adaptation campaigns may have both positive and negative gendered effects (Devonald et al., 2020; Devonald et al., 2024). If reforestation efforts help create awareness among boys and reduce desertification, the distances girls must travel to collect water may be diminished, decreasing their potential exposure to GBV and increasing their educational opportunities. However, married girls remained largely excluded from decision-making processes. Conversely, displacement from droughts sometimes led to increased aspirations among girls or their parents for education (Devonald et al., 2020).

In research, particularly on sensitive issues such as these, it is important for researchers to be aware of their own social positioning (see Box: Reflexivity and Positionality). In investigating oppression and health, considering the positionality of the researchers is essential.

Box: Reflexivity and Positionality

Practicing reflexivity, or reflecting on the construction of knowledge between researcher and respondent, is a way to deconstruct stereotypes and prevent their reproduction (Verdonk & Abma, 2013). Reflexivity is defined as "finding strategies to question our own attitudes, thought processes, values, assumptions, prejudices, and habitual actions, to strive to understand our complex roles in relation to others" (Bolton, 2010, p.13). Verdonk and Abma (2013) state that reflexive thinkers make aspects of the self strange by stepping back from beliefs, values, and professional identities, focusing on how they are embedded in larger cultural structures such as class, gender, and race. Reflexivity is therefore not an evaluative action about the self and individual performance; it focuses on researchers' social identities and their locations in social groups, such as ethnicity, age, and gender, across their intersections. As a gender(ed) researcher, refraining from the gender system as an objective outsider is impossible (Robertson, 2006), as it is also impossible to refrain from other social positions such as race, ethnicity, or age (Ahmad, 2022; Chadderton, 2012; Van Wees et al., 2024; Verdonk et al., 2010). Researchers' backgrounds and frames of reference influence what is readily available for them to see and understand, and what remains hidden (Stuij et al., 2021). Hence, 'neutral research' does not exist, and researchers' social positioning should be made transparent and reflected upon (Stuij et al., 2021).

For instance, in interviewing refugee men and studying their negotiations of masculinity, Huizinga elaborates on being a White young male PhD student and interviewer (Huizinga and Van Hoven, 2021). He notes that depending on the issue addressed in the interview, his position as an insider or outsider shifts, and despite having clear privileges on several dimensions, these do not always render him the outsider, depending on what is salient. Verdonk et al. (2010) interviewed Dutch male employees about health beliefs and workplace physical activity, finding that masculinity was present in the men's accounts and was also established during the interviews. For instance, a shared interest in participating in a male soccer competition was discovered. The interviewed men also 'confessed' that discussing 'emotional issues' was generally easier with women (Verdonk et al., 2010). In Van Wees et al.'s (2024) interview study with men working in long-term care, the men were aware of and openly discussed their male privilege in the workplace with the young White heterosexual female student interviewer. This outspokenness, she suggests, may have been influenced by the power dynamics in their interactions. In interviews, women interviewers may be stereotyped as unthreatening and empathetic, but Van Wees suggests they may also reveal a more hostile side. Men sometimes underestimate and attempt to impress her, which made her feel unsafe in a man's home during one interview (Van Wees et al., 2024).

Possible questions to advance reflexivity (e.g., Stuij et al., 2021):

- Who are we, and how are we socially positioned? How do we identify, what is readily available for us to see, and what is more hidden? How is this related to disadvantage and privilege in our social positioning?
- From which research perspective do we approach the topic and the data? From which epistemological and theoretical backgrounds, with which knowledge of literature?
- Who (in the data or in the team) is 'the Other,' the group with which I do not identify at all, who is 'different'? Who do we identify with?
- What assumptions do we hold about the identity and environment of the participants?
- How can we identify possible blind spots? What is needed to make those visible?
- What ideas exist about the participants whose lives are the subject of the research? Are there stereotypical or normative views of this group?

Example II: Hegemonic Masculinities After Forced Migration

As the Planetary Health crisis deepens, displacement within and beyond national borders is expected to increase the number of refugees. Redefining manhood after forced migration is embedded in refugee men's personal biographies as well as in the social and physical context of the host society (Huizinga & Van Hoven, 2021). In Western countries, political agendas often frame male Muslim bodies as 'the Other,' associating the masculinities of Muslim men with religion, race, violence, and deviance. Anti-Muslim narratives affect perceptions of refugees, particularly male refugees. While refugee women are often seen as victims of patriarchal systems and violence, refugee men are frequently viewed as problematic and dangerous rather than as individuals who have faced challenges and are in need of support (Boukema et al., 2023). This framing of refugee men contributes to their exclusion, discrimination, and marginalization. In the Netherlands, Huizinga and Van Hoven (2021) interviewed 22 Syrian men aged 19 to 35, most of whom identified as Muslims, and analyzed how these men negotiate constructions of masculinities. Masculinity constructions were significantly tied to the men's (un)employment and their roles in the labor market. For older men, particularly those who were highly educated professionals, masculinities were challenged due to status loss and downward mobility in the Netherlands. These men felt misrecognized and stripped of the privileges associated with their social class and citizenship, as they were systematically associated with poor socio-economic prospects and oppressive gender norms. The younger men, aged 19 to 25, appeared more proactive in their efforts to enter the labor market, converting their physical capital into economic capital, particularly in the construction sector. Enforced by the war they had experienced, more traditional gender scripts were re-established, as boys and men were expected to find work while women and children stayed home. Paid employment would also allow these men to assume the role of breadwinner and provide financial security for their families. In Western host countries, in relation to experienced racism and exclusion, men may adhere to more traditional gender beliefs, while refugee women's beliefs about gender roles may become less traditional (Khazai et al., forthcoming). In forced displacement, gender relations and hegemonic masculinities are ruptured and may change in a new country. Gender-transformative research and interventions challenge gender relations and aim for gender equity (see Box: Gender Transformative Science and Interventions (Krieger, 2024).

Box: Gender-Transformative Science and Interventions

Gender-transformative science challenges (a) traditional gender norms of male domination and the association of masculinity with violence, (b) gendered power dynamics, and (c) inequities beyond the individual level in the ecosocial system (Krieger, 2024). Gender-transformative interventions (GTIs) in health challenge essentialist assumptions about men and women and gender relations, emphasizing that gender norms, roles, and behaviors are not 'natural,' 'fixed,' or 'binary.' Furthermore, GTIs focus on the root causes of gendered health inequities at multiple levels, from the individual to the societal level (Krieger, 2024). GTIs in health care may help men identify traditional masculine ideologies that position men over women and are often associated with male-typed behaviors such as violence, risk-taking, and decreased help-seeking or communication. Zielke and colleagues (2023) analyzed 21 GTIs in health care that focus on transforming unequal gendered power relations. In these interventions, gender (in)equality, particularly concerning gender-based violence and its prevention, was most frequently addressed. Rooted in feminist frameworks and other theories, the study included GTIs aimed not only at identifying masculinities as patterns of practice but also at addressing men's structural social positions, such as class and race. Transformation after participating in interventions was observed in improved intimate relationships with partners and children, reduced violence, increased supportiveness, enhanced friendships, and greater emotional expression and vulnerability. In the GTIs, educational elements, such as information about biology, sexuality, and the construction of gender, were relevant for changing power relations and supporting equitable relationships (Zielke et al., 2023).

Masculinity, Climate Denialism, and Environmentalism

This section addresses the role of masculinity at the intersection of Whiteness in climate denialism and climate activism. Ogunbode et al. (2022) studied how people of color experience and engage with climate change in Britain. Globally, people of color are disproportionately affected by climate change, and these impacts are felt indirectly by people of color residing in the United Kingdom, in addition to the direct effects on their lives. In 2013, nine-year-old Ella Adoo-Kissi-Debrah died in London due to severe asthma, with the coroner stating that air pollution significantly contributed to her death. Ella's case exemplifies environmental injustice or environmental racism, as people of color are less likely to own cars yet are more likely to suffer the consequences of air pollution. Historically, mainstream environmental organizations have focused on conservation and the creation and preservation of green spaces rather than on mitigating environmental pollution, climate change, and their health effects. A study by Hoicka et al. (2023) on philanthropic support for environmental organizations found that conventionally-led organizations often lacked commitment to gender diversity, poverty issues, or the problems faced by minoritized communities. These organizations received more support than minority-led organizations, resulting in actions and solutions that primarily address the needs of privileged groups (Hoicka et al., 2023). However, Indigenous women globally are at the forefront of grassroots movements fighting against toxic pollution, environmental racism, and the protection of nature from colonial extractivism and dispossession (see Box: Environmental Racism and Environmentalism) (Thomas, 2022; CRD, 2023). Few studies exist on how people of color in the Global North relate to the climate crisis. In 2023, Civil Rights Defenders (CRD) published a report on environmental racism affecting Europe's Roma and Travellers (approximately 10-12 million in Europe), highlighting that entire Roma communities live in deep poverty, often forced to reside and work near landfills or other polluted sites, and are denied access to clean water and sanitation as a form of structural racism (antigypsyism). Resistance and campaigns have persisted for decades. In 2022, Ogunbode et al. published a mixed-methods study involving 1,008 adults (51.4% women, 46.8% men) across the UK who identify as non-White ethnic minorities. This study found that people of color are highly concerned about climate change, recognize its human causes, and connect it to their own experiences of extreme weather, such as heatwaves or flooding. A significant proportion of respondents felt connected to nature (92%), and many identified as highly spiritual (82%) and religious (87%) (see Box: Intersectionality). People of color also expressed a strong affinity for dialogues on international climate finance and support for countries vulnerable to climate change, as heritage links heightened their concern for other regions. In contrast, White men tend to be less concerned about environmental issues than other demographic groups (McCright & Dunlap, 2011), resulting in women and people of color suffering more from the ecological crisis.

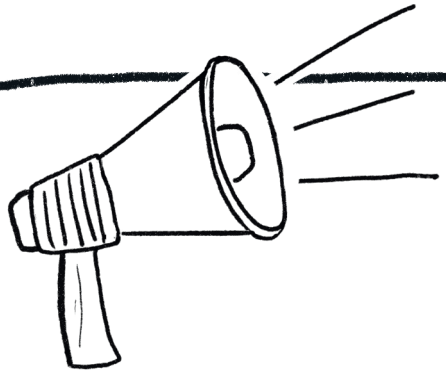
Next, we describe studies examining the intersection of Whiteness and masculinity in climate denialism and environmentalism: (III) a study of climate change denial among conservative White men in the United States, based on Gallup's annual environment poll; and (IV) an investigation into how hegemonic masculinity shapes environmentalism in interaction with racism, colonialism, and sexism.

Example III: Studying Cool Dudes and the Denial of Climate Change With Gallup Poll Data

The most prominent climate denialists are conservative White men, as is the case in science, media, and politics (McCright & Dunlap, 2011). Among the general public, concern about the Planetary Health crisis is primarily expressed by individuals with liberal beliefs. In their study, McCright and Dunlap (2011) explore the intersection of political ideology, race, and gender in climate change denial. They apply the concept of the White male effect, which posits that White men are more accepting of a wide range of risks than other adults, exhibiting a higher affinity for hierarchy and greater trust in authorities. The tendency of White men to downplay or ignore environmental risks, which may be perceived as challenges to the existing social, political, and economic hierarchy, can be explained by the notion that their identities are the most threatened. Data from ten Gallup surveys (2001-2010), based on telephone interviews with a nationally representative sample of adults (N=1,000 - 1,060) in the United States, were pooled and analyzed using multivariate statistical methods. The variables included measures of beliefs about climate science, perceptions of the scientific community, personal concern about global warming, and respondents' assessments of their understanding of the issue, alongside political ideology, race, and gender. Control variables included education, income, and religion. The researchers found that conservative White men claimed a greater understanding of global warming while simultaneously denying the existence of scientific consensus more frequently. The authors conclude that climate change denial appears to be an essential component of conservative White male identity in the American public.

Box: Environmental Racism and Environmentalism

Current and prospective inequalities, access limitations, and emerging resource conflicts are leading to growing protests, social unrest, and civil disobedience. The emerging climate movement, which includes organized groups of healthcare workers and researchers, displays striking gendered and racialized characteristics that influence its priorities and organization. Environmental racism is defined as racial discrimination in environmental policy-making and enforcement, the deliberate targeting of people of color for toxic waste facilities, the sanctioning of poisons and pollution in communities of color, and the exclusion of people of color from leadership roles in the environmental movement (CRD, 2023). In 1991, the First National People of Color Environmental Leadership Summit was held in Washington, D.C., where seventeen principles of environmental justice were drafted (United Church of Christ, 1991). The leaders emphasized the importance of re-establishing human connections to the natural world and recognizing the history of colonialism, oppression, and genocide against nations of color. Among other things, the principles voiced the need for freedom from discrimination and bias, as well as the right to participate in decision-making as equal partners. Unfortunately, mainstream environmentalism often separates social issues from environmental issues, sustainability, and conservation (Thomas, 2022). While mainstream environmentalism is dominated by White men (Chan & Curnow, 2017; Karpf, 2021; Thomas, 2022), studies indicate that this group may be less concerned about the Planetary Health crisis than other demographic groups (Chan & Curnow, 2017). Not only do White men frequently set the agenda for proposed solutions to the Planetary Health crisis, but their lack of representation in policies suggests that women, people of color, and Indigenous groups have not been adequately advocating for life-sustaining solutions or protesting against the destruction of the planet and non-human nature (Chan and Curnow, 2017; Thomas, 2022). However, this perception is misleading. In the Arctic, for instance, Inuit and other Indigenous groups have protested against environmental pollution and colonial dispossession of their natural resources, with women often leading these movements (Watts-Coultier, 2015). In the youth climate movement, African students in Uganda have rallied against pipelines and oil extraction by multinational corporations, often at the expense of their health and freedom (Nakaté, 2021). Between 2012 and 2022, over 1,900 land and environmental defenders were killed while protecting the planet, with the majority occurring in Latin America, particularly in Colombia and the Amazon Rainforest (Global Witness, 2023). Thus, while the participation of women and people of color in decision-making does not automatically lead to more inclusive research and policies, the opposite is certainly true: when marginalized voices are not heard, interests and their solutions will not be integrated into decision-making, resulting in ineffective environmentalism (Karpf, 2021; Thomas, 2022). The debate regarding the environmental movement's lack of diversity has also been prominent in the media, as the notion of a dystopian future and anxiety about what is to come do not resonate with those whose communities have long faced the consequences of oppressive systems, including people of color and those living in poverty. In 2007, Jones argued that to change laws and culture, the green movement should not only attract the 'eco-elite' but ensure that 'green includes all colors,' rather than reproducing the Whiteness of environmentalism (Jones, 2007). However, as noted by Akec in The Guardian in 2019, environmentalist groups continue to grapple with patriarchal and White supremacist structures within their organizations. Policies have often spatially segregated communities, denied certain communities access to essential resources such as clean water, and forcibly evicted and relocated them to toxic sites. In the quest for climate-resilient societies and within the activities of the green movement, structural racism is frequently overlooked. Consequently, these communities have less capacity to mount effective opposition, and resistance campaigns often lack consideration of broader regional contexts. For some communities, including Roma and Travellers in Europe, opportunities for a livable and sustainable future have never been available (CRD, 2023).



Example IV: Taking Up Space – Men, Masculinity, and the Student Climate Movement

Chan and Curnow (2017) argue that hegemonic masculinity shapes environmental activism and interacts with racism, colonialism, and sexism to create an environment where non-White, non-male individuals are excluded. A critical gender analysis was conducted on practices and participation within a student environmental activist group in the United States. This group was a local chapter of an international organization dedicated to combating climate change and advocating for climate justice. Group interactions during meetings were recorded, and participation dynamics were analyzed, including who spoke, how often, whose ideas were adopted, and who received public recognition for their contributions. Microanalysis of group interactions revealed that White men engaged more frequently in 'exclusive talk,' which refers to exchanges between two or more individuals that exclude majority of the participants. Elements of exclusive talk included eye contact, body positioning, naming participants who 'should' contribute, discussing particular topics known only to a few, speaking rapidly, and making decisions with a small group of participants. This dynamic sidelined women and people of color during decision-making and suggested that White men possessed greater expertise. 'Establishing expertise' also occurred through the dismissal of the legitimacy of other campaign strategies that White men themselves had not suggested, labeling such approaches as ineffective and distractions from main priorities, such as Indigenous solidarity and anti-oppression work. Over the year, White men gained more access to training and skill-building opportunities, further reinforcing their positioning as experts. Despite the group's interest in justice, integrating justice into their own campaigning proved challenging, as hegemonic masculinity positioned White men as 'leaders' by 'demonstrating expertise.' Consequently, broader societal dynamics within environmental groups were reflected in this local activist group. Understanding how White male students occupy space more frequently and countering such practices through more democratic or sociocratic methods for deliberation and decision-making may enhance decision-making in climate activist groups and help build capacity among individuals from marginalized communities.

Conclusions

The Planetary Health crisis exacerbates existing risk factors for sexual and gender-based violence (SGBV) and intimate partner violence (IPV), as well as social unrest. Gender inequalities manifest in various forms of masculinity, particularly hegemonic masculine ideals, which incorporate male superiority and legitimize male domination over women. Such forms of masculinity may also be established through force, and they not only obstruct effective mitigation and adaptation policies but also hinder the participation of women and other marginalized groups in political environmental behaviors. The Planetary Health crisis amplifies social and gender inequalities. Disasters, whether natural or human-made, such as floods, storms, and armed conflicts, are associated with increased violence, including IPV and SGBV. Gender-transformative interventions targeting hegemonic masculinity beliefs aim to reduce men's use of violence and control. When effective, such interventions may have far-reaching ripple effects across various domains, levels, and generations.

Next Steps

- Incorporate gender inequality and violence into research on health and disasters, both pre- and post-disaster.
- Participatory research approaches to explore the needs and lived experiences of SGBV and IPV survivors across all intersections, mitigating power inequities in research and combining research with social change.
- Develop gender-transformative interventions targeting climate change mitigation and adaptation. This involves incorporating women's voices and agency, avoiding the framing of women solely as victims, and integrating men while challenging masculinities.
- Conduct research on women's and marginalized groups' pro-environmental knowledge and practices.

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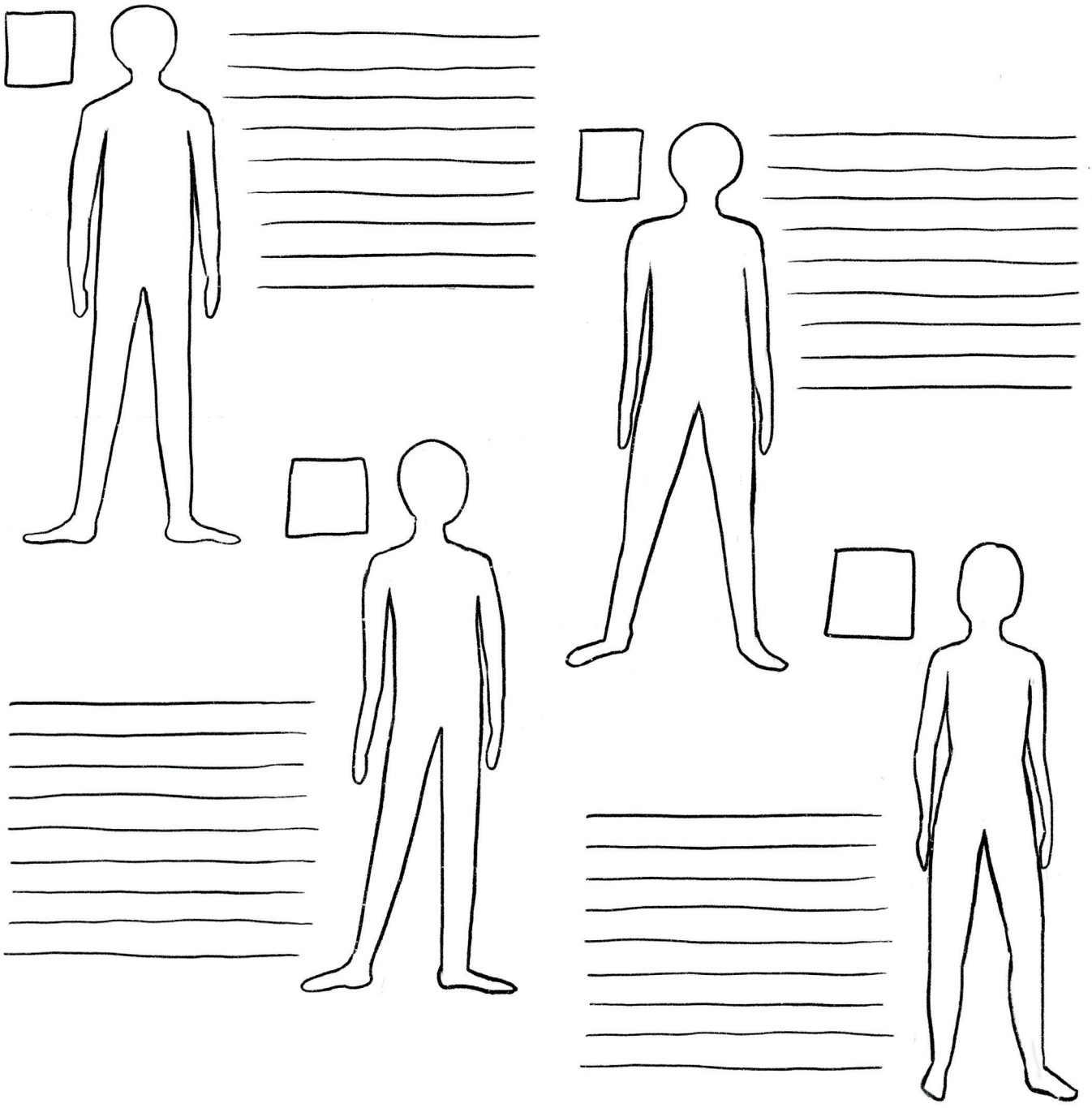
ASSIGNMENT 4

PETROMASCULINITY

STEP 1: DRAW FOUR DIFFERENT PEOPLE WHO PROMOTE PETROMASCULINITY IN DIFFERENT WAYS (E.G. WITH COOL CARS, FIREARMS, BARBECUES, OR OTHER SYMBOLS). CONSIDER DIVERSITY IN TERMS OF AGE, ETHNICITY, GENDER, AND OTHER ASPECTS.



