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Interconnected health: A concept analysis of planetary empathy for healthcare professionals

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ABSTRACT

Background: Planetary Health emphasizes the interconnectedness of human health and the natural environment. Despite this, human-induced destruction of ecosystems threatens planetary stability. Understanding planetary empathy may offer insights into how healthcare professionals can better live and work with nature.
Purpose: This paper presents a concept analysis of planetary empathy, exploring its impact on healthcare and the roles of healthcare professionals.
Methods: The Walker and Avant eight-stage approach for concept analysis informed this paper. Data were obtained from literature searches, dictionaries, encyclopedias, and relevant international organization websites.
Discussion: Planetary empathy is a cyclical process involving reflection, reciprocal relationships with nature, recognition of biases, responsibility for future generations, and behavioral responses to protect planetary health.
Conclusion: Planetary empathy catalyzes prosocial environmental behaviors. Healthcare professionals who embody this empathy are more likely to be engaged in creating a healthier, more equitable world for all people and ecosystems.

Introduction

> "*We need acts of restoration, not only for polluted waters and degraded lands, but also for our relationship to the world.*" ~ Wall Kimmerer, 2013

Empathy is recognized as integral to quality patient care (Hojat et al., 2013), with empathic healthcare professionals said to be more vigilant and invested in patient well-being (Trzeciak & Mazzarelli, 2019). What is less well-understood is the notion of planetary empathy and whether healthcare professionals who care deeply for nature and the well-being of all life on Earth, are more likely to engage in prosocial behaviors that mitigate the adverse impacts of climate change, pollution, biodiversity loss, and the social structures and systems—including healthcare systems, have on the environment.

Ward et al. (2024) emphasized the importance of expanding the traditional scope of empathy to include a broader planetary focus, arguing for a form of empathy that encompasses not just human beings, but the health of all life and the planet as a living ecosystem. Currently, there is no definition of planetary empathy in the healthcare literature. We therefore used Walker and Avant's (2019) eight-step concept analysis approach to identify what planetary empathy is and why it is important for healthcare professionals.

Background

To understand the notion of planetary empathy, a concise synthesis of the intersection between empathy and planetary health is first needed. The field and framework of Planetary Health was first described in the 2015 Report of the Rockefeller Foundation–Lancet commission (Whitmee et al., 2015). Planetary Health recognizes that human health

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and well-being are intricately interconnected with the health and well-being of all ecosystems; and that ongoing air, land and water pollution, land use decisions, excessive destruction of natural ecosystems, and biodiversity loss are putting the health of current and future generations at grave risk (Passarelli et al., 2021). Increasing global temperatures and the severity and frequency of bushfires, floods, droughts, and other extreme weather events, are signs of a planet in distress. The Lancet commission report points to "empathy failures" as a core driver of the enormous environmental and societal problems we are facing. As individuals, communities, and nations, we need to recognize that planet Earth has a unique ecosystem that must stay in balance in order to support all life on Earth.

In 2009, Rockström et al. introduced the concept of the planetary boundaries within which humanity and ecosystems can thrive (Rockström et al., 2009). These boundaries refer to nine interdependent processes that regulate the Earth's stability and resilience. The 2024 Planetary Health Check Report (Caesar et al., 2024) notes that humanity has now transgressed six of these boundaries, including climate change, biodiversity loss, land systems change, freshwater use, novel entities (plastics, microplastics, pesticides, fertilizers, and other new chemical entities), and biogeochemical changes. Climate change is often identified as the most concerning planetary boundary (Cissé et al., 2022), as global temperatures exceeding 1.5 degrees Celsius are having a profound impact on human health and could catastrophically accelerate degradation across the other planetary boundaries (United Nations Environment Programme, 2021; United Nations Climate Change, 2023). At this moment in time, we are at a critical juncture that will determine the future of both human and planetary health (Richardson et al., 2023).

The responsibility for addressing the ongoing devastation of our environment, and its effects on health, sits squarely with us, we need to move away from decisions that value the short term over the long term, growth over sustainability, and our modern society's disconnection from each other and the rest of the natural world (Pfenning-Butterworth et al., 2024). Individuals, societies, and healthcare professionals must pay attention; we must address this core "empathy failure."