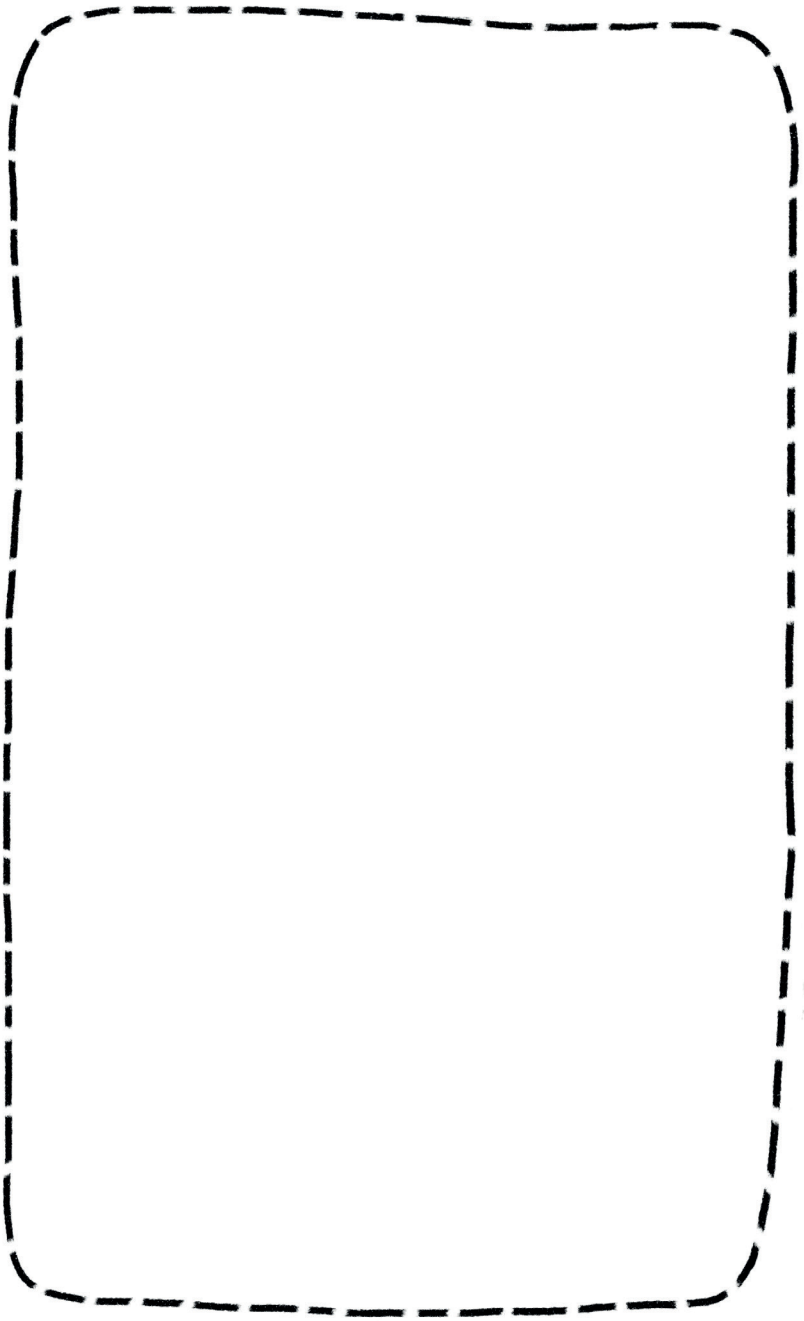
NEXT TO EACH DRAWING, WRITE QUESTIONS YOU WOULD ASK TO BETTER UNDERSTAND THEIR BELIEFS AND BEHAVIORS. FOR EXAMPLE: WHAT IS IMPORTANT TO THIS PERSON IN LIFE? WHAT DOES FREEDOM MEAN TO THEM? HOW DO THEY VIEW CLIMATE CHANGE? WHAT DO THEY THINK THEY WOULD LOSE FROM CLIMATE ACTION (POLICIES, MEASURES)?

CAN YOU SAY SOMETHING ABOUT POSSIBLE HEALTH ISSUES RELATED TO THEIR BELIEFS AND BEHAVIORS?

STEP 2:

DRAW YOURSELF AS A RESEARCHER.

WHAT DO YOU HAVE IN COMMON WITH THESE PEOPLE? HOW ARE YOU DIFFERENT? WRITE ABOUT HOW YOU CAN EMPATHIZE WITH THEIR WORLDVIEW AND WHAT STEPS YOU CAN TAKE TO GAIN THEIR TRUST AND TALK ABOUT CLIMATE CHANGE.



CHAPTER 4: HEALTH CARE AND PLANETARY HEALTH

Petra Verdonk, Hans Ossebaard

In this chapter

- Planetary Health and health care
- Concepts, methodological approaches, tools, and frameworks to guide equitable health care research, e.g.,
  - Concepts
    - Cultural Safety
    - Gender Sensitivity
    - EcoHealth and OneHealth
  - Methodologies
    - Participatory Health Research (PHR)
    - Photovoice
    - Community-Based Participatory Research (CBPR)

Background

Until recently, health has remained peripheral to the global climate change agenda, particularly in high-income countries (HIC). HIC incorporate the health impacts of the Planetary Health crisis much less than low- and middle-income countries (LMIC) in their policies (Dasandi et al., 2021). In their nationally determined contributions, which countries submit every five years as part of the Paris Agreement, the levels of engagement with climate change and health have been shown to be low. Since 2020, the climate crisis is increasingly seen as a major threat to human health. Health is gradually being incorporated in the policy debate; for instance, at COP26, the United Nations' climate summit in Glasgow in 2021, over 80 countries adopted a program to decarbonize their health systems and promote climate resilience (WHO, 2024). The health sector and health professionals worldwide are increasingly engaging with the Planetary Health crisis. Highlighting the human health impacts of climate change is also seen as a way to accelerate climate action, potentially mobilizing public and political support within countries and fostering alliances between nations (Braithwaite et al., 2023; Dasandi et al., 2021).

Health systems face three major challenges posed by the climate crisis. First, as discussed in the introductory chapter, the Planetary Health crisis is the foremost public health crisis of our time, with significant consequences for human health globally—though not equally for all populations. Second, primary care workers and their organizations are among the first to confront the health consequences of the ecological crisis, particularly during extreme weather events, as are emergency medical services. Lastly, protecting health and preventing disease in relation to the Planetary Health crisis is increasingly viewed as a moral obligation by health professionals worldwide.

For medical, organizational, and ethical reasons, health systems must develop environmentally sustainable, low-carbon, and climate-resilient health systems. This can be achieved within the six building blocks of any health system: finance, leadership and governance, service delivery, health information systems, essential medical and technological products, and the workforce (Braithwaite et al., 2024; WHO, 2023). In this way, health care can become part of the solution, even as it also contributes to the problem (Richie et al., 2023; Steenmeijer et al., 2022). The health care industry is responsible for approximately 4-8% of the world's total greenhouse gas emissions, with health systems in LMICs emitting much less due to fewer resources and facing greater consequences (e.g. Braithwaite et al., 2023; Steenmeijer et al., 2022). Emissions are linked to medical waste, such as single-use plastics, fossil fuels used for energy, the supply chain and transport, and particularly pharmaceuticals and chemicals, which are carbon-intensive and polluting.

Climate-resilient health systems are not only environmentally sustainable; they are also particularly capable of adapting to external pressures—such as extreme weather events—while maintaining overall performance (Raffetti et al., 2024). Long-term strategies for sustainable health systems require an understanding of potential future impacts of climate change. To prepare health systems for the complex nexus of societal processes related to climate change and to implement adaptive actions, inter- and transdisciplinary research and policy development are essential (Deivanayagam et al., 2023). Raffetti et al. (2024) suggest that developing future scenarios or storylines for context-specific health care services at different levels holds great potential, such as creating scenarios around heatwaves or floods and exploring what consequences for various groups and health care services at the local level (Raffetti et al., 2024).

Increasing Awareness of Planetary Health

Human health depends on the health of the planet. Studies on the Planetary Health crisis and its impacts on human health have been summarized in a factsheet based on the sixth assessment report of the Intergovernmental Panel on Climate Change of the United Nations (IPCC, 2023). It states, among other things, that: (a) with proactive, adaptive measures risks to human health and well-being may be reduced or even avoided; (b) multi-sectoral investments in health systems can protect them against risks and enhance system resilience, and; (c) policies in other sectors aimed at improving social determinants of health can reduce vulnerability to Planetary Health-related human health risks (see Chapter 6).

In 2021, editors-in-chief of leading medical journals published an editorial in over 200 scientific medical journals urging governments to take climate action and implement fundamental and equitable changes in our societies. They stated that health professionals must do everything possible to aid the transition to a sustainable and just world, including the transformation of health systems (Atwoli et al., 2021). Charles et al. (2021) emphasized the role of health professionals in society, asserting that they could be key climate advocates since they are widely perceived as trusted sources of information and possess the skills to educate the public. The Lancet's editor-in-chief, Richard Horton has even urged health professionals to engage in all forms of non-violent social protest, legitimized by the professional responsibility of doctors (Horton, 2019). Historically, the medical profession has engaged in various forms of political activism, inspiring many today (Ossebaard & Brakema, 2024; Dunk & Jones, 2020). Planetary Health is increasingly gaining attention in leading scientific journals, medical curricula (see Chapter 5) (e.g., Mattijsen et al., 2023), professional codes of conduct (KNMG, 2022), and sector policies (e.g., The Lancet Countdown project; Kort et al., 2023). At the individual level, health professionals are making changes in codes of conduct, and interventions may support health professionals in altering practices (Luykx et al., 2024; Ossebaard & Vyas, 2024), such as prescribing behavior, operating room routines, or implementing 'green informed consent' (Richie et al., 2023).

In many countries, the health sector is discussing ways to reduce its ecological footprint at all levels. In 2019, the United Kingdom's National Health Services became the first health system to commit to net-zero emissions (Braithwaite et al., 2023). In the Netherlands, most hospitals and health care institutions have committed to the Dutch Green Deal 'Working Together towards Sustainable Health Care' (2022-2026), a policy initiative by the Ministry of Health (Green Deal 3.0 'Samen Werken aan Duurzame Zorg', 2024). Globally, the number of health systems agreeing to develop climate-resilient health systems is increasing (Braithwaite et al., 2023). However, the health sector has yet to determine specific steps to reduce emissions, waste, and pollution, and how to implement these measures. In their Green Paper, the International Society for Quality in Health Care argues that striving for environmentally sustainable and climate-resilient health systems is ultimately a matter of quality improvement (Ossebaard & Vyas, 2024). Fortunately, many tools and concepts for quality improvement are already available, tested, and can be utilized for a safe transition.

The Dutch Green Deal is a non-binding agreement between health organizations and the government to implement 'green solutions' in health care. Although education on Planetary Health is one of its formal aims, issues such as climate justice and inequities exacerbated by the ecological crisis, or the representation of women and other marginalized groups in decision-making, are not addressed. While local initiatives by volunteers in Green Teams within health organizations are proliferating, national climate policy frameworks with binding agreements, concerted efforts, sufficient funding, and an explicit justice approach are still lacking in The Netherlands (Green Deal Duurzame Zorg, 2024; Luykx et al., 2024).

The 'Unique Climate Problem' of Health Care

While health systems contribute to the multiple ecological crises, extreme weather events may impact access, affordability, and quality of health services. This can occur both directly—such as through disruptions to health care delivery or supply chains—and indirectly—such as by affecting food security (Raffetti et al., 2024). For instance, in the Netherlands, investigative journalists calculated that nearly a quarter of Dutch hospitals are unprepared for sudden, heavy rainfall, as roads or emergency care units may be flooded (Louman et al., 2024). Braithwaite et al. (2023) refer to these challenges as the 'unique climate problem' of health care, which has the dual mission of reducing its own contributions to the climate crisis while mitigating the health impacts of climate change for care recipients or adapt to these dire circumstances. Moreover, poor Planetary Health exacerbates vulnerabilities across social groups, such as displacement, forced migration, and unequal resources to cope with this crisis, thereby increasing health disparities. These vulnerabilities are often reinforced by existing systemic trends: changing demographics, poverty, an overstretched workforce, staff shortages, rising demand for care, and insufficient health care coverage.

Intersectional inequalities exist among care recipients and also affect health professionals. In the health system workplace, gendered and racialized disparities manifest in job security, wages, and working conditions (see Box: Intersectionality) (e.g., Duijs, 2023; Shaw et al., 2024; Verdonk & Duijs, 2023). In the Netherlands, many health professionals—often women—already feel overburdened and undervalued. Generally, crises tend to deepen existing inequalities society and in health systems. This has been evident for health professionals in long-term care during the COVID-19 crisis in the Netherlands, where the pandemic and the policy response challenged their resilience and increased the precariousness of care workers, particularly among lower-paid women of color (Duijs, 2023). In Australia, health professionals living in rural and underserved areas considered relocating after experiencing serious adverse effects of climate change in their local communities (Pendrey et al., 2021). While doctors may have means and the ability to migrate to cooler climates, their turnover would likely exacerbate staff shortages. Therefore, climate-related health risk assessments should also include workforce supply and the provision of healthcare, particularly for communities in high-risk settings (Pendrey et al., 2021). However, health care research often fails to address the unequal distribution of climate change impacts in unequal organizations within unequal societies (Benschop, 2021).

A policy paradigm rooted in social justice is essential to ensure sustainability and equitable access to health care (Raffetti et al., 2024). Developing equitable solutions for the impacts of the Planetary Health crisis on health systems requires incorporating multiple perspectives, including those outside dominant discourses, and engaging those whose lives are affected. This is not merely a matter of representation; it is crucial to amplify the voices of marginalized and silenced patients and their families from all backgrounds, because this enriches and deepens insights and lessons learned. This also means including the voices of lower-paid health professionals, often women. Elevating the voices of women, older people, youth, Indigenous communities, and those possessing Traditional Ecological Knowledge is critical to accelerating climate action at all levels and enhancing its effectiveness (Deivanayagam et al., 2023; Karpf, 2021).

Diversity, Social Justice, and Health Care

Diversity enhances resilience and is essential for solving complex problems (Desvars-Larrive & Karimi, 2024). Equal representation of female climate leaders and leaders from minority populations ensures that decision-making and policies reflect a wider perspective. This is important not only at the macro level of governments (particularly in HIC) but also within health care organizations, non-governmental organizations, and research institutions. Equitable participation in climate governance and fostering gender responsiveness improve the inclusivity and effectiveness of national strategies. Strengthening the climate leadership of women and other marginalized groups is key to safeguarding Planetary Health and building resilient, just, and healthy societies (Van Daalen et al., 2024; Wray et al., 2023).

To embed more social justice into our methodologies, an epistemic justice approach is required, which involves recognizing people in their capacity as 'knowers' (Deivanayagam et al., 2023). Fricker (2007) identified two types of epistemic injustice. Testimonial injustice refers to a speaker's diminished or inflated level of credibility due to the hearer's prejudice. Hermeneutical injustice occurs at a prior stage before testimonial injustice, when individuals are already

disadvantaged in making sense of their social experiences due to a lack of critical concepts and language in culturally oppressive and silencing contexts (Fricker, 2007; Hengelaar et al., 2024). In health care delivery, it is important to develop sensitivity to 'the just story' of individuals receiving care. Such sensitivity is cultivated by striving for a satisfactory interpretation of verbal communication and body language and by attuning to experiences of oppression, exclusion, violence, and marginalization (Hengelaar et al., 2024). Similarly, addressing care professionals' own intersectional or marginalized positions necessitates diversity-sensitive health organizations that foster cultural sensitivity at all levels and implement anti-racism and anti-sexism policies to combat discrimination at all levels (e.g., Bousbaa et al., 2024; Okafor et al., 2024).

For a long time, diversity has been viewed primarily through the lens of how culture, ethnicity, or race impacts patients' health outcomes, often referred to as 'cultural deficit theories.' Studies have typically focused on barriers to health and health care from the patient side, such as language barriers, unfamiliarity with the health system, poor skills, or health illiteracy. In health organizations, efforts to address racism and discrimination often center on training individual health professionals and responding to situations deemed "incidents" (Bousbaa et al., 2024). However, for health systems to build sensitivity to injustice, it is vital to avoid epistemic violence and reflect on and diminish the impact of gender bias, racism, and other prejudices on health outcomes through health care practices, procedures, and policies at all levels (e.g., Bousbaa et al., 2024; Curtis et al., 2019; Deivanayagam et al., 2023; Hengelaar et al., 2024; Okafor et al., 2024), as well as through inclusive research (e.g., Verdonk et al., 2019) and education (see Chapter 5).

For instance, in their scoping review of public health research in Inuit communities, Belaid et al. (2022) critically assessed the methods used in research. They also examined the application of Inuit-attuned methods and the concept of 'cultural safety' (see Box: Cultural Safety). Like clinical studies, public health research does not inherently escape the harms of colonization; avoiding such harms requires special attention from researchers. According to Belaid et al. (2022), principles of Indigenous research are grounded in 'relational accountability,' viewing research as a process toward decolonization and self-determination. In health research, concepts such as cultural safety and intersectionality (see Box: Intersectionality) specifically aim to address the systemic power inequities that have long been overlooked as root causes of health inequities and their reproduction.

Box: Cultural Safety

Cultural safety centers on patient experiences. This concept is more commonly used in research addressing Indigenous health and it is initially developed by a Māori nurse in response to the negative experiences of Indigenous patients in New Zealand's health services (Belaid et al., 2022). Cultural safety refers to "an outcome based on respectful engagement that recognizes and strives to address power imbalances inherent in the healthcare system. It results in an environment free of racism and discrimination, where people feel safe when receiving health care" (CPHO, 2023, p.9).

Related to concepts such as cultural awareness or sensitivity, cultural humility, or cultural proficiency, cultural safety specifically addresses social injustice. The concept is understood as challenging existing power imbalances to create an environment that is spiritually, socially, emotionally, and physically safe at both the individual health professional and organizational levels (Curtis et al., 2019). It also addresses the unfair distribution of social determinants, epistemic violence, institutional discrimination, marginalization, privilege, racism, and coloniality in health (care) research, health services, and policies. As such, the concept of cultural safety goes beyond cultural sensitivity and competence, aiming to achieve health equity (CPHO, 2023; Curtis et al., 2019; Belaid et al., 2022). In research, it ensures that the lived experiences of participants, their knowledge, and their needs are respected and recognized.

Minoritized groups possess unique skills, knowledge, and experiences. Their systematic exclusion from research and decision-making structures results in a lack of innovative perspectives on emergency preparedness, response, resilience, and recovery (Van Boetzelaer et al., 2023). The universal challenge of poor Planetary Health necessitates the intuition, skills, and knowledge of previously ignored and underestimated populations. While Indigenous communities

are threatened by climate change, their Indigenous Traditional Ecological Knowledge is also at risk. However, Indigenous communities have led the environmental movement globally and have challenged colonial practices across multiple sectors, including public health. Their ecological knowledge systems, based on the relationship and kinship of communities with local ecosystems, entail sustainable practices and may provide solutions to climate change (Deivanayagam et al., 2023).

Gender and Health Care

Power structures such as sexism, paternalism, racism, and colonialism have routinely been overlooked, misunderstood, and even denied in health research and practice. Since the 1970s, the LGBTQ+ movement, the civil rights movement, and international feminist and women's health movements have mobilized against inequality (e.g., The Combahee River Collective Statement, 1977). Activists have successfully contested the diagnosis of homosexuality as a psychiatric disorder; addressed health disparities; highlighted the lack of expertise on sexual and gender minority health; and tackled issues of sexual and gender-based violence, as well as other gender-related concerns, including sexual and reproductive health and rights (SRHR). In doing so, they have challenged the dominant patriarchal and heteronormative systems in health care and research (e.g., Landers & Kapadia, 2019; Oliffe & Greaves, 2012; Van Mens-Verhulst & Waaldijk, 2008). Despite advancements in education, politics, and the labor market, including in the health workforce, most women still bear the burden of unpaid informal care, such as caring for small children or aging parents who require assistance (Verdonk & Duijs, 2023). Informal care, domestic work, and other forms of reproductive labor are essential for maintaining family, social, and societal structures and are necessary prerequisites for productive work (Fraser & Jaeggi, 2018). However, despite their crucial role in providing both paid and unpaid health care, women themselves remain underserved in health care. Sexist practices in care provision and the exclusion of women from clinical trials continue to disadvantage female bodies and women's health (e.g., Greaves & Ritz, 2022).

Gradually, funding agencies, policymakers, care organizations, and research institutions are beginning to adopt equity perspectives, albeit with mixed results, as studies in Australia and Canada have indicated (Gadsden et al., 2024; Haverfield & Tannenbaum, 2021; Stranges et al., 2023). Although some policy evaluations have shown increased consideration of sex and gender in grant applications, for instance in Canada (Haverfield & Tannenbaum, 2021), other researchers have found limited impact on the inclusion of women or on disaggregated analyses of results by sex and gender (Gadsden et al., 2024; Stranges et al., 2023). Gadsden et al. (2024) identified barriers such as limited expertise among those involved in the research pipeline and a lack of accountability and monitoring mechanisms. In their study, they developed a Theory of Change (ToC) and identified pathways for improved consideration of sex and gender in health and medical research, policy, and practice. Their ToC provides a framework for how social change might occur across research, policy, and practice, which could encourage organizations to consider necessary activities and inform practice throughout the research pipeline.
Continuing to ignore women's health issues is also costly, leading to diagnostic delays and higher costs for specialized care, sick leave, or productivity loss (e.g., NVOG, 2023; WOMEN Inc. 2024). Recently, attempts have been made to assess the global economic costs of the gender health gap. Revenues worldwide for closing this gap, based on sick leave and productivity loss from women's undertreatment in 64 common health problems, were calculated at 1 trillion USD annually (WEF, 2024). Gender sensitivity throughout the entire research cycle—from identifying health problems to research design and methodology, back to health care delivery—is urgently needed (see Box: Gender Sensitivity).

Box: Gender Sensitivity

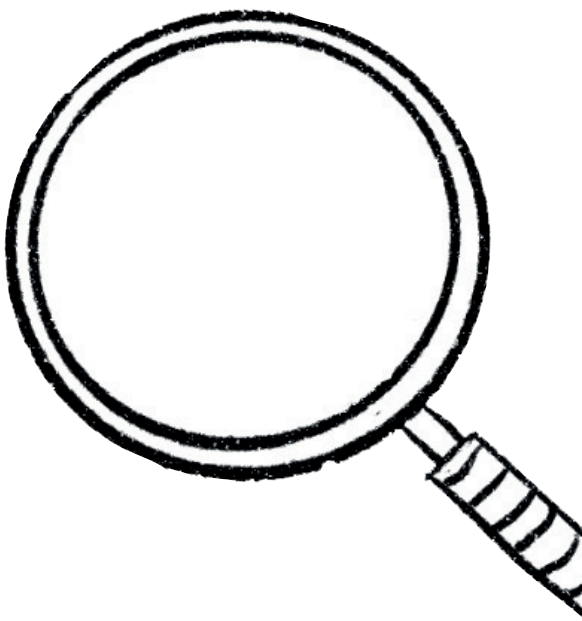
Gender sensitivity in health care entails paying attention to women's bodies and lives in relation to health, including sex differences in non-reproductive health issues, partner and sexual violence, and respecting the lived experiences and knowledge of women (Van Mens-Verhulst & Waaldijk, 2008). Researchers have addressed sexism and gender bias in research, calling for the integration of sex and gender across their intersections in health and care research, as well as in (health) policy. They have developed theories, principles, and tools to embed sex and gender in their work (e.g., Connell, 2012; Gadsden et al., 2024; Oliffe & Greaves, 2012; Tannenbaum et al., 2016) (see Box: Tools and Resources in Chapter 1).

Gender, Human Health, and Planetary Health

Our understanding of the interconnections between gender, human health, and Planetary Health remains limited (Desai & Zhang, 2021; Zavala et al., 2024). Actions to transform the relationship between gender, women's health, health care, and Planetary Health may benefit from feminist research. This includes, but is not limited to: (a) research on sex and gender differences; (b) postmodernism addressing gender as a fluid and context-dependent social construction; (c) gender-relational approaches that view gender as an organizational principle in societies at various levels; and (d) intersectional approaches that examine health across multiple intersections of privilege and oppression (e.g., Connell, 2012; Oliffe & Greaves, 2012; Tannenbaum et al., 2016).

Gaining a better understanding of the relationship between gender, human health, and Planetary Health also requires expanding input from multiple academic disciplines and sectors, as the challenges facing the planet are interconnected and thus require a holistic approach (Pham et al., 2023). A major tenet of Planetary Health research is that it is transdisciplinary, which integrates knowledge from fields such as medicine and public health, climate sciences, economics, social sciences, and policymakers, while involving other stakeholders (Pham et al., 2023). For instance, De Paula et al. (2022) suggest exploring a 'caring economy' that combines women and children's health with Planetary Health. In an example of such a caring economy approach, Smith et al. (2024) offer a new understanding of breastfeeding. Breastfeeding has numerous benefits to children's health, including physical growth, cognitive development, lifetime opportunities, and even survival, as well as benefits for women's health, such as protection against breast and ovarian cancer. However, breastfeeding does not officially contribute to the economy in terms of 'wealth.' In contrast, despite their historical and ongoing health and environmental harms, animal milk and commercial milk formula are counted in calculation of the Gross Domestic Product. Thus, in current economic thought, animal milk consumption increases societies' 'wealth' while breastfeeding does not, despite its multiple benefits for health and the planet. Therefore, Smith et al. (2024) advocate for a new economic paradigm that views investment in breastfeeding protection, promotion, and support as beneficial, yielding numerous positive returns, including environmental benefits. Increased breastfeeding, as opposed to commercial milk formula, should lead to reductions in greenhouse gas emissions and could be recognized as a carbon offset, serving as a practice to avoid or compensate for emissions. This perspective implies supporting and protecting women through paid maternity leave, breastfeeding-friendly workplaces, and investments in infrastructure that allow women time for breastfeeding, nutrition, and self-care. The authors caution, however, that this perspective should not shift responsibility to those already overburdened by care tasks, poverty, or the consequences of climate change. Supporting women in this manner should particularly benefit women in LMICs and represents a just transition (both intergenerational and intragenerational) to sustainable development and Planetary Health (Smith et al., 2024). Ultimately, transformation is a matter of ethics, power, and justice, leading to a just redistribution of power and resources.

In the following sections, we will showcase transdisciplinary research through three examples of participatory health research and the use of creative methods in health and care research. Example I presents a stakeholder approach to prepare the Australian health system for climate change. Example II presents a participatory health research (PHR) project (see: Box: Participatory Health Research) in long-term care for older patients using photovoice (see Box: Photovoice). Example III presents a community-based participatory research (CBPR) project that maps and fosters local knowledge on EcoHealth (see Box: EcoHealth and OneHealth).



Box Participatory Health Research (PHR)

Participatory Health Research encompasses a range of transformative and social action-oriented research practices, such as action research, community-based participatory research (CBPR), or (feminist) participatory action research (PAR) (Duijs, 2023; Godden et al., 2020; ICPHR, 2013). PHR is explicitly conducted in the field of health (care) research. Those whose lives are affected participate as much as possible in all phases of the research process. This may include various stakeholders, such as policymakers, patients and their families, and health workers. As a transdisciplinary approach, it combines social change with scholarly understanding. Incorporating and amplifying participants' voices, experiences, and their knowledge, connecting these to theory, and fostering agency are the most important tenets of PHR (Duijs et al., 2022).

In such a participatory and transdisciplinary approach, which combines various sources of knowledge, creative expression, and art-based methods such as photography, drawing, or performance, inclusion is enhanced (Godden et al., 2020). Stakeholders participate in framing the problem, collecting and analyzing data, and developing and supporting solutions. This research approach provides tools for intervention, informs more equitable health policies, and increases the likelihood of successful implementation of research findings (Abma et al., 2018; ICPHR, 2013; Verdonk et al., 2019). Joint methodological reflections are an explicit part of the participatory research process (Duijs et al., 2022).

Example I: Preparing the Australian Health System for Climate Change

An early example of preparing a national health system for climate change is provided by Australia, where the Climate and Health Alliance, a national coalition of health stakeholders, guided the development of a policy framework for a National Strategy on Climate, Health, and Well-being (Armstrong et al., 2023). Through iterative rounds of extensive transdisciplinary consultation and collaboration with health stakeholders, policymakers, and various communities of practice over several years, a policy framework was developed for all levels of government, from federal to local. Policy actions and recommendations were outlined, and the framework was endorsed by more than 70 health and medical organizations across the country. This secured significant support from both the health sector and the federal government, although delay tactics and climate denial by the government have slowed its uptake. In a 2021 update, a justice approach was incorporated by placing Aboriginal and Torres Strait Islander knowledge of custodianship at the forefront of climate-health strategies. Incorporating Indigenous knowledge or Traditional Knowledge is considered not only as an act of reconciliation, decolonization, and justice, it is also as an act of self-preservation (Armstrong et al., 2023). However, the Australian example also illustrates that even in participatory approaches, justice is not automatically achieved and requires explicit effort and political will.

Example II: Studying Care Workers' Health and Wellbeing with PHR and Photovoice

In a PHR project aimed at understanding how the health and well-being of (un)paid care workers in long-term care for older people (aged 45-67 years) are shaped by gender, age, and other aspects of diversity (see Box: Intersectionality), photovoice was employed (Duijs et al., 2022). By participating in the photovoice project (see Box: Photovoice), ten paid and unpaid caregivers in long-term care developed a research agenda for a larger PHR project. In the next phase five of them joined as community researchers conducting qualitative interviews with hired employees and self-employed care workers of all genders in long-term care for older people. A reflexive trajectory through photovoice, alongside other research activities, deepened the understanding of the structural intersectional inequalities in the lives of those participating in the project, thus including the scholarly photographer, the interviewees, the co-researchers, and the academic researchers. Ultimately, a PhD thesis and a book with portraits were co-created to disseminate findings. A complex interplay of age, gender, race, and class was unraveled in the lived experiences of all participants. Experiences and reflections were connected to theory, such as intersectionality, which contributed to sense-making, collective action, and critical consciousness. However, some concepts were considered 'contested vocabulary' and were more challenging to discuss. Class-based inequities united the group of lower-paid older care workers, while addressing race- and gender-based inequities caused friction among participants. Awareness of structural inequalities or critical consciousness still requires (developing) openness to the intersections of privilege and disadvantage in participants' lived experiences. Those at the privileged end of social identities must be willing to learn to listen to issues that are difficult to address such

as gendered or racialized poverty. Photovoice and participatory research can foster critical consciousness, but for social change to occur, responsibility lies with those in power (Duijs et al., 2022). Participatory research methods can promote change, but they cannot enforce it.

Box: Photovoice

Photovoice, which is particularly suitable for incorporating place-based knowledge, is developed by Wang and Burris (1997). It is grounded in critical theory, including feminist and postcolonial thought, and documentary photography. Visual images can enable people to reflect on and discuss the environmental, social, and political forces that influence their daily lives. A typical photovoice project aims to: (a) support participants in expressing themselves through photographs; (b) create a space where personal experiences can be connected to structural inequalities; and (c) challenge experiences of marginalization in collaboration with stakeholders such as researchers, professionals, and policymakers (Duijs, 2023). As an art-based, inclusive visual and oral methodology, photovoice combines collective action and social change with scholarly understanding (Liebenberg, 2022). Most people can take pictures, including those who may struggle to communicate in dominant languages, and photos can reveal individuals' expertise and insights—though they can also obscure, mask, and omit. By using photographs, participants can document their community's strengths and concerns. Critical dialogue and knowledge are promoted through discussions of photographs, such as by narrating the meanings of the images, writing captions, and jointly identifying issues, themes, and theories (Wang & Burris, 1997; Liebenberg, 2022).

Example III: Community-Based Participatory Research and EcoHealth

Crosse et al. (2021) conducted a Community-Based Participatory Research (CBPR) project in two rural Irish communities to map local knowledge systems of EcoHealth (see Box: EcoHealth and OneHealth). Rural communities can serve as 'gatekeepers of the land' and are vital for environmental well-being and development, as well as for shaping a healthy and sustainable future, including the protection, maintenance, and restoration of ecosystems. Ecosystem services provide benefits for human health, such as clean water, opportunities for exercise, and regulating systems that ensure clean air, as well as information services that monitor weather events or disease outbreaks. The study aimed to: (a) examine community understanding of EcoHealth; (b) investigate challenges and opportunities for community health planning in relation EcoHealth; (c) to identify what is required for developing an EcoHealth Toolkit; and (d) establish pathways for integrating EcoHealth into community policymaking.

The project is grounded in the recognition that local communities possess unique historical, social, cultural, and ecological forms of knowledge. Local knowledge can enhance and sustain ecosystem benefits for health and well-being when integrated into policy development and community planning. Based on Ortiz et al.'s (2020) review of community-engaged research, four interrelated domains were identified: (1) context; (2) partnership and processes; (3) intervention and research; and (4) outcomes. In collaboration with co-researchers from two rural communities, Crosse et al. (2021) accessed community members' local knowledge of social, cultural, and ecological issues, formulated research questions, and enabled community ownership of the process. The project was designed in five phases, starting with nature walks involving different groups (e.g., school children, older people, environmental groups, farmers, and fishermen) using photovoice (see Box: Photovoice), audio recordings, and interviews. The aim of the walks was to provide insight into the meanings and practices people associate with their environment and to construct a narrative of experiences spatially rather than temporally. Preliminary findings from the analysis of data collected during the walks revealed several themes: enjoyment of exploration, a sense of place and belonging, feelings of calm, happiness, and invigoration, childhood memories, and knowledge of nature. Community members' perceptions of place-based health and well-being reflected all ecosystem services, with participants particularly mentioning cultural and regulating services, such as physical health benefits from exercising in natural spaces and the presence of accessible walkways. The least mentioned were supporting services, such as goods (e.g., fish, seaweed) from the sea and healthy soil. Next steps in the project include organizing workshops, interviewing policymakers, and developing a toolkit that offers guidance for effectively communicating local knowledge and integrating it into local and regional decision-making processes on EcoHealth with (non-)governmental agencies.

Box: EcoHealth and OneHealth

EcoHealth refers to the well-being of people, animals, ecosystems, socioeconomic stability, and environmental sustainability. Its goals are sustainable health through healthier ecosystems (Crosse et al., 2021; Pham et al., 2023). Within an ecosystems approach to human health and biodiversity, the EcoHealth paradigm links public health and health promotion to natural resource management and sustainable development. Principles of EcoHealth center around systems thinking (see Box: Feminist Systems Thinking), sustainability, knowledge-to-action, social and gender equity, transdisciplinarity, and participation.

OneHealth integrates sectors, disciplines, and communities to work together and balance and optimize human health, animal health, and the environment (Pham et al., 2023). According to the World Health Organization (WHO, 2023), it is particularly useful in addressing global threats such as pandemics, zoonosis, pollution, and antibiotic resistance. By involving public health, veterinary, and environmental health, innovative and sustainable solutions can be developed.

EcoHealth, OneHealth, and Planetary Health are often used interchangeably, but they are distinct concepts (see Box: Planetary Health) (Crosse et al., 2021; Pham et al., 2023). Planetary Health is the most recent concept, integrating knowledge from fields such as medicine and public health, climate sciences, economics, social sciences, and knowledge from policymakers, along with other stakeholders (Pham et al., 2023).

Conclusions

Health sectors across the globe, including those in high-income countries, face numerous challenges, from workforce issues to health inequities to unique climate problems. These challenges are interrelated. Power structures such as sexism, paternalism, autocracy, racism, and colonialism continue to exacerbate the Planetary Health crisis, manifesting in health care provision and research. The health sector will benefit from redesigning its processes, products, and services to work in harmony with the natural environment and provide equitable, gender-sensitive, and culturally safe health care. This must be done urgently as the multiple ecological crises deepen.
Knowledge derived from feminist, participatory, and creative research approaches can support health systems in simultaneously (a) taking responsibility for their current and historical role in environmental degradation, (b) addressing the health impacts of the Planetary Health crisis, and (c) envisioning the transition toward climate-resilient and equitable health systems. However, few interventions have been evaluated regarding how to transform health systems and health research toward higher quality, environmentally sustainable, and equitable practices. What is clear is that this transformation requires nothing less than a paradigm shift.

Next Steps

- Climate-resilient health systems are equitable health systems. Studies evaluating health system preparedness should incorporate equitable outcomes as valid study outcomes;
- Fund, support, and conduct transdisciplinary Planetary Health research by bringing together stakeholders from various domains scientific disciplines, and incorporating a climate justice and epistemic justice perspective;
- Ensure the inclusion of marginalized groups in PHR and creative research in the domains of health, health care, and health systems;
- Amplify voices from outside dominant structures and systems in Planetary Health research and climate action;
- Apply feminist research approaches in health system research and engage with those whose lives are affected, particularly but not limited to the female workforce at all levels of the system.

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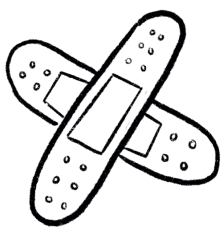


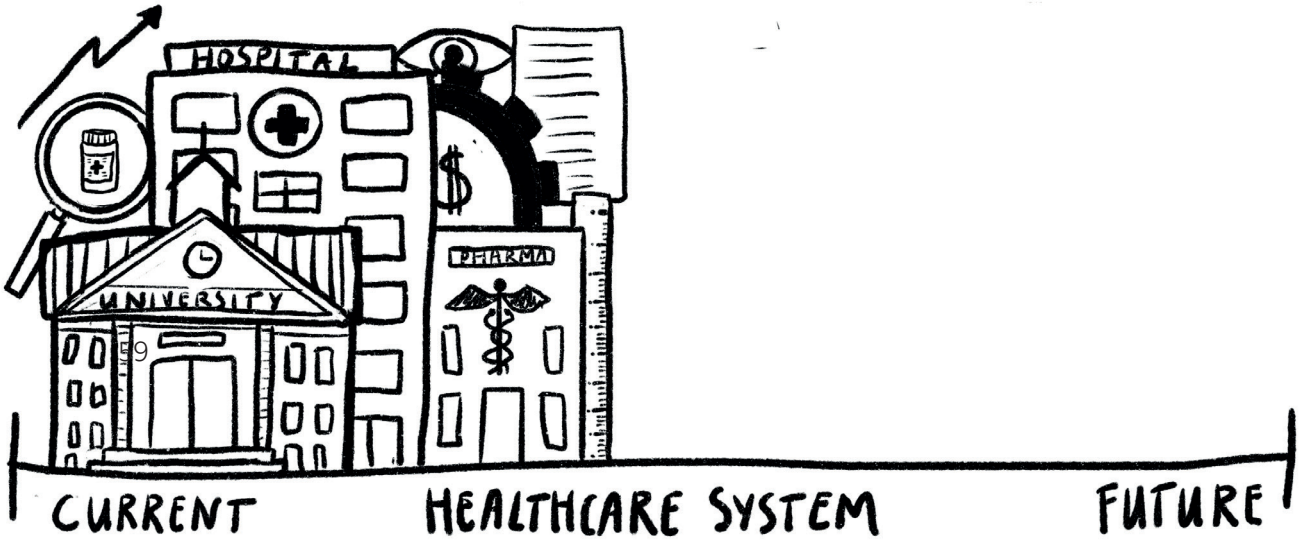
ASSIGNMENT 5

VISION FOR THE FUTURE OF HEALTHCARE

STEP 1: ANALYZE THE CHALLENGES THE HEALTHCARE SYSTEM FACES IN TERMS OF RELEVANCE, COST-EFFECTIVENESS, PERSONALIZED CARE AND EQUALITY.

RELEVANCE	COST-EFFECTIVENESS	PERSONALIZED CARE	EQUALITY

STEP 2: DRAW (OR WRITE) YOUR VISION FOR THE FUTURE OF HEALTHCARE ON THE RIGHT SIDE OF THE TIMELINE. WHAT NEEDS TO CHANGE FOR HEALTHCARE TO BECOME MORE CLIMATE-ADAPTIVE, RESILIENT, AND EQUITABLE?



THINK ABOUT (LOWER-PAID) HEALTH PROFESSIONALS. HOW WILL YOU ENGAGE THEM?

IF AN EQUITABLE AND CLIMATE-RESILIENT HEALTHCARE SYSTEM IS THE GOAL, WHAT KIND OF KNOWLEDGE IS NEEDED?

WHAT SHOULD BE RESEARCHED?

CHAPTER 5: MEDICAL EDUCATION AND PLANETARY HEALTH EQUITY

Gabrielle Cepella, Amarylle van Doorn, Petra Verdonk

In This Chapter

- Planetary Health crisis and health (in)equities in relation to medical education.
- Methodological approaches, tools, and frameworks to guide research on the development, implementation, and evaluation of equitable medical education, including:
  - Analysis and comparison of existing and new educational frameworks;
  - Curriculum assessment using a social accountability assessment framework, adapted to local health contexts;
  - Arts-based and humanities-based educational techniques to develop teaching methods focused on equity within Planetary Health education.
- An overview of knowledge gaps in education, training, and research on Planetary Health Equity education for health practitioners and future health professionals.

Background

To prepare the next generation of medical professionals to engage with issues related to the climate crisis, it is imperative to incorporate Planetary Health as a topic in medical education. Increasingly, students and educators advocate for or develop Planetary Health education for healthcare professionals, including the incorporation of Planetary Health into the Hippocratic Oath (Wabnitz et al., 2020). In 2021, the largest international association for health professions education, AMEE, published a statement emphasizing the importance of integrating education on Planetary Health into all medical training programs (Shaw et al., 2021). In the Netherlands, the Dutch Federation of Medical Universities (NFU) has set objectives for incorporating Planetary Health into all healthcare curricula by 2025 (NFU, 2023). Furthermore, in 2022, the Dutch Ministry of Health, Welfare and Sports published a report providing insights to directors of education, lecturers, and curriculum developers on how medical schools could implement Planetary Health education in their curricula (Van Bree et al., 2022).