The Sao Paulo Declaration for Planetary Health (Myers et al., 2021) is a global call to action for all sectors, including healthcare, to understand the interconnection between human and planetary health, to embrace individual and collective changes, and build the transdisciplinary partnerships that are urgently needed to achieve the "Great Transition."

The Planetary Health Alliance (Guzmán et al., 2021) centers the concept of "interconnection within nature," recognizing that this is a sensibility that is being shared from traditional ecological knowledges and indigenous ways of knowing. For thousands of years, indigenous cultures have centered the interconnectedness of humans, nature, the environment and the planet as a core tenet, underlying value system, and way of living in kincentric relationships (Redvers et al., 2020). Indigenous communities have continued to draw on practical, social, and spiritual wisdom passed down through the generations. The foundations of many of the world's religions also share the values of responsibility, reciprocity, stewardship, fairness, awe, and reverence for the natural world (Zagonari, 2020). Yet, many contemporary social structures, systems, and practices, particularly in the Global North, value the individual, the privileged few, short-term gains, and an economy based in growth (Raworth, 2017), and have not always acknowledged and/or embraced indigenous wisdom. This has resulted in a disconnection between humans and the environment (Beery et al., 2023) and has had disastrous consequences for people and nature. Moving forward, individuals and communities must learn from indigenous wisdom and shift toward connections with nature (Barragan-Jason et al., 2023). This is particularly true for the societies that bear the responsibility of disproportionate harms and ongoing damage to the planet. We cannot wait.

Change must occur now and must be a combination of individual and collective factors. When we value equity and fairness and work toward protecting nature and biodiversity through the implementation of wise ecological practices in all aspects of our lives, we start to reduce our consumption/use of products that harm the environment. We can apply these sustainable practices in our homes and also in our workplaces (Lim, 2024). In our homes and communities, there is a need to cocreate practices, systems, and structures that support flourishing, for all humans equally and for nature and our more-than-human kin. This will require a shift away from how we currently live and work, including how we make land use decisions, how we reside in urban and rural environments, and how we cultivate food and gather the materials we want/need from the Earth (Myers & Frumkin, 2021). We also need to reduce the harm caused by our global economic systems and change our relationships with energy and technology to more sustainable and regenerative practices (Raworth, 2017).

Governments and social leaders must change their standards and mandates for building, development, energy, education, healthcare, transportation, and business so that all aspects of our communities and economies promote the health and well-being of humans and nature. But in an era of polarizing views about climate change and increasing financial pressures that are forcing people to make choices that prioritize basic human needs (e.g., food and shelter) over investment in our planet, we need to understand how to increase human empathy toward planetary health (Planetary Health Alliance, 2024). This can then be used to shift attitudes and actions toward our environment and empower individuals and governments to make choices that together bring about change and improve the health of the planet and its inhabitants.

In healthcare, we need to consider a holistic view of health and build healthcare systems and sensibilities that recognize that healthcare is not just "person-centered," but also includes community-centered partnerships for health and well-being from the perspective of the whole ecosystem—all interwoven and interdependent. The São Paulo Declaration on Planetary Health (Myers et al., 2021) states that as a healthcare workforce, we must

- "Reorient all aspects of health systems toward planetary health - from procurement, energy sources, healthcare efficiency, to waste reduction.
- Commit to achieving a nature-positive, carbon neutral healthcare system before 2040, while strengthening health systems' resilience to global environmental changes.
- Consider social and ecological determinants of health for both individuals and communities, including public and active transportation; access to healthcare facilities; green spaces to provide social, recreational, and mental health benefits; air, soil, and water quality; and access to affordable and nutritious diets, particularly for lower income communities." (São Paulo Declaration on Planetary Health, p. 6)

Healthcare professionals are invited to use a planetary health lens as a way of being and moving in their professional work. This is a necessary path for the future and the first step is understanding what it is to develop the empathy necessary for this work.