Simultaneously, bottom-up initiatives, both professional and student-led, have emerged in the Netherlands, such as the Dutch General Practitioners (GPs) in De Groene Huisarts (www.degroenehuisarts.nl), the Dutch students' initiative CO2-assistant (co2assistent.nl), and the GREENER-collective (Mattijsen et al., 2023). These groups advocate for the implementation of Planetary Health into medical education and provide resources for curriculum developers. According to a survey of 3,489 Dutch medical students, 83% expressed a desire to "know more about the health risks related to climate change and sustainable healthcare" (De Geneeskundestudent, 2021). Historically, Western medical education has focused primarily on individual health problems, but there is a growing recognition of the relationship between individual health and environmental health.

The internationally recognized CanMEDS competencies framework largely informs national frameworks for medical education (*CanMEDS // Framework*, n.d.). For instance, in the Netherlands, the national framework for physician competencies is based on CanMEDS, which describes the final qualifications of medical education programs (NFU, 2020). Although the CanMEDS framework expects future physicians to be aware of societal developments and threats to public health (competency of health advocate), it does not specifically address Planetary Health or climate change and health (Green et al., 2023). Similarly, the health advocate role proposed in the Dutch framework (NFU, 2020) does not incorporate Planetary Health. This role is defined as: *"the future physician contributing to important societal themes and discussions regarding healthcare,"* without specifically addressing Planetary Health. To rectify these shortcomings and more firmly integrate Planetary Health into CanMEDS 2025, Green et al. (2023) propose incorporating several themes within the CanMEDS 2025 physician competency framework. These themes include sustainability and resilience of the healthcare system, addressing the environment's impact on patient health and inequalities, and social accountability.

These competencies could be integrated into the health advocate competency, as well as other competencies within the framework. Previously, medical students have proposed such a framework. In 2021, the Canadian Federation of Medical Students built upon CanMEDS and defined Planetary Health competencies for medical students across three domains: (1) advancing Planetary Health justice, to be incorporated into the CanMEDS role of Health Advocate; (2) managing and preventing health impacts, to be incorporated into the CanMEDS role of Medical Expert and Scholar; and (3) leading and collaborating on mitigation and adaptation, to be incorporated into the CanMEDS role of Leader, Manager, Collaborator, Communicator (CFMS, 2021).

Planetary Health, Equity, and Medical Education

The effects of the climate and ecological crisis are not distributed equally (Kartha et al., 2020; Van Daalen et al., 2021), and inequalities are a root cause of the Planetary Health crisis (Sultana, 2022; Sultana, 2023). Therefore, health inequities must be a fundamental component of Planetary Health education. People in low- and middle-income countries (LMIC) suffer the most severe consequences of the Planetary Health crisis (intragenerational injustice, see Box: Climate Justice), while individuals in high-income countries (HIC) have contributed the most to its causes (indicating a historical responsibility). It is noteworthy that even within HIC, the environmental and health impacts are unequally distributed across geographical areas, populations, social strata, generations, and more (Planetary Health Alliance, 2024; Thomas, 2022). Historical and political processes (e.g., colonialism, capitalism, neoliberalism) have created the systemic disparities (e.g., health, environmental justice) we observe today (Atwoli et al., 2021; Sultana, 2022; Sultana, 2023; Thomas, 2022). For Planetary Health education to contribute to a more just and healthier world, medical schools and training institutes should include discussions on the root causes of the Planetary Health crisis, aligning their programs with equity principles to help reduce inequities and promote equity. Therefore, a fundamental tenet of Planetary Health education is the acknowledgment of existing power structures, both locally and globally. Educators should adequately address the health and well-being of populations that are already vulnerable to poor health and how their health is exacerbated by environmental degradation (see box Intersectionality). This knowledge should also manifest in professional skills, meaning that Planetary Health, including social justice and equity principles, must be integrated into health professionals' daily practice.

Planetary Health Equity is closely related to the concept of *social accountability*. Social accountability emphasizes the responsibility of medical education to address health inequalities and the overlooked health needs of disadvantaged populations. In medical education, social accountability also refers to schools' obligation to focus efforts on addressing the priority health concerns of the communities, regions, or nations their curricula serve (Boelen et al., 1995). Implementing social accountability in medical education has been an international aim since the development of the Global Consensus for Social Accountability of Medical Schools (GCSA) in 2010. In 2021, the Planetary Health Alliance (https://www.planetaryhealthalliance.org, n.d.), a consortium of over 250 partners from around the world, developed a framework for Planetary Health education (see Box: Planetary Health Education Framework) (Guzmán et al., 2021).

Box: Planetary Health Education Framework

The Planetary Health Education Framework is based on the premise that developing effective and societally relevant solutions begins with educating the health professionals of the future (Guzmán et al., 2021). The framework consists of five foundational domains that are interdependent and interconnected: (1) Interconnection within Nature; (2) The Anthropocene and health; (3) Equity and social justice; (4) Movement building and systems change; and (5) Systems thinking and complexity. The outer rings of the framework represent the various conditions that influence how the five domains are understood and taught, as well as how themes, topics, and concepts will vary over time and context.

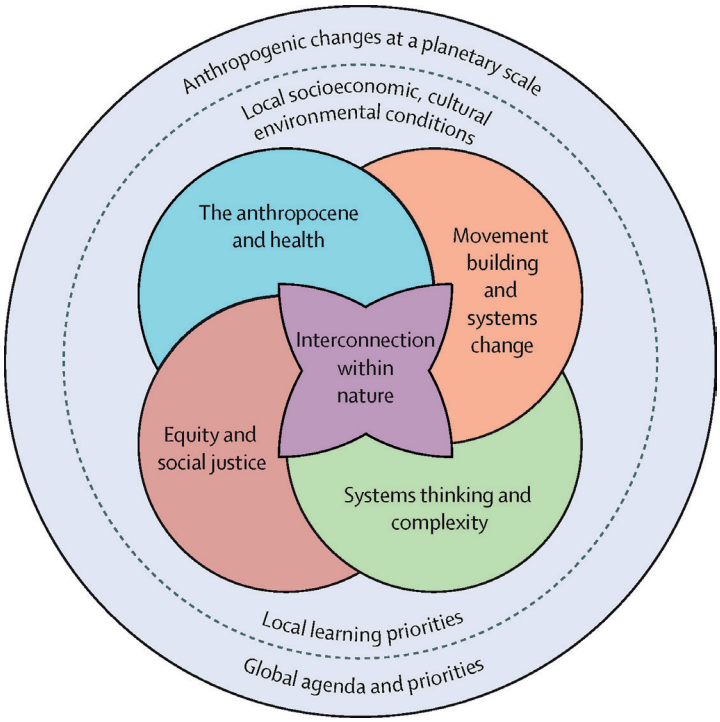


Figure: Planetary Health Education Framework (Guzmán et al., 2021)

Research on Planetary Health Equity Education

The adoption of Planetary Health in medical curricula is becoming more widespread, and research on how to do so is increasing. Authors have advocated for equity-centered Planetary Health education (e.g., Guzmán et al., 2021; IFMSA, 2016; Van Bree et al., 2022), provided curricular frameworks (e.g., Guzmán et al., 2021; IFMSA, 2016), and proposed evidence-based professional Planetary Health Equity competencies (e.g., CFMS, 2021). However, implementation and evaluation studies of equity-centered perspectives in medical education are lacking. In the following section, we present three examples of studies obtained through a literature search to inspire equity-centered thinking in the development of Planetary Health education. First, we describe a study comparing educational frameworks. Second, we present a study on curriculum assessment for social accountability. Finally, we describe a study on the development of effective learning methods for Planetary Health education. For details on the methodology of our search, see Box: Literature Search.

Box: Literature Search

Conducting a literature search on equity-centered Planetary Health education is challenging due to several factors. Many concepts in the field are not yet incorporated as MESH terms or are used as synonyms across varying fields. For example, 'sustainability' is used in environmental health to address issues like (non-)pollution or in occupational health to address workers' long-term employability. Additionally, there is no common understanding of how equity should be addressed or which concepts should be used for what (see Box: Planetary Health; see Box: One Health, EcoHealth).

To gain comprehensive insight into the current incorporation of equity in Planetary Health education, a state-of-the-art analysis was deemed necessary. We utilized a broad search strategy employing keywords such as "Planetary Health," "Gender," "Equity," and "Education," searching databases including Embase, Google Scholar, PubMed, Eric (Ebsco), Cinahl (Ebsco), and Scopus from October to December 2023, with support from a librarian[1]. Initially, articles were screened based on titles and abstracts, and subsequently, snowballing was employed to identify additional relevant articles from those initially retrieved. In-depth analysis focused on studies discussing methods for developing Planetary Health education and topics closely associated with equity. The final search string was constructed as follows:

#1 Planetary Health:
"Climate Change"[Mesh] OR "Planetary Health"[tiab] OR "climate change*"[tiab] OR "climate crisis*"[tiab]

#2 Gender or equity
"Gender Equity"[Mesh] OR "Gender Role"[Mesh] OR "Gender Identity"[Mesh] OR "Sexual and Gender Minorities"[Mesh] OR "Diversity, Equity, Inclusion"[Mesh] OR gender[tiab] OR feminin*[tiab] OR masculin*[tiab] OR sex[tiab] OR equalit*[tiab] OR equity[tiab] OR "Intersectional Framework"[Mesh] OR "Sex Factors"[Mesh] OR "Gender Identity"[Mesh] OR "Sexual and Gender Minorities"[Mesh] OR "Sex Characteristics"[Mesh] OR intersectional*[tiab] OR gender[tiab] OR "sex diff*"[tiab] OR "sex inequalit*"[tiab] OR "sex bias"[tiab] OR "sex-specific"[tiab] OR "sex factor*"[tiab] OR "sex based"[tiab] OR "sex disparit*"[tiab] OR "sex factor*"[tiab] OR "sex characteristic*"[tiab] OR "sex related"[tiab] OR sexe*[tiab] OR "male versus female"[tiab] OR "men versus women"[tiab] OR "men and women"[tiab] OR "women and men"[tiab] OR "male and female"[tiab] OR "female and male"[tiab] OR "female identit*"[tiab] OR "male identit*"[tiab] OR women[ti] OR woman[ti] OR female[ti] OR man[ti] OR men[ti] OR male[tiab]

#3 Education
"Education, Medical"[Mesh] OR "medical education*"[tiab] OR "medical school*"[tiab] OR "medical teaching"[tiab] OR "medical curriculum"[tiab] OR "medical training"[tiab]

The literature search yielded 15 articles, of which three scientific articles were deemed relevant to this case study. So far, none of the articles explicitly addressed the overarching question of how to integrate equity into Planetary Health education. In the near future, more studies in the health and medical education domain are expected.

Example I: Comparing Equity-Based Frameworks for Incorporation in Nursing

Astle (2021) outlines how the intersection of health equity and Planetary Health can be incorporated into nursing practice, advocating for a transdisciplinary, equity-centered approach to tackle Planetary Health challenges. The author discusses and compares the Pan American Health Organization (PAHO) Equity Commission's Conceptual Framework (Marmot, 2018) and the Planetary Health Education Framework (Guzmán et al., 2021). The PAHO Commission's Equity Conceptual Framework, proposed in 2018, includes drivers of health inequities such as social, political, cultural, and economic structures. It also addresses structural racism and colonialism, with a strong focus on the natural environment, land, and climate change.

1 With gratitude to librarian L. Schoonmade, Amsterdam UMC medical library

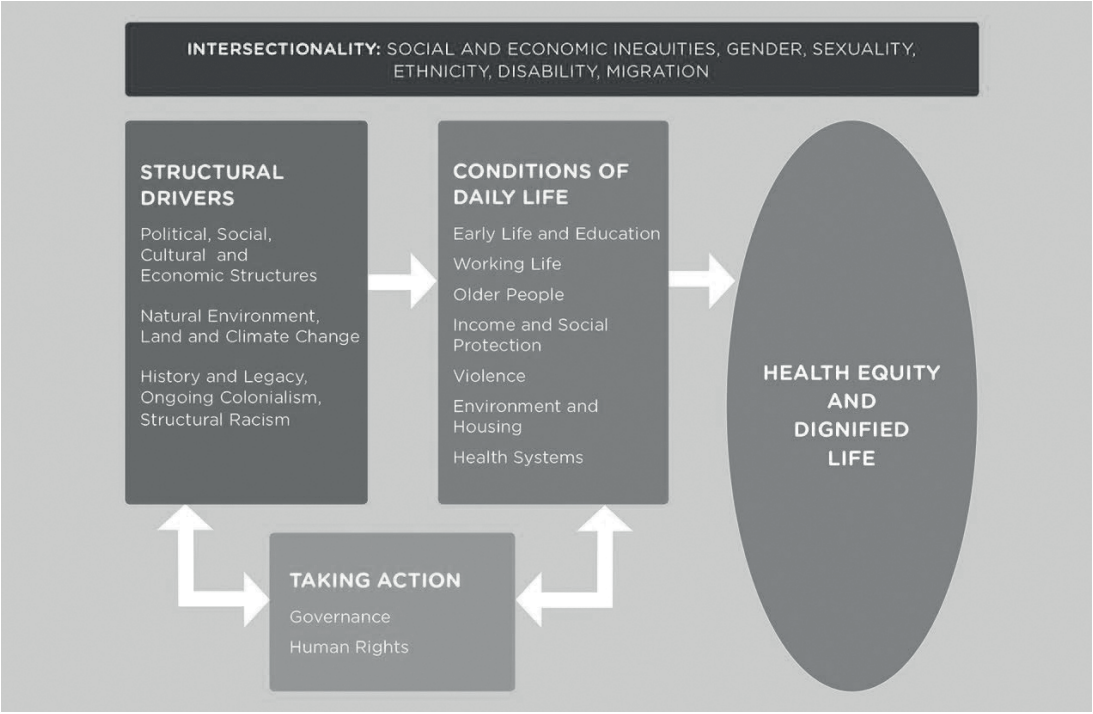


Figure: PAHO Equity Commission's Conceptual Framework (Marmot, 2018)

Astle's analysis shows that both frameworks emphasize health equity. However, while the PAHO framework addresses structural drivers of health inequities, including racism and colonialism, the Planetary Health Education Framework integrates equity and social justice into its foundational domains. The paper emphasizes the role of nursing practice in promoting education about health equity, aiming for the vitality of both natural and human systems. The author calls for ongoing collaboration and exploration in a transdisciplinary manner to effectively address global health challenges. This study demonstrates how analyzing and comparing frameworks can provide insights into how current frameworks could be adapted or enhanced for local contexts.

Example II: Assessing Social Accountability and Health Equity in Medical Curricula

When developing education, a critical assessment of the existing curriculum is an important step in the process. Kelly et al. (2022) showcase a method for assessing social accountability in a problem-based learning (PBL) medical curriculum in Limerick (Ireland), using a qualitative content analysis approach divided into two stages. In PBL, written educational materials are based on cases that present a medical problem, often from the perspective of a patient. The story format of the PBL case aims to prompt students to consider the structure and function of the body, as well as the social and cultural history of the patient. Interdisciplinary PBL curricula are particularly suited for integrating gender equity issues in medical education (Verdonk et al., 2008). In this study, Kelly et al. (2022) examined key health policy documents from Ireland and Limerick to understand the specific contextual backdrop of the medical curriculum. Using policy analysis, they determined which health issues were most relevant at that particular moment in the local area and thus should be included in the local curriculum.

Next, the authors employed Abdalla's validated social accountability inventory framework to assess the medical curriculum at the Limerick medical school (Abdalla et al., 2020). This framework is a tool for assessing social accountability in PBL curricula and is based on the four core social values of health systems established by the World Health Organization in the 1990s: relevance, quality, effectiveness, and equity (Boelen et al., 1995). The four domains in Abdalla et al.'s (2020) social accountability inventory framework are: (1) relevance of content, i.e., whether the educational content is relevant to the local context; (2) cost-effectiveness; (3) person-centeredness; and (4) equity. The authors compared the curriculum's social accountability-related content from 2006 to 2020 and identified gaps, particularly within domain (1) relevance of content and domain (4) equity.

Within domain (1) *relevance of content*, Kelly and colleagues (2022) found that the cases mostly adequately address

relevant health concerns, social determinants of health, health promotion and prevention, psychosocial issues, health management, medical professionalism, referral, and multidisciplinary thinking. However, the impact of the environment on health is insufficiently addressed. Furthermore, the evolving role of the doctor, such as the doctor's role as a Planetary Health advocate, is not included in the cases. Within domain (4) equity, the authors found that the cases adequately address ethnicity and age, but the health needs of other disadvantaged populations, gender, and socioeconomic status are insufficiently addressed. The authors suggest improving the curriculum's social accountability regarding, for instance, Traveller health, LGBTI+ health, and domestic violence (see Box: Environmental Racism and Environmentalism).

Example III: Arts-Based Educational Techniques for Implementing Planetary Health

In their work, Brand et al. (2023) advocate for the implementation of innovative educational strategies in the context of Planetary Health education in Australia, with a particular focus on addressing equity-centered learning objectives. The authors state that existing educational approaches are deeply entrenched in Western epistemologies, often suffering from a binary framing of right and wrong, rendering them inadequate for the nuanced challenges presented by Planetary Health and sustainable healthcare. To address these limitations, Brand et al. (2020) introduced the Depth of Field methodology alongside arts-based educational techniques. Depth of Field is a health humanities research and education methodology that employs narrative portraits and arts-based education strategies to design resources for use in health professionals' education. Arts-based educational techniques utilize narrative portraits or the analysis of other cultural references, such as poetry or artwork, to foster critical thinking among learners, challenge entrenched hierarchies within healthcare systems, and prompt nuanced discussions among students that encompass diverse perspectives. For Planetary Health education to align with equity principles and address the nuanced challenges posed by Planetary Health, Brand et al. (2023) propose three primary objectives. First, they emphasize acknowledging Indigenous knowledge in promoting local Planetary Health issues and sustainable development. Second, they stress the need to understand the intricate connections between environmental sustainability, social determinants of health, and cultural diversity. Finally, they highlight the role of healthcare professionals in advocating for sustainable development and environmental stewardship. According to the authors, each of these learning objectives should be complemented by a tailored arts-based educational strategy. Such strategies include engaging learners through Indigenous storytelling and narrative portraits, facilitating meaningful discussions to uncover biases and cultural assumptions, and guiding students in applying newfound knowledge to real-world healthcare scenarios through structured reflection exercises. In summary, the authors propose a comprehensive approach to equity-centered Planetary Health education, integrating Indigenous perspectives and challenging conventional paradigms within healthcare education using innovative methodologies (Brand et al., 2023).

Moving Planetary Health Equity Education and Training Forward

Top-down and bottom-up initiatives aimed at integrating Planetary Health in medical education are on the rise (e.g., IFMSA, 2016; IFMSA, 2021; NFU, 2023). Additionally, there is an increasing call for considering equity in Planetary Health education initiatives (e.g., IFMSA, 2016; Guzmán et al., 2021; Stone et al., 2018). However, whether and how Planetary Health education projects consider equity principles, and how such projects are evaluated, remains unclear. Besides the lack of knowledge on how to integrate Planetary Health Equity into existing curricula, there is also a need to understand the facilitators and barriers to implementation, ranging from vested interests to a lack of teaching competencies and student engagement or motivation.

Professional competencies in medical curricula are generally based on internationally recognized frameworks, such as the CanMEDS framework. The Planetary Health Equity competencies proposed by the CFMS (2021) may serve as an example for implementation. Emerging fields addressing complex questions like the Planetary Health crisis require collaboration beyond the scope of single disciplines, thus 'tapping into the interdisciplinary nature of science' (Tripp & Shortlidge, 2019). Interdisciplinary science is proposed as a process of integrating knowledge, with key aspects including collaboration among individuals trained in different perspectives, approaches, research methods (tools and instruments), and methodologies (philosophical assumptions for using methods), as well as a thorough understanding of disciplines and their limitations ('disciplinary humility') (Tripp & Shortlidge, 2019). Consequently, future health professionals require profound skills in inter- and transdisciplinary collaboration with humanitarians, climate scientists, and political scientists.

Defining what should be considered 'common knowledge' for all health professionals, as well as what knowledge is necessary for particular specialties, and whether dedicated specialists are needed in the field of Planetary Health Equity—which would turn the field into another discipline—are urgent yet challenging tasks.

For practicing health professionals, postgraduate training opportunities are essential as the Planetary Health crisis rapidly escalates. Knowledge must be quickly transferred, and major, ongoing efforts are needed to educate the global health workforce in Planetary Health Equity. Floss and colleagues (2023) share experiences with a Global-South-originated Massive Open Online Course (MOOC) for primary care practitioners. They state that education in Planetary Health should be de-commodified and that accredited (online) education should be provided as a public good. Since primary care teams are first responders, they are particularly suited to address Planetary Health issues, including (in) equity, within their own communities. Furthermore, due to the complexity and extremity of this crisis, rapid, innovative, and interdisciplinary Planetary Health Equity education is needed for the entire health workforce (Floss et al., 2023; Tripp & Shortlidge, 2019).

As for developing teaching and learning methods for health professionals, interdisciplinary and arts-based educational methods may help foreground Planetary Health Equity. Research is also needed to establish evidence for their effectiveness. The Australian example in this chapter illustrates how an arts-based interdisciplinary perspective supports the translation of concepts such as equity into medical curricula (Brand et al., 2023). Medical students themselves have proposed frameworks and tools for implementing Planetary Health from an equity perspective in medical education (CFMS, 2021; IFMSA, 2016; IFMSA, 2021). Further inspiration may be drawn from other disciplines, including liberal arts and sciences, interdisciplinary science education, (medical) humanities, philosophy, and beyond. Indigenous healthcare traditions and medical studies not grounded in Western epistemologies are rich sources of knowledge that may help promote competencies in Planetary Health Equity for health practitioners.