Step 1: The Concept Being Examined

Walker and Avant (2019) state that the first step in a concept analysis is to identify the concept being analyzed and position it within contemporary knowledge. This study sought to examine the concept of planetary empathy in general and for healthcare professionals in particular.

Table 1
Walker and Avant's (2019) Eight Stages of a Concept Analysis

Step	Explanation
1	Identification of a concept
2	Determine the aims and/or purposes of the analysis
3	Review the literature to identify the uses of the concept
4	Determine the defining attributes
5	Present a model case
6	Present a contrary case
7	Identify antecedents and consequences
8	Define the empirical referents

Step 2: Aim

The aim of this paper is to present a concept analysis of planetary empathy. It seeks to identify why planetary empathy matters for health, healthcare, and healthcare professionals, and to develop an operational definition.

Methods

Design

A concept analysis "is a systematic process that allows one to examine and articulate the most basic elements of a given concept" (Schiller, 2018, p. 248). It enables researchers to provide exact definitions that can be used in future research and theory development (Anåker & Elf, 2014). Walker and Avant's (2019) approach for conducting concept analyses was adopted for this paper. This eight-step model has been widely used and demonstrated to be rigorous (see Tables 1 and 2).

Step 3: Review of Literature

Data were derived from literature searches in ProQuest, CINAHL, EBSCO, PubMed, and Web of Science. The dates ranged from 2010 to 2024 and were limited to the English language. We also screened the first two pages of a Google search, dictionaries (Oxford English (Oxford University Press, 2023), Cambridge (Cambridge University Press, 2024), and Merriam Webster (Merriam-Webster.com, 2024), the Encyclopedia Britannica, books, literature, and the websites of relevant healthcare organizations. In line with the recommendations of Walker and Avant (2019), we also consulted colleagues with experience in planetary health and empathy on important documents deemed important to include.

Search Terms

We began by conducting a thorough search of the literature to identify and examine how the term "planetary empathy" had been used. Title and abstract searches were conducted for the terms "planetary empathy" and or "empathy for the planet." Walker and Avant (2019, p. 172) advise that during the initial stage, the search should not be limited to only one aspect of the concept, but that instead, all uses of the term should be considered. Therefore, we did not restrict the search by including the term "healthcare." Only four relevant papers were identified at this stage and only two of these mentioned planetary empathy. As this was not enough to develop an operational definition of planetary empathy, we subsequently expanded the search terms to include "planetary health empathy," "environmental empathy," and "planetary health" AND "empathy." "Planetary health" was not searched as a stand-alone term, however, pertinent documents on planetary health identified by experts were included.

Altogether, 296 records were identified through database searches, and an additional 12 from other sources (308 in total). Duplicates were removed and the remainder proceeded to title and abstract review. Records unable to be accessed (n = 2) and those deemed to not add to the aim of the concept analysis were excluded. Walker and Avant (2019) suggest that not all records will be "the real thing" and it is up to the research team to determine which records should be included and excluded. Subsequently, after discussion within the research team, 26 records were included in this concept analysis.

Environmental Empathy (Including Empathy for the Planet)

Several studies have examined the notion of environmental empathy and the importance of this in shaping pro-environmental attitudes and behaviors (Kim & Cooke, 2021). Environmental empathy specifically refers to feeling empathy with and for nature, particularly in the context of environmental pollution and destruction (Ienna et al., 2022). Environmental empathy refers to people's experiences and response to environmental issues, and how they impact on attitudes and behaviors toward the environment (Chen et al., 2023). Environmental empathy (empathy for nature) is a core component in pro-environmental behaviors and helps to shape the concept of planetary empathy that extends this work toward a more holistic perspective that includes humans as an integral part of nature and not separate from it (Redvers et al., 2020; Talgorn & Ullerup, 2023).

Results

Step 4: Defining Attributes

The research team met to critically review the identified literature relevant to the concept of planetary empathy and related terms. Key themes, words, and uses were deductively coded using methods outlined by Braun and Clarke (2013) and sorted according to definition and attributes.