Conclusions

To provide equitable healthcare for patients in times of climate crisis, health care workers must be competent in Planetary Health issues with a focus on equity. Planetary Health education within the medical field is emerging and still in development, but it needs to accelerate to prepare the health workforce—there is no time to wait for sound evidence of effective education. To rapidly address the root causes and unjust health consequences of the climate crisis, we need interdisciplinary and innovative approaches to teaching, learning, and research in medical education. To achieve this, there is a need for: (a) knowledge concerning gender, socio-economic, and other health inequalities and inequities across their intersections; (b) knowledge of the Planetary Health Equity implications for human health; and (c) a deep understanding of ethical concepts such as social justice, equity, and climate justice, which are the root causes of this crisis.

Next Steps

- Upscaling and evaluating the provision of accessible Planetary Health Equity training, particularly for primary care practitioners.
- Implementing and evaluating Planetary Health Equity in competency frameworks for health professionals and medical teachers, medical curricula, and postgraduate training.
- Engaging students in educational framework analysis, curriculum assessment, the development of innovative educational approaches and materials, teacher training, and evaluation.

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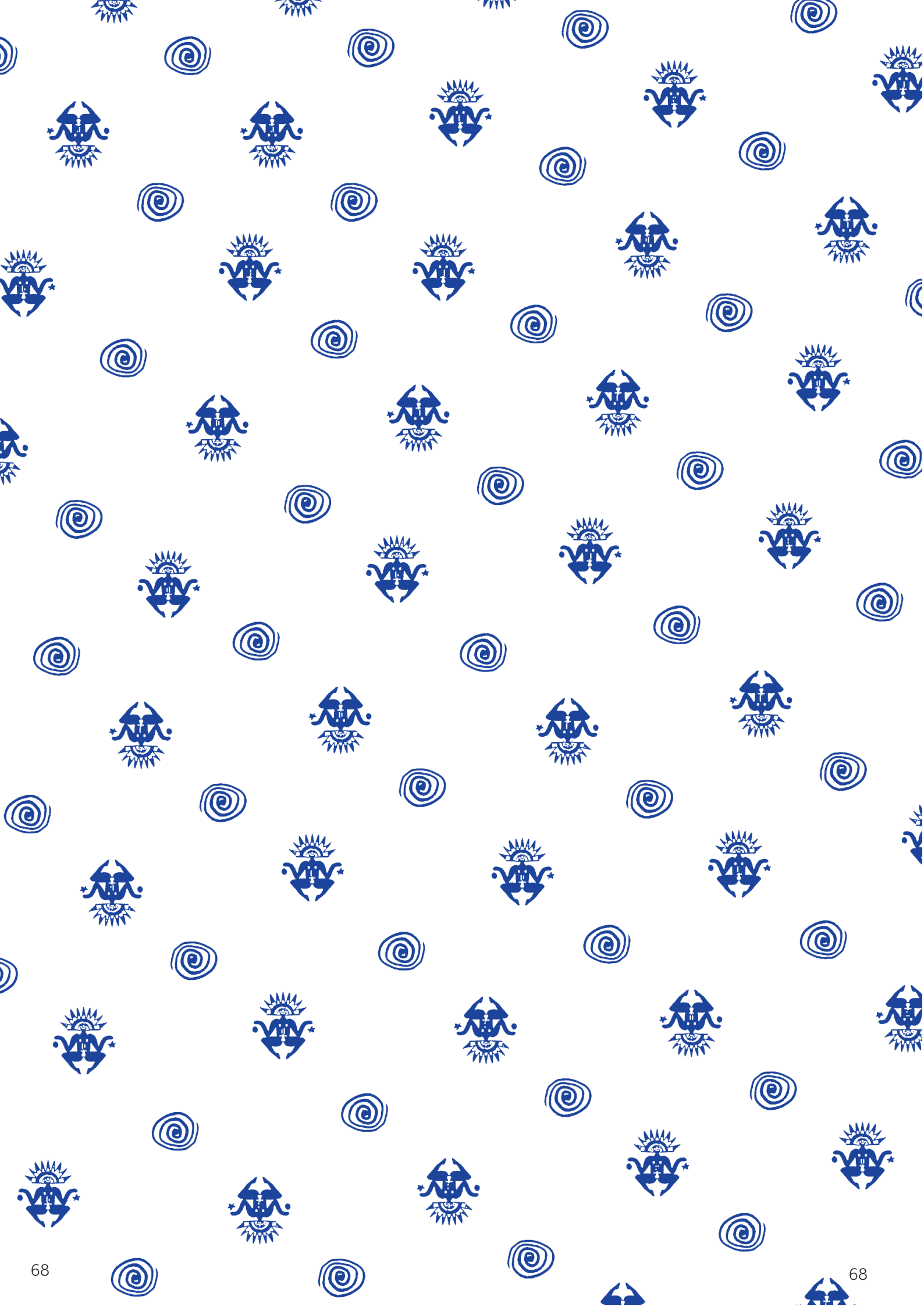

68

TRAINING: CRITICAL REFLECTION ON FRAMEWORKS OF REFERENCE IN RELATION TO HEALTH, CLIMATE JUSTICE, AND INDIGENOUS KNOWLEDGE.

Duration: 2.5 hours
Maximum Participants: 14

Preparations for the Trainer:

- Read the literature (see 'Resources') and prepare the theoretical background.
- Review the training assignments and work through them in preparation. Your completed assignments will serve as examples for participants. The assignments are:
  - An introduction about yourself and an introduction to Bordas' and Smith's perspectives on multicultural leadership and decolonizing research.
- Bring the following cards:
  - **Three question cards:**
    How do you conceptualize "health" and "well-being"?
    Which values and belief systems have shaped your understanding of health equity?
    To what extent does your educational, social, and cultural background influence these perspectives?
  - **Three cards with 'Indigenous Knowledge Frameworks':**
    Seventh Generation Principle
    Ubuntu
    Buen Vivir

Preparations for Participants:

- Read the literature (see 'Resources').

Objectives of the Training:

- To critically reflect on your personal frames of reference in relation to health and healthcare research.
- To explore the intersections between health, climate justice, and Indigenous knowledge.
- To engage with diverse perspectives, developing an understanding of how Indigenous frameworks—such as the Seventh Generation Principle, Ubuntu, and Buen Vivir—can inform, enhance, and challenge health research.

Introduction

In this session, you will engage with various Indigenous knowledge systems, including the Seventh Generation Principle (from the Iroquois/Haudenosaunee), Ubuntu (a Southern African philosophy), and Buen Vivir (a concept from South American Indigenous cultures). These systems come from different parts of the world and define health in a broader, more holistic way. All these perspectives consider health in relation to the vitality of ecosystems, rivers, fish and bird communities, and the planet as a whole. This is distinct from how 'health' is typically approached in Western medicine, which focuses on more reductionist models. You will also explore how these Indigenous perspectives align with and differ from concepts like positive health (e.g., Huber et al., 2011) and their connection to the pursuit of climate justice. By discussing Indigenous knowledge frameworks from a holistic climate justice perspective, you will critically evaluate how these frameworks challenge and expand the research frameworks you are familiar with in health and health care.

Program

1. Introduction & Objectives (10 minutes)

Goal: Briefly introduce the importance of health, climate justice, and Indigenous knowledge systems. Contextualize this training and its relevance for healthcare research, particularly through the lens of decolonizing methodologies.

- **Discuss the objectives of this training:**
  - To critically reflect on how your personal frames of reference influence your understanding of health and healthcare research.
  - To explore the intersections of health, climate justice, and different Indigenous knowledge systems.
  - To engage with diverse perspectives to develop insight into how Indigenous frameworks (e.g., the Seventh Generation Principle, Ubuntu, Buen Vivir) can inform, enhance, and challenge health research.

2. Introductions and Exploring Our Own Frames of Reference (40 minutes)

Goal: Invite participants to reflect on their personal frameworks of reference and their relationship to health research.

- **Instructions** (10 minutes):

Participants are asked to introduce themselves and share their understanding of "health" and "well-being." Use the following reflection questions from the question cards:

- How do you conceptualize "health" and "well-being"?
- Which values and belief systems have shaped your understanding of health equity?
- To what extent does your educational, social, and cultural background influence these perspectives?

As a trainer, start with your own introduction, reflecting on these questions and introducing Bordas' and Smith's perspectives on multicultural leadership and decolonizing research.

- Reflect on potential assumptions regarding health, climate justice, and equity. Drawing from Bordas' (2007) *Salsa, Soul, and Spirit: Leadership for a Multicultural Age*, discuss how your frame of reference can be broadened by incorporating diverse perspectives that emphasize interconnectedness and the collective well-being of communities.
- Linda Tuhiwai Smith (2022), in *Decolonizing Methodologies: Research and Indigenous Peoples*, advocates for research approaches that challenge Western epistemologies and embrace Indigenous ways of knowing. Reflect on how decolonizing methodologies can inform a more inclusive approach to health and healthcare research.

- **Activity** (30 minutes):
  - Individual Reflection (5 minutes): Participants write down or draw their personal reflections on the questions above.
  - Subgroup Discussions (10 minutes): Form groups of 3 to 4 people to share some reflections.
  - Plenary Discussion (15 minutes): After the subgroup discussions, reconvene in a plenary session to reflect on the group's thoughts.
  -

3. Break (10 minutes)

4. Theory & Group Discussion: Indigenous Knowledge Systems (60 minutes)

Goal: To explore key Indigenous knowledge systems (Seventh Generation Principle, Ubuntu, Buen Vivir) and their implications for research on health and climate justice.

- **Trainer presents theory** (10 minutes):

Explain the key Indigenous knowledge frameworks:

- **Seventh Generation Principle:** An Iroquois/Haudenosaunee concept that emphasizes the responsibility of making decisions with long-term impacts on the seventh generation in mind, advocating for intergenerational responsibility.
- **Ubuntu:** A Southern African philosophy focused on communal values, mutual responsibility, and the idea that individual well-being is inseparable from the well-being of the community and the environment.
- **Buen Vivir:** A South American Indigenous concept that prioritizes harmonious living with nature over economic growth, promoting ecological sustainability and holistic well-being.

- **Activity** (35 minutes):

Divide participants into subgroups of 3 to 4 and ask them to reflect on the following questions:

  - How do each of these frameworks challenge or expand your understanding of health, climate justice, and equity?
  - How do these frameworks offer alternative ways of thinking about health, climate justice, and well-being?
  - How do these frameworks challenge Western understandings of health?
  - How could your approach to health and healthcare research change by emphasizing intergenerational justice and communal well-being?

Reflect on how decolonizing your research practice might influence your engagement with marginalized communities and promote more equitable health outcomes.

- **Plenary Discussion** (15 minutes):

Ask participants to share their insights, focusing on how these frameworks could influence their research approaches.

5. Group Reflection & Action Planning (30 minutes)

Goal: Foster collective reflection on the necessary steps to embed Indigenous knowledge and decolonizing

methodologies into health research.

- **Facilitated Reflection** (10 minutes):
  - What have participants learned during the session? Has their understanding of health, climate justice, and equity shifted? If so, how?
  - How could they apply these frameworks to their current or future research projects?
- **Activity** (15 minutes):
  - Ask participants to formulate three concrete actions that can help embed diverse, Indigenous, and decolonial knowledges into their research methodologies.
- **Wrap-Up** (5 minutes):

Thank participants for their contributions and share the list of readings for further exploration.

Resources

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Borrows, J. (2002). Recovering Canada: The Resurgence of Indigenous Law. University of Toronto Press.
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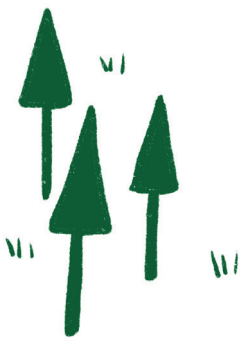
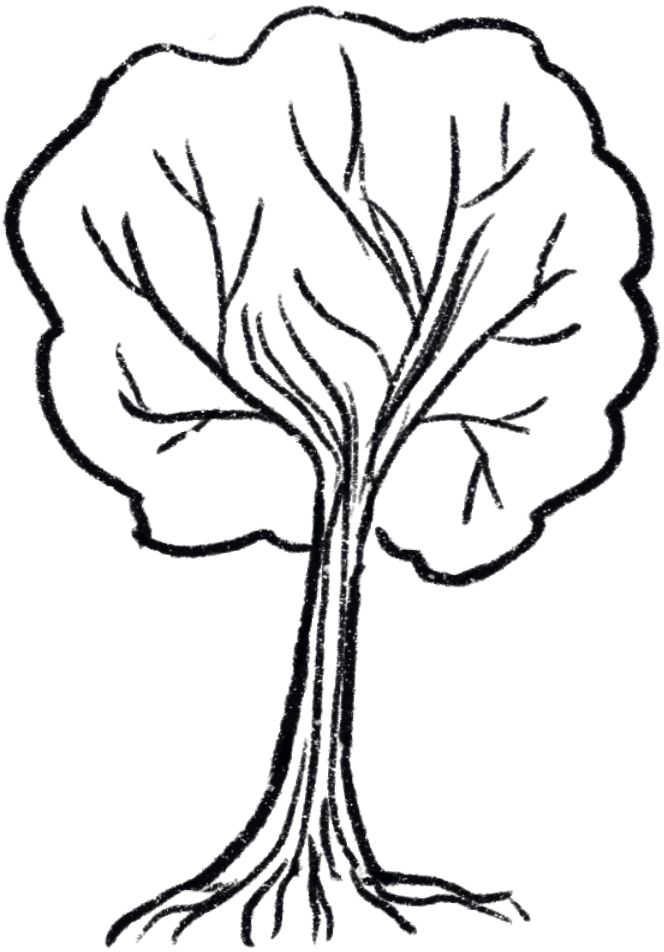


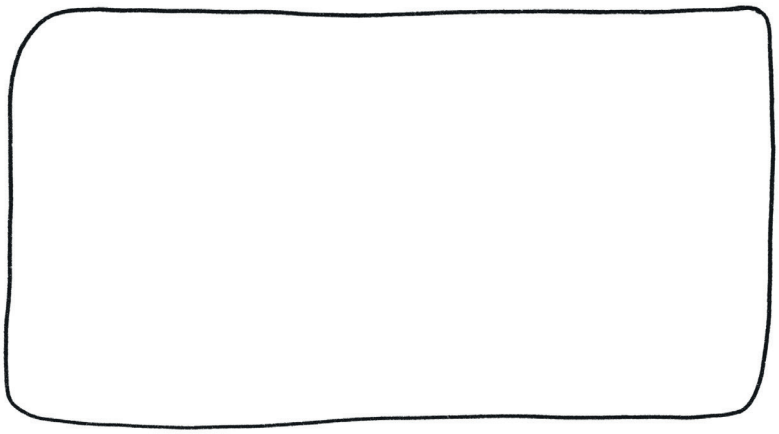


ASSIGNMENT 6

MAPPING YOUR FRAME OF REFERENCE

STEP 1:

START WITH A BLACK-AND-WHITE SKETCH THAT REPRESENTS YOUR CURRENT FRAME OF REFERENCE.



STEP 2:

USE COLORED MARKERS TO ADD NEW PERSPECTIVES, REPRESENTING INFLUENCES LIKE COMMUNITY, CULTURE, EDUCATION, OR PERSONAL BELIEFS. LET COLORS OVERLAP TO SHOW WHERE PERSPECTIVES INTERSECT. COLOR OUTSIDE THE LINES TO VISUALIZE EXPANDING YOUR CURRENT FRAME OF REFERENCE.

STEP 3:

HOW DO YOU CONCEPTUALIZE "HEALTH" AND "WELL-BEING"? DRAW SYMBOLS OR IMAGES THAT COME TO MIND WHEN YOU THINK OF THESE CONCEPTS. ARE THEY PHYSICAL, EMOTIONAL, OR ABSTRACT?

WHICH VALUES AND BELIEF SYSTEMS FORM YOUR UNDERSTANDING OF HEALTH EQUALITY? USE DIFFERENT COLORS TO ILLUSTRATE EACH VALUE OR BELIEF. FOR EXAMPLE, A CERTAIN COLOR MIGHT REPRESENT FAMILY INFLUENCE, WHILE ANOTHER SHOWS CULTURAL BACKGROUND, OR YOUR RELIGION.

EMPHASIZE COLORS BY SHADING OR EXPANDING THEM TO INDICATE WHICH BELIEFS HAVE A STRONGER INFLUENCE ON YOU. USE LINES AND SHAPES TO SHOW THE DEPTH AND SPREAD OF EACH INFLUENCE ACROSS YOUR FRAME OF REFERENCE.

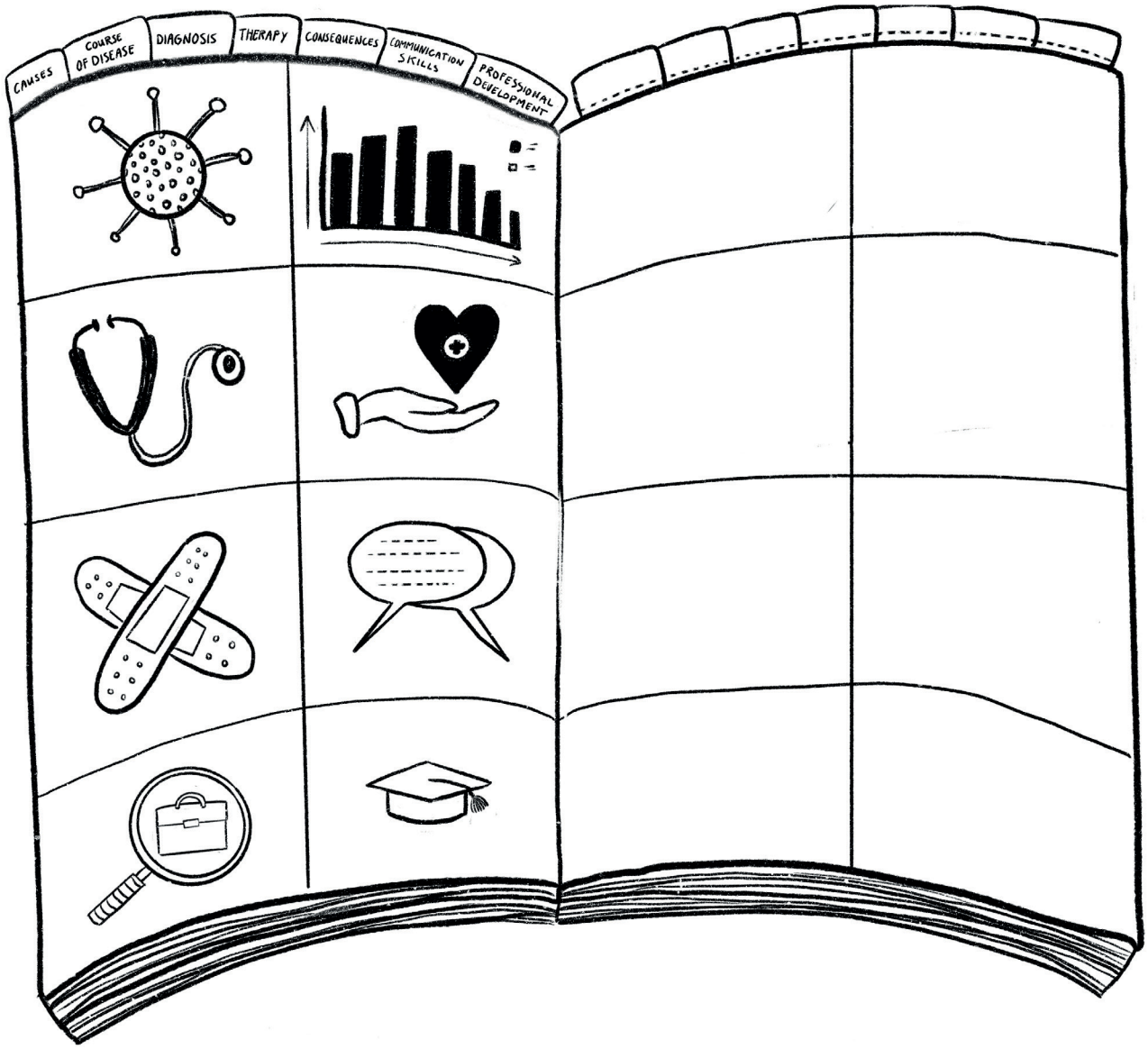
STEP 4:

HOW DOES THE EFFECT OF THESE BACKGROUNDS CHANGE OVER TIME? THINK ABOUT A TIMELINE OF INFLUENCES. USE LINES, ARROWS, BOXES OR OTHER SYMBOLS TO SHOW WHEN AND WHERE THEY INFLUENCED YOU.