Defining attributes clarify what elements do and do not make up the concept (Walker & Avant, 2019). The defining attributes for planetary empathy were identified as (a) reflection, (b) reciprocity, (c) recognition of implicit biases, (d) sense of responsibility, and (e) response. These five "Rs" emerged from both the synthesis of the literature and from a series of discussions between the authors, all of whom are scholars with lived and professional experience in this field. Each of the five "Rs" are explained below.

The first attribute identified in the literature was deep reflection on one's thoughts, feelings, values, and actions concerning nature, planet Earth (and its inhabitants), as well as the motivations behind these (Logan, Berman, Scott, et al., 2021; McKnight, 2010). This reflective process allows individuals to gain insights into their personal and collective impacts on the environment, fostering a heightened awareness of the consequences of their behaviors (Musitu-Ferrer, Esteban-Ibañez et al., 2019; Prescott et al., 2018). Reflection is critical for recognizing the interconnectedness between personal actions and broader ecological outcomes, promoting a comprehensive understanding of how human activities contribute to planetary health (Ward et al., 2004).

The second attribute, reciprocity, is grounded in the understanding of the ebbs and flows between the planet and its inhabitants (Gagliano, 2018). It acknowledges the interconnectedness of all life on Earth and that the well-being of one depends on the health of the entire ecosystem (Artmann, 2023; Faerron Guzman & Potter, 2021). Reciprocity entails an appreciation of the symbiotic relationships that sustain life on Earth and acting in ways that promote the health and resilience of the entire ecosystem (LeClair & Potter, 2022; Musitu-Ferrer, León-Moreno et al., 2019; Redvers et al., 2020).

The third attribute is a recognition of implicit biases, which involves acknowledging and addressing unconscious biases that shape

Table 2
Records Included in the Concept Analysis Paper

No.	Author/s (Year)	Title	Use of the Term	Integration Section
1	Artmann (2023)	Human-nature resonance in times of social-ecological crisis—A relational account for sustainability transformation	"In order to listen to this urgency, a shift from a morality of care rather than utility is needed (Jax et al. 2018; Muradian and Gómez-Baggethun 2021) that is linked with internal relational capacities of compassion and empathy with oneself, other people and the world as a crucial skill for supporting harmonious human-nature relations (Muradian and Gómez-Baggethun 2021; Wamsler et al. 2020)."	Defining attributes Model and contrary case Empirical referents
2	Brand et al. (2023)	Embedding Indigenous knowledge and voices in planetary health education	(On discussing the need to embed Indigenous knowledges in planetary health education, and the use of creative, intuitive, and critical thinking skills to promote empathy and reflection for person and country) "…arts-based education strategies that are deliberately designed to encourage new and different ways of seeing, knowing, and understanding people with different lived experiences. For example, there is a focus on the development of creative, intuitive, and critical thinking skills that promote the empathy and reflection needed to consider new and potentially challenging concepts and ideas."	Defining attributes Antecedents and consequences Empirical referents
3	Chen et al. (2023)	The effects of environmental empathy and sustainable intelligence on wetland tourists' revisit intention using an extended model of goal-directed behavior	"EE (Environmental empathy) and SI (sustainable intelligence) all have a positive impact on tourists' pro-environmental behavior (PETB). Additionally, both EE and SI were proved to have significant and positive indirect influence on desire and revisit behavioral intention."	Defining attributes Antecedents and consequences Empirical referents
4	Faerron Guzman and Potter (2021)	The Planetary Health Education Framework	"To survive, humans must shift the mindset and shared narrative from separation, apathy, and domination to interconnection, empathy, and partnership.""…learners require self-awareness and empathy to acknowledge their own biases and epistemological groundings."	Defining attributes Model and contrary case Antecedents and consequences
5	Gagliano (2018)	Planetary Health: Are we part of the problem or part of the solution?	"To choose guilt is to plant the seed that ensures that the individuality of the 'other'—in the context of my story, the fish, and in the bigger story, the planet—remains an elusive entity, an objectification that is central to the lack of empathy and that is essential to our reckless exploitation. Yet, we can plant and nurture the other seed, the seed of environmental empathy. Empathy is a seed of wisdom, central to our human capacity for true care, and it is essential to our creative inspiration. To choose empathy is to plant the seed that ensures we encounter the 'other', who is constantly beckoning us to open fearlessly, and discover who we are."	Defining attributes Model and contrary case Antecedents and consequences
6	Holm (2012)	Exploring environmental empathy in action with children's books	"Environmental empathy in action occurs when people help save animals covered in oil from an oil spill. It occurs when people try to save ancient forests from being cut down, or riding their bicycles as a way to limit greenhouse gases. In short, environmental empathy in action is what occurs when people actively work to protect or improve the environment."	Defining attributes Model and contrary case Antecedents and consequences
7	Ialenti (2021)	The art of pondering Earth's distant future	"Stretching the mind across time—even in the most speculative ways—can help us become more responsible planetary stewards: It can help endow us with the time literacy necessary for tackling long-term challenges such as biodiversity loss, microplastics accumulation, climate change, antibiotic resistance, asteroid impacts, sustainable urban planning, and more. This can not only make us feel more at home in pondering our planet's pasts and futures. It can also draw us to imagine the world from the perspective of future human and non-human communities—fostering empathy across generations."	Defining attributes Antecedents and consequences
8	Kim and Cooke (2021)	Using the Health Belief Model to explore the impact of environmental empathy on behavioral intentions to protect ocean health	"Environmental empathy is an internal motivator… (consciously or subconsciously derived from an individual's values, experiences, and knowledge) that is associated with pro-environmental behaviors and is considered to be central to garnering support for conservation efforts" (p. 813). "Empathy with nature, or environmental empathy, may be defined as the understanding and sharing of emotional experiences of the natural world (Tam, 2013)" (p. 814).	Empirical referents