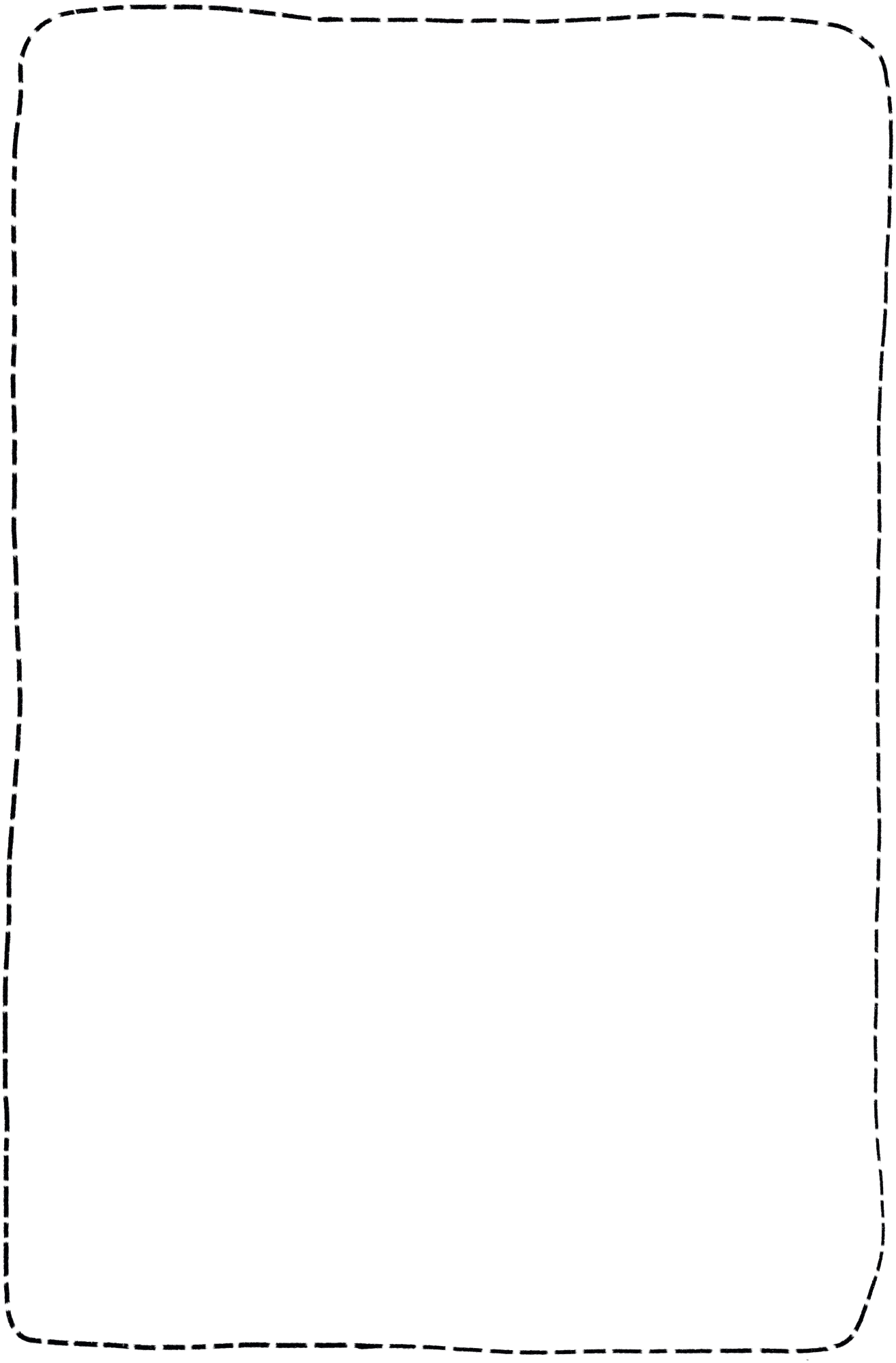
ASSIGNMENT 6

WHAT IS HIDDEN IN THE CURRICULUM?

DRAW OR COLOR WHAT REMAINS HIDDEN IN MEDICAL EDUCATION. CONSIDER TOPICS RELATED TO HEALTH THAT ARE OFTEN MISSING FROM CURRENT CURRICULA, SUCH AS: GENDER, DIVERSITY, CULTURAL SENSITIVITY, AND RACISM, LIFESTYLE, AND NUTRITION. HOW AND WHERE COULD THESE TOPICS BE INCLUDED IN MEDICAL EDUCATION?



WHY ARE THESE TOPICS NOT CONSIDERED OR RARELY DISCUSSED IN MEDICAL EDUCATION?



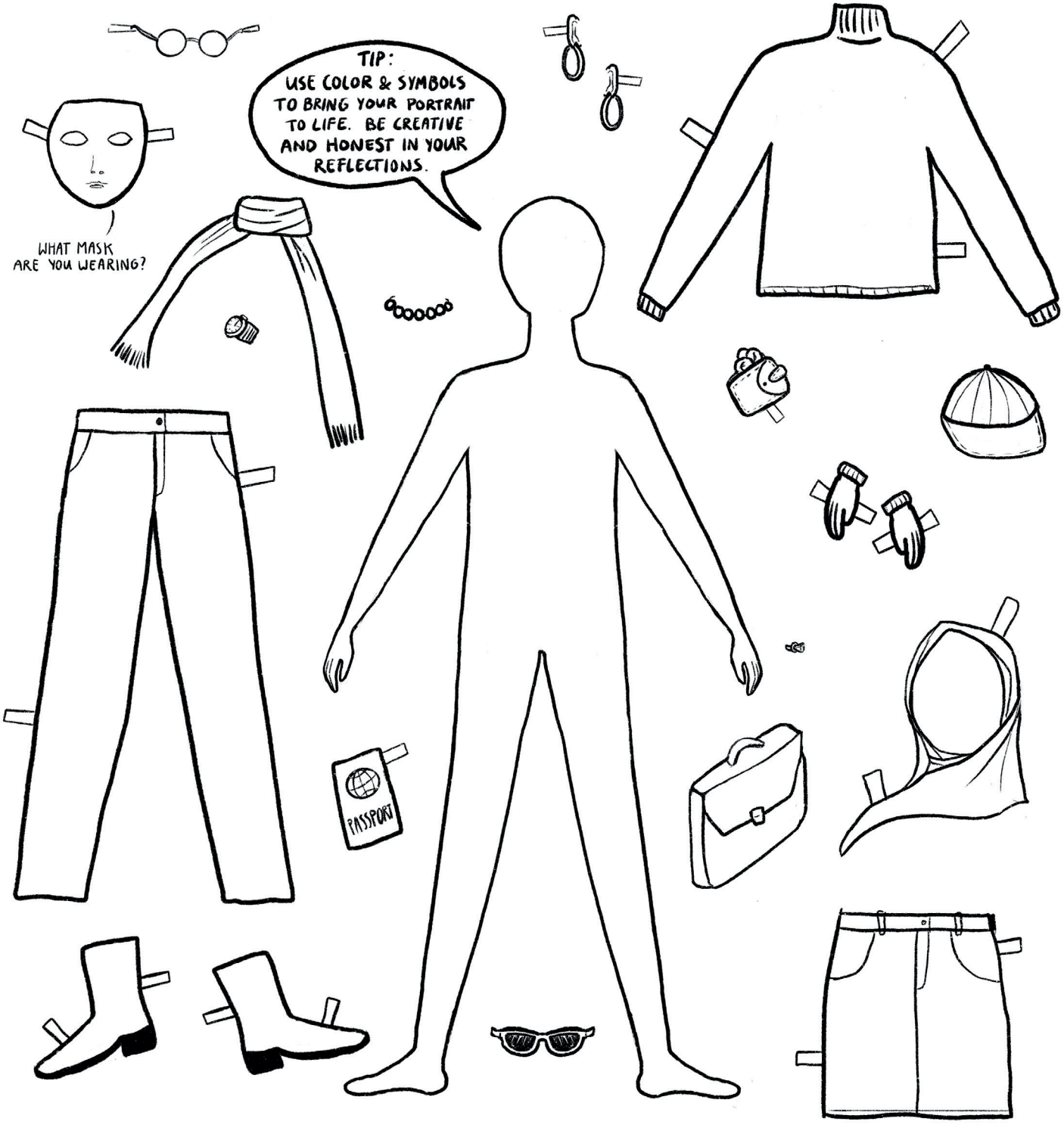
ASSIGNMENT 8

REFLEXIVITY - A SELF-PORTRAIT

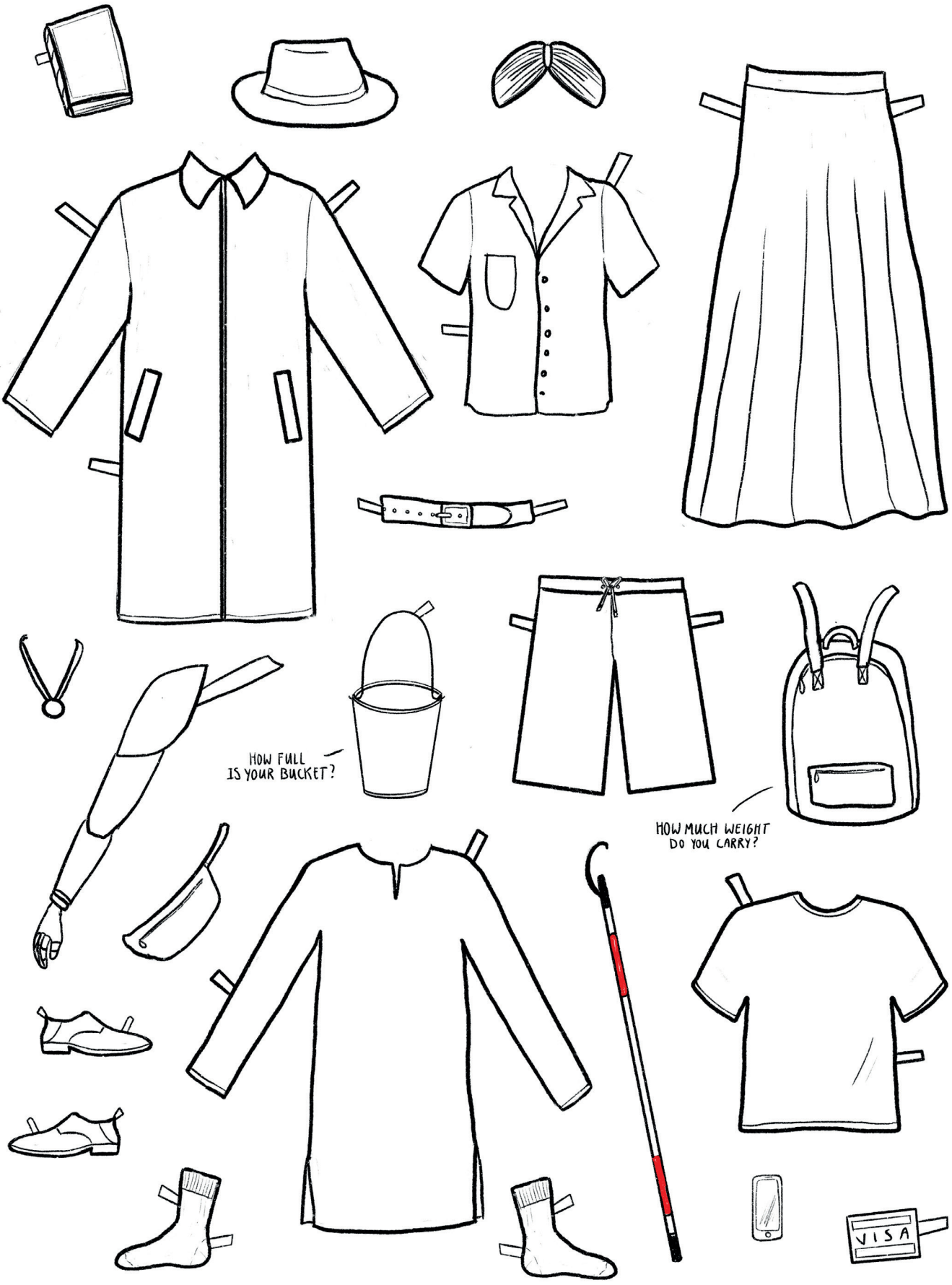
WHAT ARE YOUR HIDDEN FLAWS? WHAT ARE YOUR PRIVILEGES AND DISADVANTAGES?

IN THIS ASSIGNMENT, YOU WILL CREATE A SELF-PORTRAIT USING A PAPER DOLL AND VARIOUS CLOTHING ITEMS AND ACCESSORIES. THE GOAL IS TO HELP YOU BECOME AWARE OF YOUR SOCIAL POSITIONING AND IT'S IMPACT ON YOUR RESEARCH.

STEP 1: COLOR THE PAPER DOLL AND THE ACCESSORIES. THINK ABOUT ASPECTS OF YOUR IDENTITY SUCH AS AGE, RELIGION, PROFESSIONAL BACKGROUND, AND SKIN COLOR. SEE BOX: INTERSECTIONALITY.



STEP 2: ADD SYMBOLS, WORDS OR DRAWINGS TO EACH CLOTHING ITEM THAT REPRESENT YOUR BACKGROUND OR EXPERIENCES.



WRITE DOWN WHAT IT MEANS TO YOU AND HOW YOUR PRIVILEGES AND DISADVANTAGES IMPACT YOUR VIEW OF THE WORLD.

ASSIGNMENT 9

PHOTOVOICE:
STUDYING GENDER AND HEALTH AMIDST THE CLIMATE CRISIS

STEP 1: MAKE DRAWINGS (OR PASTE PHOTOS) OF TWO SITUATIONS RELATED TO GENDER, HEALTH, OR THE CLIMATE. WHAT DO YOU SEE IN THE PHOTOGRAPHS?

WHAT DO YOU SEE IN THIS PHOTO?

WHAT IS HAPPENING HERE?

WHAT REMAINS UNSEEN IN THE PHOTO?

EXPLAIN WHAT IS MISSING AND WHY IT'S IMPORTANT:

WHAT DO YOU SEE IN THIS PHOTO?

WHAT IS HAPPENING HERE?

WHAT REMAINS UNSEEN IN THE PHOTO?

EXPLAIN WHAT IS MISSING AND WHY IT'S IMPORTANT:

STEP 2: DRAW WHAT IS MISSING FROM THE PHOTOS. ADD ELEMENTS THAT ARE IMPORTANT BUT NOT VISIBLE. COLOR OUTSIDE THE LINES.

STEP 3: DRAW A RED THREAD AROUND THE VISIBLE AND INVISIBLE ELEMENTS TO SHOW THEIR CONNECTION.

CHAPTER 6: PUBLIC POLICY, INTERSECTIONALITY, AND HEALTHY CITIES

Petra Verdonk, Josefien van Marlen, Natalia Tumas, Irene van Valkengoed

In This Chapter

- Planetary Health crisis, Intersectionality, and Health (In)Equities in Urban Policy Development and Analysis
- Concepts, Methodological Approaches, Tools, and Frameworks to Guide Equitable Policy Development and Analysis, e.g.
  - Public Policy
  - Feminist Systems Thinking
  - Color-Evasiveness
  - Action Framework - Getting Started on Intersectionality in public policy
  - Intersectionality-Based Policy Analysis (IBPA)
  - Action Research
  - Gender Mainstreaming
  - Systematic Review

Background

Public policy focuses on identifying problems, determining their solvability, exploring potential solutions, assessing the costs of these solutions, and evaluating their effectiveness (Hankivsky, 2012). *Health care policy* pertains to decisions, plans, and actions within the health sector aimed at achieving specific health care goals, concentrating on the health system. Public health policy encompasses regulations, laws, and policies implemented in society to promote well-being and to ascertain that health-specific goals are met. Additionally, a wide range of *public policy issues* influences health determinants, such as the regulation of natural resources, education, agriculture, and transportation. In this chapter, we examine examples of public policy analysis and development, primarily urban policies, and assess how they promote equitable, healthy, and sustainable environments (Lowe et al., 2022).

This focus is pertinent as more than half of the global population currently resides in cities, with projections indicating that two-thirds will live in urban areas by 2050 (Karpf, 2021). City planning can yield co-benefits: (a) for human health, such as creating walking- and cycling-friendly cities with accessible public spaces; (b) for climate action, including reducing CO2 emissions and air pollution; and (c) for Planetary Health equity (Lowe et al., 2022; Karpf, 2021). Urban planning necessitates integrated approaches both vertically (across different levels of government) and horizontally (across all relevant sectors).

The concept of "healthy cities" describes a process rather than a static state. It involves a "commitment to health", "a continuous striving to improve physical and social environments", and "expanding community resources that enable people to support one another" (WHO, n.d.). Cities continuously confront emergencies attributed to among other issues gender- and race-based violence, social inequities, poverty, crises of care, epidemics or pandemics, and extreme weather events related to the climate crisis. A healthy city is defined as "a place to deliver for the people as well as for the planet" (WHO, n.d.). Consequently, cities are increasingly viewed as sites for solutions, rather than merely as locations where problems originate (Karpf, 2021). In 2017, the Women4Climate initiative, launched by Paris Mayor Anne Hidalgo, convened women within the C40 Cities Climate Leadership Group to work toward solutions (Karpf, 2021). The initiative aimed for gender-inclusive climate action, such as providing access to green jobs, investing in women and marginalized communities, and ensuring that everyone benefits from climate action (C40.org, 2024). It is evident that both the causes and solutions to climate change are not gender-neutral (Rainard et al., 2023).

Gender and Intersectionality in Public Policy

Similar to other research fields, gender in climate change research and policy analysis is often approached as a men-women dichotomy rather than as a multifaceted social dimension. Furthermore, power dynamics and social and political relations are frequently overlooked (see Box: Sex and Gender) (Kaijser & Kronsell, 2014; Djoudi et al., 2016). Thus, significant work remains to be done. In 2023, Zachariassen and colleagues from the GenderAction+ network highlighted that European research and innovation policies (R&I) inadequately address overall inclusion and intersectionality. Consequently, a discourse of "feminization of vulnerability" and "victimization" is often perpetuated, while the contextual factors that render women and gender minorities more susceptible to the adverse impacts of climate change remain obscured. Vulnerability to crises, including the climate crisis, results from numerous factors, particularly those shaped by political and societal institutions such as housing, transportation, and energy (Hankivsky, 2014). Ecofeminist and intersectional approaches are bridging the gap between human/social dimensions and non-human nature (see Box: Ecofeminism; see Box: Feminist Systems Thinking) (Stephens, 2013; Thomas, 2022).

Box: Feminist Systems Thinking

Research on humans is often decontextualized from social, political, and environmental contexts. Ecofeminists have long criticized the dichotomy between human and non-human nature, asserting that nature should be central to analysis as they saw a connection between the exploitation of non-human nature and the oppression of women by patriarchal systems (e.g., Shiva, 2010; Thomas, 2022). Stephens (2013) developed Feminist Systems Thinking (FST) based on ecofeminist principles, such as centering nature, gender sensitivity, and valuing marginalized voices. The FST framework provides a lens for self-reflection and reflective inquiry while aiming to avoid essentialist perspectives that portray women as inherently better connected to "the earth" or "non-human nature" (Stephens, 2013).

The development and effectiveness of a policy may depend on its social acceptability. Civil society, including the women's movement, often plays a role in advocating for policies, although it is ultimately the government's responsibility to create them (Hankivsky, 2012). Policies never begin "anew" and are inherently reductionist and incrementalist (Hankivsky & Cormier, 2011). When intersectionality is integrated into mainstream health care and public health policy development, it can shift policy reform by identifying interacting determinants of health beyond the health care system itself, addressing broader structures of inequality, and leading to more effective and responsive policymaking (Verdonk et al., 2019).

Types of policy interventions may include changes in standards, regulations, laws, funding, and incentives (e.g., subsidies). Public policy development based on high-quality policy analysis can support health, equity, and sustainability in climate action (Khanal et al., 2022). This is crucial, as particularly vulnerable groups are often excluded from policy considerations (intersectional failure), frequently due to a lack of (quantitative) data. For instance, in France, the government is prohibited from collecting ethnic or racial data, rendering ethnic and racial minorities invisible—there are no quantitative data on these groups to expose discrimination (CIJ, 2019). In 2019, the Center for Intersectional Justice (CIJ), as part of the European Network Against Racism (ENAR), explored intersectionality in relation to addressing discrimination in Europe. Their report stated that the historical and contemporary impacts of racism on society, as well as exclusion and privilege, are often overlooked in intersectional policy. In countries like the Netherlands, Belgium, and France, color and race are frequently deemed irrelevant across various fields, including legislation and policymaking. Therefore, in this European context, it is essential to be mindful of "color-evasiveness." Color-evasiveness refers to (a) the legal principle that race is supposed to be irrelevant to law, policies, and society at large, and (b) post-racialism, the discourse suggesting that "race" has been transcended as an organizing principle of society (CIJ, 2019). Color-evasiveness is often used to justify the absence of laws and policies targeting discrimination.

Box: Action Framework - Getting Started on Intersectionality in Policy

In Europe, implementing intersectionality in policy development is still relatively new. In 2022, the Dutch Ministry of Education, Culture and Science and the Ministry of Social Affairs and Employment initiated a pilot program on "intersectionality in policy." In this pilot, the ECHO Center for Diversity Policy developed the *Action Framework: Getting Started with Intersectionality in Policy* as a practical tool aimed at guiding governmental policymakers in integrating intersectionality into policy development (ECHO, 2023; ECHO, 2024). This framework introduces intersectionality as a lens for understanding how overlapping identities—such as race, gender, and socioeconomic status—intersect to create unique experiences of privilege and oppression.

The *Action Framework* breaks down the process of policy development from an intersectional perspective into clear steps:

(1) Identifying the problem;
(2) Reflecting on your own social position as a policymaker;
(3) Conducting an intersectional analysis;
(4) Applying practical strategies, and;
(5) Monitoring and evaluating policy outcomes.

This structured approach ensures that policymakers consider the complexity of social inequalities and avoid the pitfalls of one-size-fits-all solutions. Intersectionality offers a nuanced understanding of social issues and provides a methodology for developing more equitable policies that account for the diversity of experiences among different populations and within a single population (ECHO, 2023).

High-quality policy analysis should recognize that individuals can experience both privilege and oppression simultaneously. Inequities manifest in tangible ways, such as access to natural resources, clean air and water, healthy food, and quiet environments (Thomas, 2022). To address the interconnected polycrisis of socioeconomic issues, a crisis of care, violence, racism, discrimination, and the increasing health impacts of climate change, intersectional frameworks and equity principles are invaluable. Such a framework can assist policymakers in urban planning and other policy domains to tackle inequalities in more holistic ways and build transformative sustainable futures (Amorim-Maia et al., 2022; Amorim-Maia et al., 2023).

While equity is a crucial dimension of health care policy, public health policy, and public policy development and analysis, different interpretations of equity exist. For instance, policy analysis may focus on procedural equity (ensuring fair processes) or substantive equity (ensuring policies reduce inequities among the target populations). Contextual equity links these two types by considering pre-existing political, economic, and social conditions.

Gender and Intersectionality in Climate Adaptation and Policy Research

Regarding climate change, Kaijser and Kronsell (2014) advocate for an intersectional analysis as a tool for critical thinking and understanding its complex dimensions, including relationships with "earth others" or non-human nature. Often, the reconciliation of human/social and natural dimensions has been excluded from policy analysis (Hankivsky & Cormier, 2011). The interconnectedness of different goals, such as equality and equity, improved conditions for marginalized groups, and respect for non-human nature or environmental sustainability, should be central in research and political projects (Kaijser & Kronsell, 2014). Intersectionality prompts normative questions about what constitutes a good life, how it is lived and achieved, and in whose interests. Public policies and research should strive to avoid pitfalls such as treating "affluent masculinity" or the elite white middle class as the norm.

Several suitable frameworks that account for equity are available. In their study protocol, Khanal et al. (2022) outline a systematic review exploring policy analysis frameworks to understand health equity in climate change policies and public health policies related to climate change. Amorim-Maia et al. (2022) developed a conceptual framework specifically for climate adaptation research in urban planning, focusing on the reinforcers of racial and gender inequalities and taking the politics and ethics of care seriously. Another example of an inclusive framework is the United States Department of Health and Human Services Centers for Disease Control and Prevention's (CDC) Building

Resilience Against Climate Effects framework (BRACE). BRACE proposes five steps in public health policy development and incorporates principles of justice, equity, diversity, and inclusion (CDC, 2024).

Centering Inequities in Public Policy

In the next section, we showcase three examples of interdisciplinary policy research. In these examples, frameworks that incorporate gender and intersectional approaches and center equity are applied to studying public policies:
(I) an Intersectionality-Based Policy Analysis of an urban planning Participatory Action Research project in Barcelona, which, while not explicitly focusing on health, demonstrates health benefits from the implemented policies (Amorim-Maia et al., 2022);
(II) a comparative case study policy analysis in Spain and Austria examining Gender Mainstreaming and intersectional approaches in policy documents (Charafi, 2023); and
(III) a systematic review on gender and Intersecting Inequalities in climate change adaptation policy studies (Djoudi et al., 2016).

Example I: Governing Intersectional Climate Justice: Tactics and Lessons from Barcelona
To bridge the domains of adaptation planning, transformative action, and social equity in cities, Amorim-Maia et al. elaborated on the concept of intersectional climate justice (see Box: Climate Justice) (Amorim-Maia et al., 2022; Amorim-Maia et al., 2023; Thomas, 2022). This approach aims to create new opportunities for more inclusive and resilient cities at both the individual and community level.

Barcelona is an early adopter of "intersectional climate justice" policies (Amorim-Maia, 2022). The City of Barcelona serves as a critical case study illustrating categories of governance and decision-making tactics. The municipality aimed to build resilience to climate change while addressing structural inequalities in accessing the built environment, health services, energy, housing, and transportation experienced by frontline communities. Since 2015, the City of Barcelona has implemented measures to create a greener, more liveable, and inclusive city while targeting social and economic inequalities, utilizing a 'feminist urbanism' perspective, recognizing and rectifying the gendered allocation of time for work, family, socializing, resting, and caregiving. The city's efforts are categorized as "climate connected" according to Bulkeley's (2021) framework of urban climate governance history; that is, Barcelona acknowledges that climate challenges are intricately intertwined with social justice concerns. Communities were involved in planning for climate change, and citizen participation was maximized through inclusive decision-making processes in various ways (see Box: Action Research; see Box: Participatory Action Research).

Box: Action Research

Action research combines social action with scholarly reflection. Research-in-action refers to the integration of research and the identification of problems or phenomena in practice with social action in iterative loops. Action research aims to avoid the conceptualization of dualistic interactions between researchers and end-users in knowledge translation: from researcher to policymaker or from researcher to health care professional (Poole, 2012). Such a linear relationship, whether top-down, bottom-up, or both, between scientific evidence and effective policy does not exist (Schofield, 2012). Knowledge follows a complex route toward implementation in policies and practice, characterized as a social, dynamic process involving power relations and hierarchies. In action research, complexity is embraced, and the role of the researcher is that of a "boundary spanner," facilitating connections between multisectoral partners or stakeholders involved and supporting the "knowledge-to-action" process (Poole, 2012; Bradbury & Lifvergren, 2016).

Prioritizing Planetary Health in policies—Bradbury (2022) states that given the existential nature of the climate crisis, Planetary Health, sustainability, and social justice must be prioritized in policies. Such prioritization may happen when those who are privileged recognize that caring for everyone, including 'earth others' is in their own interest. Action research invites researchers to enhance knowledge creation, by moving beyond individual expert knowers toward collective decision-making based on diverse perspectives, thereby shifting towards a life-sustaining civilization (Bradbury, 2022).

In the case of Barcelona, a free and open-source online platform was made available for individuals who lacked time or felt uncomfortable with in-person sessions. The city also sought to provide technological support in neighborhoods with high levels of digital divide, aiming to enhance the participation of women, immigrants, and youth. Officials reached out to specific collectives and trusted key figures. Moreover, translation services and assistance were offered for individuals with impairments, and session locations were diversified. Other actions included providing childcare services during participatory sessions and financial remuneration for participation. Despite these efforts, participation has proven to be challenging (Amorim-Maia et al., 2023).

In evaluating Barcelona's initiative, Amorim-Maia (2023) identified and analyzed 33 policy documents since 2015, including city plans, declarations, and commitments related to climate action and social justice. Additionally, 23 in-depth interviews were conducted with municipal employees, technicians, and elected officials, applying the Intersectionality-Based Policy Analysis (IBPA) framework (Hankivsky, 2014; Hankivsky et al., 2014). IBPA serves as an analytical tool to examine inequalities and inequities across their intersections in policies (see Box: Intersectionality; see Box: Intersectionality-Based Policy Analysis) (Hankivsky et al., 2014). Such analysis forms the basis for developing more equitable and socially just interventions, which may include changes in standards, regulations, laws, funding, and incentives (e.g., subsidies). Equality refers to the absence of discrimination and equal opportunities, while equity refers to addressing needs, including health needs, that may be similar or different among groups (Hammarström et al., 2014).

Box: Intersectionality-Based Policy Analysis (IBPA)

The Intersectionality-Based Policy Analysis (IBPA) Framework aims to address and respond to the complex interacting social locations, forces, factors, and power dynamics that shape and impact human life and health. IBPA was created and refined through a multisectoral participatory and iterative process (Hankivsky, 2014; Hankivsky et al., 2014). IBPA includes descriptive and transformative questions to guide policy analysis. Descriptive questions aim to generate critical background information about policy problems, revealing assumptions that underpin current policy priorities, targeted populations, and the inequities and privileges created by existing policies. For example, descriptive questions include, "What is the policy problem under consideration?" or "How are groups differentially affected by this representation of the problem?" (Hankivsky et al., 2014). Transformative questions assist in developing alternative policy responses and solutions aimed at structural social change and the promotion of social justice. Transformative questions include, "How will proposed policy responses reduce inequities?" or 'How will you know if inequities have been reduced?" (Hankivsky et al., 2014).

Interviews included questions about government coordination and collaboration, conceptualizations of justice, equity, and vulnerability, implementation of climate strategies, challenges, and other topics. Results indicated that Barcelona's policies operationalized intersectional climate justice through several governance tactics, including:

(1) experimenting with unpopular disruptive planning strategies and accepting that there will be contestation, e.g., traffic calming strategies, while communicating benefits such as health and safety, reduction of carbon emissions and noise pollution, improvement of air quality, and increase of communal spaces;
(2) working transversally across agencies and actors by mainstreaming climate and gender in all policies, e.g., monitoring climate health impacts to combat vulnerability, health problems, and energy poverty, and training municipal employees;
(3) centering everyday life, care, and caregiving in urban planning, e.g., policies to identify and connect caregivers to enhance their well-being and support systems, and provide knowledge and skills training (e.g., training on mitigating health risks from heat waves), and;
(4) mobilizing place-based actions related to the equitable distribution of climate goods and services, as well as actions that advance justice through participatory processes, such as the 219 climate shelters in schools, libraries, and civic centers that 95% of residents can reach within a 10-minute walk, retrofitting homes of marginalized populations in low-income neighborhoods, regulating the housing market, and efforts to allocate at least 20% of public housing for women and single-parent families.

Example II: Gender Mainstreaming and Intersectionality in Urban Planning Policy Analysis

In policy development and analysis, Gender Mainstreaming is often employed to institutionalize gender in practices, processes, and procedures (see Box: Gender Mainstreaming). As a strategy for change, Gender Mainstreaming refers to integrating gender into institutional practices, procedures, and processes, including policies, to transform ways of seeing and doing (Rees, 2002). The lessons learned may be applied to climate mainstreaming, as the climate crisis demands rapid implementation across various aspects of development and policy.

Box: Gender Mainstreaming

Gender Mainstreaming assumes that gender bias operates across institutional practices and routines that are presented as neutral. As a strategy for change, it involves integrating gender into institutional practices, procedures, and processes, including policies, by systematically collecting and analyzing statistical information about gender inequality and engaging regular actors within those institutions (Squires, 2007; Charafi, 2023). This approach aims to transform patriarchal structures that perpetuate gender inequality at the organizational, policy, and program levels (Rees, 2002; Squires, 2007). Gender Mainstreaming has been adopted as an approach to policy development, from the European Union (EU) to municipal levels, to ensure that policies are more gender-sensitive and equitable. Squires (2007) defines three strategies for mainstreaming:

(1) Inclusion targets the exclusion and disadvantage of women by focusing on "adding women." This integrative approach assumes the sameness of men and women ("principle of equality") and prioritizes equal opportunities while leaving existing structures intact.
(2) Reversal assumes differences between men and women ("principle of equity"), highlighting sex- and gender-specific needs and challenging male-dominated knowledge, cultures, and practices. However, Squires also warns that inclusion and reversal strategies can reinforce patriarchal assumptions and contribute to the notion that sex and/or gender, across their intersections, are static characteristics of individuals or categories.
(3) Displacement is the third strategy, which focuses on a broader concept of diversity and disrupts assumptions of equality/sameness and inequality/difference (Walby, 2005). This strategy exposes underlying normative processes and critiques static approaches to sex and gender, recognizing these social categories as products of political, socio-cultural, and scientific discourses. A displacement strategy transforms "the mainstream" and supports in developing new practices (Squires, 2007; Walby, 2005), aligning more closely with an intersectional approach (see Box: Intersectionality; see Box: Intersectionality-Based Policy Analysis - IBPA).

Climate mainstreaming refers to the integration of climate considerations into programs, policies, and organizations (Lam et al., 2024). Climate mainstreaming in decision-making is seen as crucial for sustainability, and learning from the lessons of gender mainstreaming may accelerate this process. Among the obstacles to Gender Mainstreaming are insufficient resources, bureaucratic co-optation, and the depoliticization of feminist and queer agendas, which undermine its transformative potential. Gender expertise is often inadequately integrated and, when included, is frequently narrowly conceptualized, overlooking intersections with other social identities. Climate mainstreaming emphasizes the urgency of climate justice by prioritizing communities at greater risk of climate change impacts and engaging diverse perspectives in decision-making (Lam et al., 2024; Rainard et al., 2023).

So far, urban planning has given little attention to the specific needs of women, instead promoting "masculine models" of daily life. Such gendered injustices are evident in public building spaces allocated for sports, business, safety, and private transport, with for instance insufficient consideration for (child)care facilities (Charafi, 2023). "Women-friendly" cities should be equitable cities for all residents. Equity manifests in "liveability" by accommodating the infrastructural, social, and spatial needs of all genders, including non-binary individuals and women and girls of all ages and backgrounds. Achieving social equity and justice in urban climate plans requires specific governance principles and arrangements (Amorim-Maia et al., 2022).
In a comparative case study, Charafi (2023) examined how linking Gender Mainstreaming as an institutional tool with intersectionality as a theoretical and analytical framework was addressed in urban planning (see Box: Gender Mainstreaming; see Box: Intersectionality-Based Policy Analysis - IBPA). Cities in Austria and Spain were selected because:

(a) both countries rank high (10th and 6th, respectively) on the 2022 Gender Equality Index (GEI) according to the European Institute for Gender Equality (EIGE, 2024);
(b) both countries have undergone significant urban transformation but have different governance structures; and
(c) while Austria has advanced gender equality policies and a high level of Gender Mainstreaming in policy, Spain has been criticized for a lack of progress in Gender Mainstreaming and for a gap between formal gender equality policies and their implementation.

The study does not analyze connections to non-human nature, but the policies included in the analysis address issues such as playgrounds, public transport, and housing conditions for older women. Older women living in older housing may be at higher risk for excess land surface temperature (Mashhoodi, 2021) and, consequently, heat stress. A mixed-method study was conducted using qualitative interviews, either in person or via phone/videocall, with experts selected based on their experience and knowledge (architects, urbanists, gender experts, key policymakers), alongside a policy analysis that involved collecting and reviewing policy documents at national and local levels. The policy analysis focused on goals, strategies, implementation processes, and thematically and quantitatively analyzing interviews and documents for content related to Gender Mainstreaming, intersectionality, and urban planning. This approach allowed for data triangulation, enhancing the authenticity and credibility of the findings.

An example from Charafi's overview illustrates how, in the 1990s, Vienna created 357 homes (Frauen-Werk Stadt) specifically for women, particularly single mothers, older women, and women seeking community. Women were involved in the design process. The project aimed to facilitate both paid and unpaid work, for instance, by safeguarding views from the kitchen to the courtyard and the playground. It was designed to foster community and safe living spaces, improving the living conditions of older women and young people through features such as fenced playgrounds, pedestrian zones, and proximity to public transport. With these measures, the city's Urban Development Plan prioritized the needs of caregivers, women, children, older persons, and low-income residents by promoting equitable mobility.

In an example from Spain, gender-responsive design principles were applied in urban space design, emphasizing accessibility, safety and inclusivity by considering the specific needs of various groups, such as women with disabilities and sexually and gender-minoritized individuals. The participation of women in urban planning was supported.

Despite the consideration of multiple groups' needs in these examples, the study revealed that urban policies in both Austria and Spain predominantly adopted a "gender-first" approach. Intersectionality was not explicitly included in the urban policies studied. Charafi (2023) noted that a lack of data (or misuse of available data), compartmentalized work environments, unclear instructions on integrating intersectionality, and inadequate training hindered the development of intersectionality-informed policies. The author observed that although there was awareness of the importance of intersectional issues, such as integrating the needs of marginalized groups women and of other marginalized populations into policies, further institutionalization is required.

Example III: Systematic Reviews on Gender and Intersecting Inequalities in Climate Change Adaptation Studies

Djoudi et al. (2016) reviewed literature on gender and intersecting inequalities in climate change adaptation studies, incorporating 42 studies addressing gender in contexts such as droughts or gradual changes in rainfall. In the review, the three specific aspects of Kaijser and Kronsell's (2014) intersectionality framework—(1) intersecting categories, (2) multilevel analysis, and (3) power—were expanded with a fourth dimension: (4) analysis of emancipation pathways and agency. This dimension is considered crucial for adaptation strategies, prompting questions about whether the included studies referred solely to vulnerability or also to agency, and whether the results provided evidence for resistance to social norms (see Box: Intersectionality-Based Policy Analysis - IBPA) (Djoudi et al., 2016).

The number of policies adopting a multilevel approach appeared relatively low. This is problematic because climate change policy is often determined at the national level, while adaptation and vulnerabilities are primarily local in nature, necessitating context-specific data. Often, men and women reported differing perceptions of climate variations, causes, and impacts, but implications for individual or household vulnerability frequently remained unaddressed. In the included studies, gender differences in perceptions were often explained by variations in daily lives, roles, and responsibilities. Although this approach represents a first step, it has been criticized, for instance, by Schofield (2012). While measurable differences between sexes and genders have become more common in research and policy, gender remains a complex phenomenon (see Box: Action Research).

Inequality, equity, and rights-based arguments were employed in only a few studies, and power relations were rarely explicitly addressed. Intersectionality was not explicitly applied, although some papers referenced existing intersectional inequalities or subgroups within male and female categories, and data were often disaggregated according to social categories. Nevertheless, the intersectional nature of vulnerability is seldom addressed.

Djoudi et al. (2016) concluded that the discourse surrounding climate change and vulnerability often resembles a "vulnerability Olympics," where competition arises for the title of "most oppressed" to gain support, resources, and recognition (see also Hankivsky, 2012). When gender is integrated, it is often limited to focusing on "vulnerable women." However, vulnerability among women cannot simply be 'assumed'. Women from socially disadvantaged groups may engage in new activities following disruptions to their community's social structure due to drought and male migration. Interestingly, these women were sometimes less vulnerable than women from higher social classes who were less able to adapt their strategies. It is crucial to analyze how social dynamics are affected by climate change and whether new social interactions, such as shifts in gender patterns, can occur due to climate change, including extreme weather events. Migration is often a male-dominated adaptation strategy, and while diversification of livelihood activities may benefit those who remain, it is frequently restricted for women due to cultural limitations. However, shifts in gender roles and patterns, along with collective action, can yield positive gender outcomes, and women's engagement in collective action has strengthened their power within households. Solutions for climate adaptation often center around traditionally male-dominated domains, such as technologies. A stronger consideration of feminist research on climate change must challenge masculine technical and expert knowledge about climate change and avoid reproducing gendered polarities that maintain the status quo (Djoudi et al., 2016).

Reflections on the Examples

The literature search conducted for this chapter did not yield urban policy studies that simultaneously addressed climate change, health, and equity. Therefore, we included policy research that addressed gender, intersectionality, and urban planning, which implicitly, but not explicitly, addressed health.

Regarding the theoretical and methodological approaches to the examples, we conclude with a few critical notes. Gender Mainstreaming has faced criticism for its gender-first approach, which can make gender an "add-on," conflating "gender" with "women" and neglecting its non-binary construct, thereby diluting radical gender and feminist theories (e.g., Nagel & Lies, 2022; Rainard et al., 2023). Although an intersectional perspective may help to avoid several of these pitfalls in research, intersectional policy can also be depoliticized. This occurs, for instance if only women's vulnerabilities from the climate crisis are cataloged while men's vulnerabilities are overlooked, when gendered relations and men's power are not addressed, or when the relationship between masculinity and fossil fuels is ignored (see Box: Masculinities) (CIJ, 2019; Daggett, 2018; Hankivsky, 2012; Qureshi et al., 2022). Recently, a growing number of researchers advocate for gender-transformative responses and interventions that incorporate an intersectional approach in line with critical ecofeminist theories (see Box: Ecofeminism; see Box: Gender-Transformative Science and Interventions) (e.g., Nagel & Lies, 2022). For those working in health research, integrating gender may be viewed as incorporating another wicked problem. However, policy research in urban planning requires comprehensive, interdisciplinary, multilevel, and multistakeholder approaches from a climate justice perspective. Life on this planet, including human health, deserves nothing less.

Next Steps

- Many factors, particularly those shaped by political and societal institutions, render individuals vulnerable to the effects of climate change. Rather than solely studying who is vulnerable, research should also focus on oppressed groups and systemic (macro-contextual) determinants.
- Place social and gender equity at the forefront of policy development and research for green and healthy cities, rather than promoting "masculine models" of daily life and centering male-dominated domains such as technologies.
- Research is needed on intersecting social dynamics in relation to climate change. Shifts in gender patterns and vulnerabilities can occur as a consequence of and adaptation to climate change.
- Research must address men's power and actions while contributing to women's agency and opportunities for collective action to strengthen their power, rather than merely describing "vulnerabilities." This includes addressing the specific needs of women with disabilities and sexually and gender-minoritized individuals.
- Action research may be beneficial as it combines research with (rapid) social action, avoiding the assumption that a linear relationship exists between scientific evidence and effective policy.

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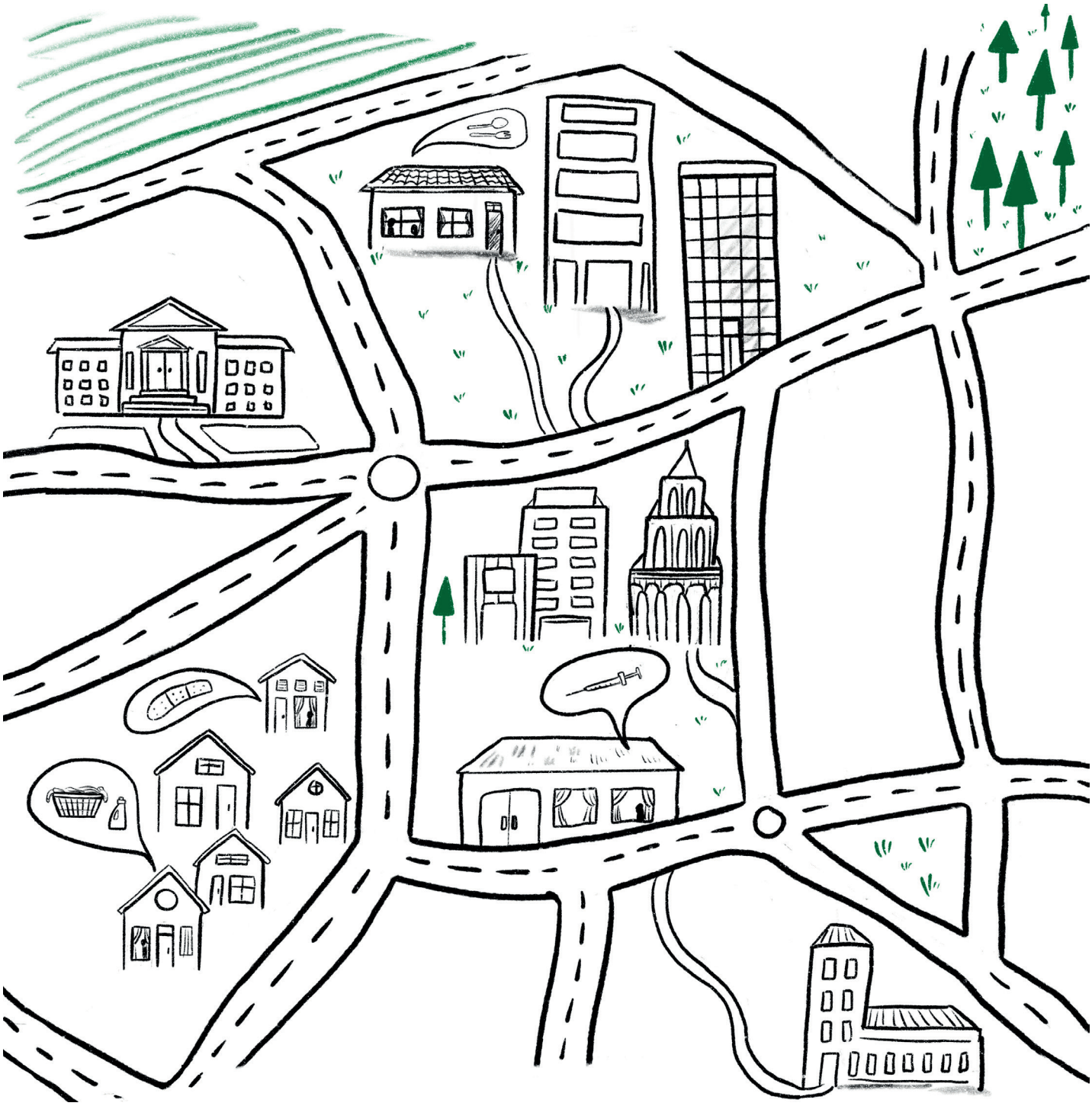
ASSIGNMENT 10

DESIGN AN INCLUSIVE CITY

EXPLORE HOW THE CITY CAN CONTRIBUTE TO HEALTH, WELL-BEING, AND EQUITY.
IMAGINE A NURSE WHO CYCLES THROUGH THE CITY PROVIDING CARE TO PEOPLE FROM DIFFERENT BACKGROUNDS. EVERYONE NEEDS AFFORDABLE HOUSING, GREEN SPACES, AND ACCESS TO HEALTHY FOOD. WHAT DOES SHE NEED TO REACH EVERYONE AND PROVIDE CARE DURING A HEATWAVE?

STEP 1: ADD ELEMENTS TO THE MAP THAT WOULD HELP HER PROVIDE CARE DURING A HEATWAVE.

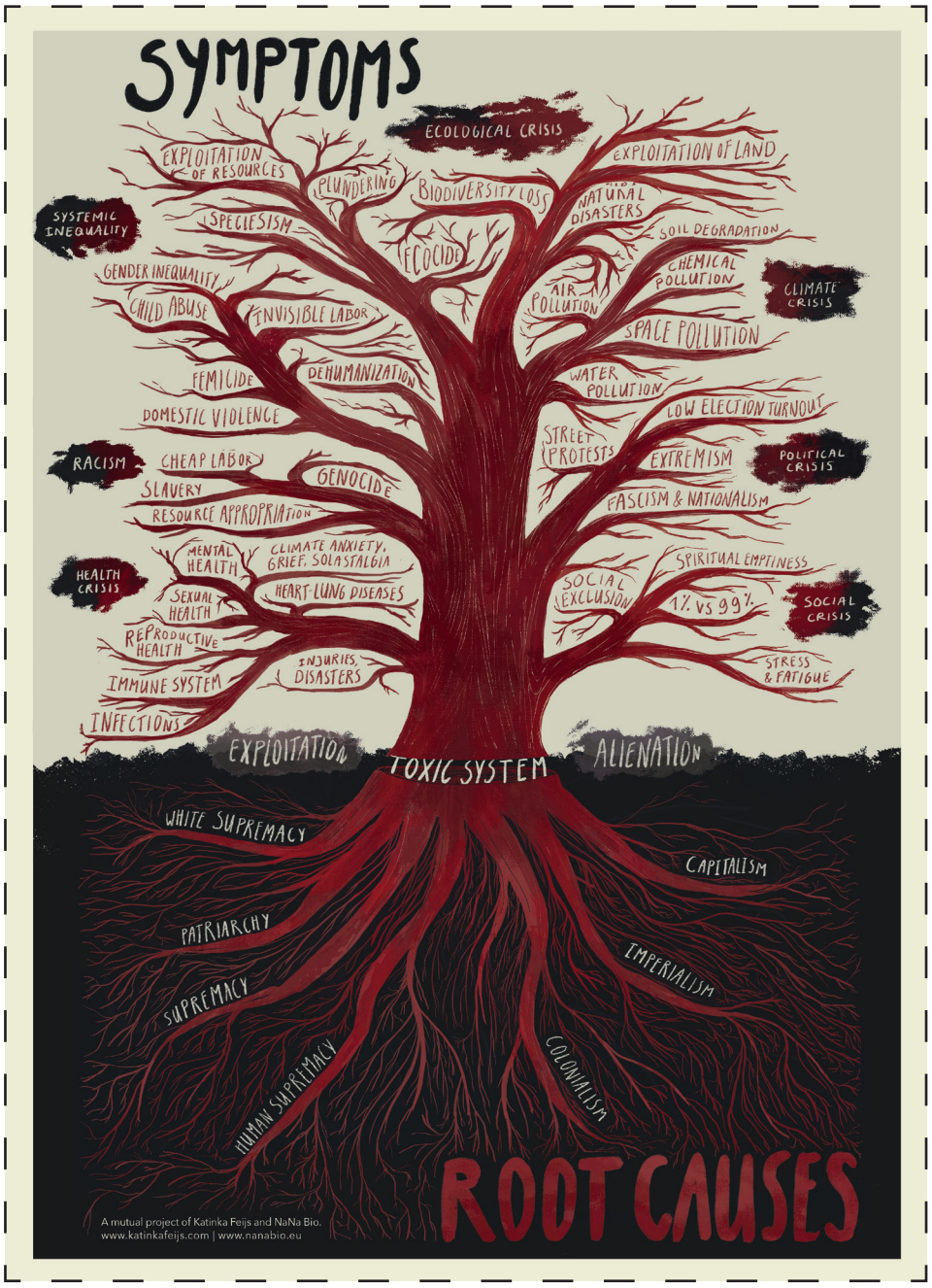
STEP 2: WHAT POLICY MEASURES, INFRASTRUCTURES, AND ACCESSIBLE FACILITIES ARE NEEDED FOR EVERYONE TO HAVE ACCESS TO AFFORDABLE, HEALTHY HOUSING AND NEIGHBORHOODS?



ASSIGNMENT 11

HOW IS YOUR RESEARCH GROUNDED?

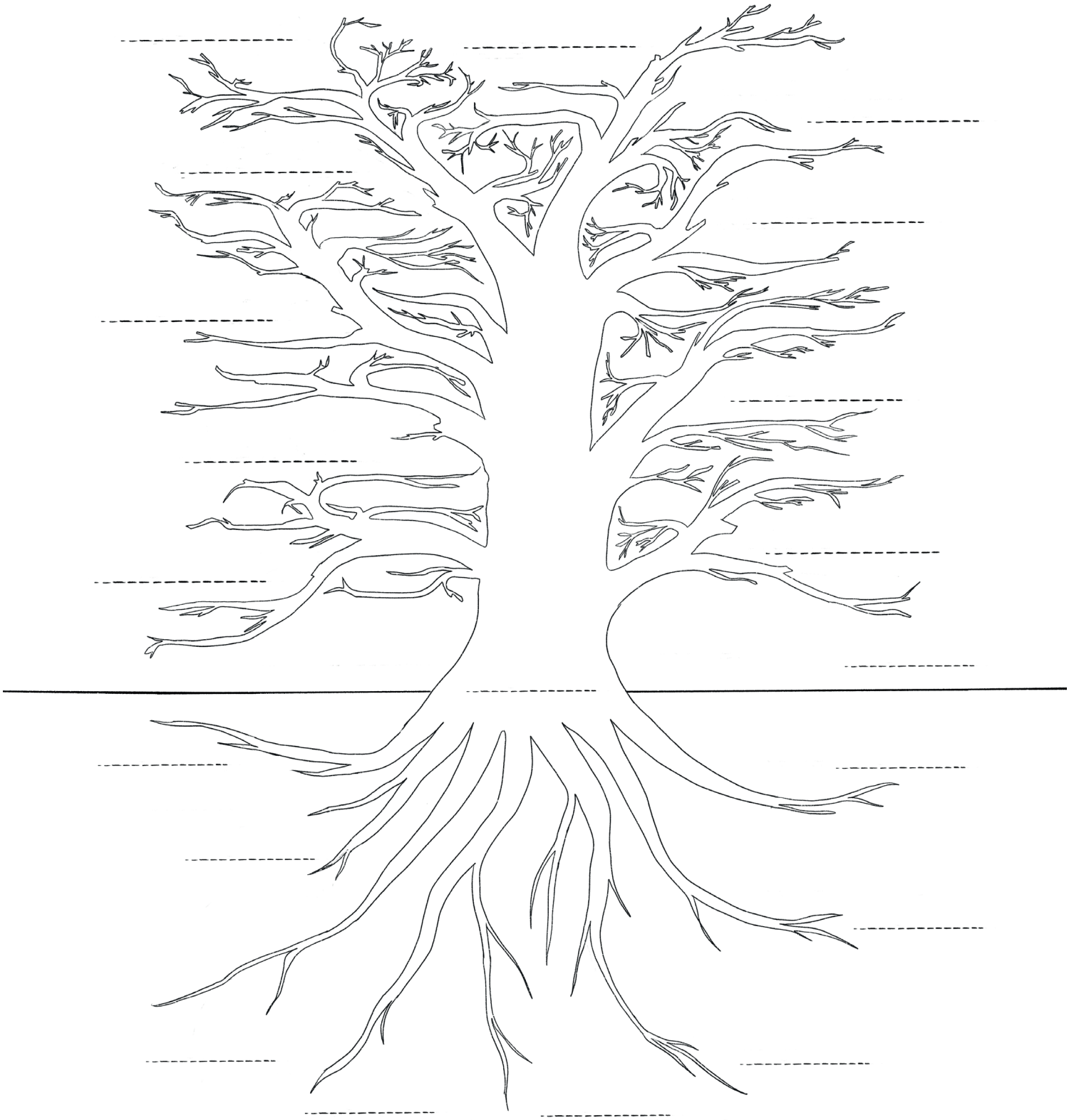
STEP 1: LOOK CLOSELY AT THE IMAGE OF THE CRISIS TREE.
NOTE THE MOST IMPORTANT ISSUES THAT MIGHT BE AFFECTING YOUR RESEARCH.



STEP 2: TAKE TIME TO REFLECT:
HOW ARE THESE ISSUES RELATED TO YOUR RESEARCH?

STEP 3:

USING THE TREE FORMAT WITH DEEP ROOTS, WRITE THE MAIN TOPIC OF YOUR RESEARCH IN THE TRUNK. FILL IN THE BRANCHES WITH RELEVANT CONCEPTS AND IDEAS FROM YOUR WORK. GROUP RELATED THEMES TOGETHER ON THE SAME BRANCH.



HOW CAN YOU INCORPORATE THESE CONCEPTS AND IDEAS INTO YOUR RESEARCH PROJECT?

NOTES

QUESTION CARDS

TO INCORPORATE GENDER, CLIMATE AND HEALTH IN YOUR RESEARCH.

CUT ALONG THE DOTTED LINE:

WHAT
RESPONSES
EXIST TO THE PROBLEM,
AND WHO
IS CENTERED IN THEM?

WHO
IS REPRESENTED
IN YOUR WORK,
AND WHERE?

HOW
WILL YOU KNOW
IF YOUR WORK REDUCES
INEQUITIES?

WHAT
IS THE PROBLEM
AND HOW
DOES IT RELATE TO
PLANETARY HEALTH?

HOW
ARE RELATIONS BETWEEN
HUMANS AND
NON-HUMAN NATURE
PORTRAYED
IN YOUR WORK?

WHAT
KNOWLEDGE OF
NON-HUMAN NATURE
DOES YOUR WORK
INCORPORATE?

HOW
DOES YOUR WORK
CONTRIBUTE
TO SOCIAL JUSTICE
AND PLANETARY HEALTH?

WHAT
INEQUITIES AND OPPRESSIONS
ARE CONNECTED
TO THE ISSUE?

BASED ON HANKISVKY ET AL., 2014; KAIJSER & KRONSELL, 2014

CRITICAL REFLECTIONS TRAINING

QUESTION CARDS

CUT ALONG THE DOTTED LINE

HOW

DO YOU CONCEPTUALIZE

"HEALTH"

AND

"WELL-BEING"?

WHICH

VALUES AND BELIEF SYSTEMS

HAVE SHAPED YOUR

UNDERSTANDING OF

HEALTH EQUITY?

TO WHAT EXTENT

DOES YOUR EDUCATIONAL, SOCIAL

AND CULTURAL BACKGROUND

INFLUENCE THESE

PERSPECTIVES?

INDIGENOUS KNOWLEDGE FRAMEWORKS

CUT ALONG THE DOTTED LINE

SEVENTH GENERATION PRINCIPLE

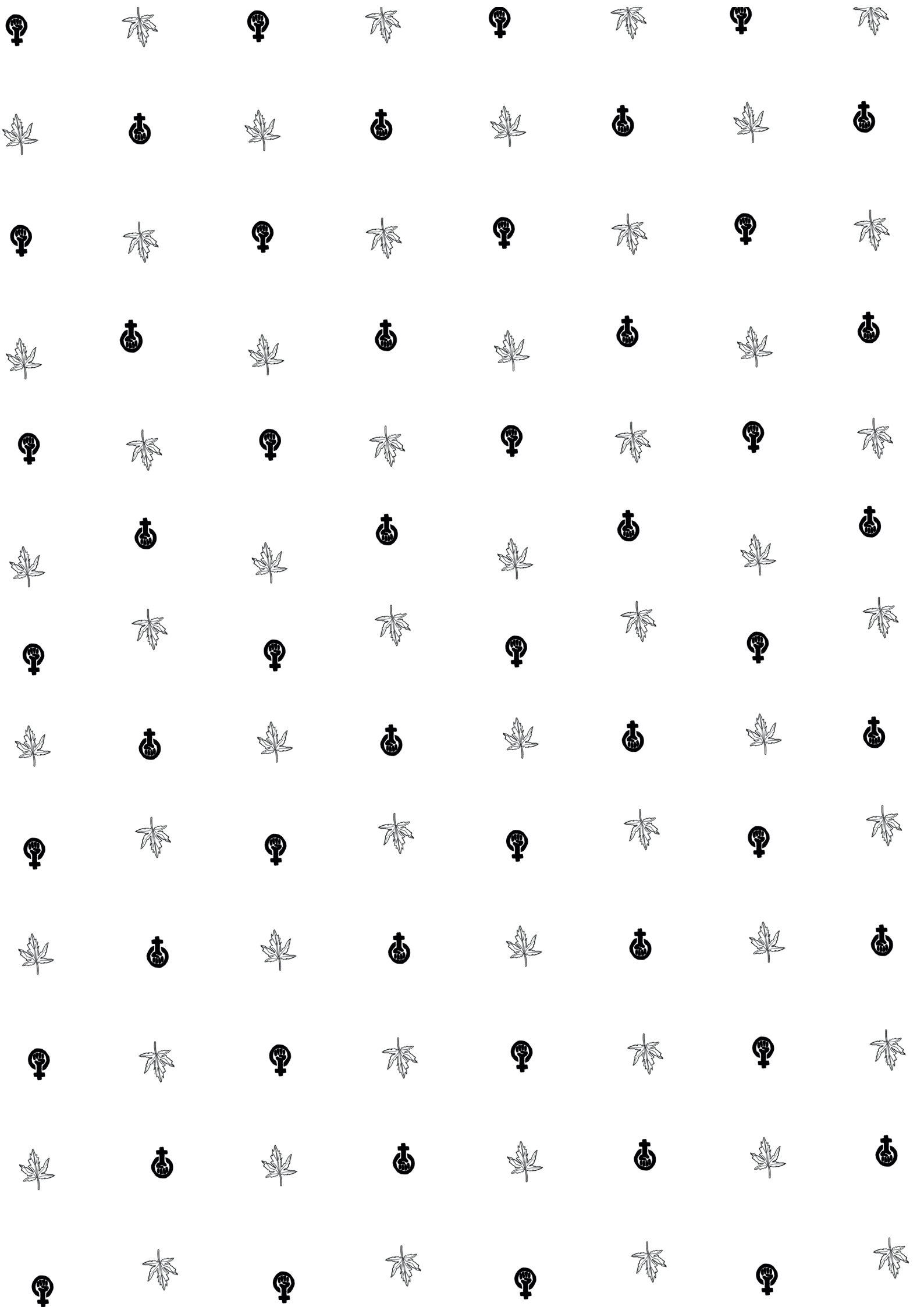
AN IROQUOIS / HAUDENOSAUNEE CONCEPT THAT EMPHASIZES THE RESPONSIBILITY OF MAKING DECISIONS WITH LONG-TERM IMPACT ON THE SEVENTH GENERATION IN MIND, ADVOCATING FOR INTERGENERATIONAL RESPONSIBILITY.

UBUNTU

A SOUTHERN AFRICAN PHILOSOPHY FOCUSSED ON COMMUNAL VALUES, MUTUAL RESPONSIBILITY, AND THE IDEA THAT INDIVIDUAL WELL-BEING IS INSEPARABLE FROM THE WELL-BEING OF THE COMMUNITY AND THE ENVIRONMENT.

BUEN VIVIR

A SOUTH AMERICAN INDIGENOUS CONCEPT THAT PRIORITIZES HARMONIOUS LIVING WITH NATURE OVER ECONOMIC GROWTH, PROMOTING ECOLOGICAL SUSTAINABILITY AND HOLISTIC WELL-BEING.



COLORING CONNECTIONS

RESEARCHING GENDER, INTERSECTIONALITY, AND HEALTH IN THE CLIMATE CRISIS

This coloring book provides case studies and creative assignments for researchers focused on gender and health in the climate crisis. It outlines five key pillars of health research to showcase how the gender dimension can be integrated into health and care research. Within these pillars, we explore specific topics that clarify concepts, highlight methodologies, and provide examples designed to inspire the inclusion of gender considerations in health research.

In health research, the importance of sex and gender is increasingly recognized. 'Sex' refers to the biological aspects of having male, female, or intersex bodies, understood through the framework of 3G-gender: genes (XX, XY, or other), gonads (hormonal influences), and genitalia (reproductive organs). 'Gender,' by contrast, is a social construct that encompasses the roles, responsibilities, and traits assigned to individuals based on their perceived gender in a given society and era. Gender operates on multiple levels, from psychological to societal, structuring the social world. We acknowledge that a strict binary distinction between men and women is insufficient; biologically, people can be intersex, and socially, gender is a fluid concept manifesting across various dimensions and levels. Moreover, sex and gender are intertwined – biology cannot exist outside its social context, and vice versa. Gender is embodied and influences how we engage with the social world, while biological sex co-defines these interactions. And gender matters in health.

Sex and gender also matter in the context of the climate crisis. Innovative fields of health research such as genomics, 3D printing, the COVID-19 pandemic, and digitalization frequently overlook sex differences, gender equity, and other systemic inequities. Research on human health in relation to the Planetary Health crisis is not only long overdue but also urgently needed. We must also avoid repeating past mistakes. Adopting a gender and intersectional perspective in health research can help identify and bridge existing knowledge gaps.

The aim of this coloring book is to illustrate the relevance of gender considerations in research on Planetary Health and human health, as well as how gender can be effectively integrated into health research. The creative assignments presented in this book, whether used individually or in groups, are designed to foster a deeper understanding of gender, intersectionality, human health and care, and Planetary Health.

The Dutch Society for Gender & Health would like to thank the Dutch Organisation for Knowledge and Innovation in Health, Healthcare and Well-being (ZonMw) for commissioning this report. Exploring this urgent and emerging field has been a valuable learning experience.

NVG&G Nederlandse Vereniging Gender & Gezondheid · ZonMw · Amsterdam UMC Universitair Medische Centra · KATINKA FEIJS