(*continued on next page*)

Table 2 (*continued*)

No.	Author/s (Year)	Title	Use of the Term	Integration Section
9	LeClair (2021)	Building kincentric awareness in Planetary Health education: A rapid evidence review	"Openness to traditional Indigenous perspectives allowed educators and students to gain understanding of their interconnection within nature" (p. 232)."Kincentricity supports an obligation to live in harmony with all kin" (p. 231). "The paucity of evidence for effective kincentric approaches in education demonstrates how research has privileged the anthropocentric perspective, with knowledge generation practices that frequently exclude the intuitive, embodied, oral, spiritual, and artistic" (p. 233).	Antecedents and consequences
10	LeClair and Potter (2022)	Planetary Health nursing	"Nurses can emphasize the importance of interconnectedness and emotional connections within nature and its biodiversity" (p. 51). "Shift the mindset and shared narrative from separation, apathy, and domination to interconnection, empathy, and partnership" (p. 52).	Defining attributes
11	Logan and Prescott (2022)	Planetary Health: We need to talk about narcissism	"Beyond grandiosity, it is the absence of empathy that characterizes individual and collective narcissism that may be a critical threat to health at all scales" (p. 7). "Empathy is the ability to understand or make accurate inferences based on the experiences of another; the combined cognitive and emotional aspects of empathy allow one to take the perspective of another, and to experience some of their emotions in a vicarious way" (p. 7).	Defining attributes
12	Lucznik et al. (2022)	An exploration of the contribution of embodied, situated research strategies to cultural ecosystem services and landscape assessment frameworks: An environmental empathy case study	"Empathy with nature is one's capacity to understand and share the emotional experience— particularly distress—of the natural world" (p.7). "Empathy and emotional engagement with nature create cultural meaning that embeds the environment and pro-environmental behaviour in one's identity and place-oriented norms. Therefore, individuals who have empathy for the environment, particularly as it relates to the consequences of environmental harm, are likely to support sustainability goals" (p.7).	Defining attributes Model and contrary case Antecedents and consequences
13	Macias-Zambrano et al. (2024)	Factors that determine the connectedness with nature in rural and urban contexts	"… much research has concluded that women show greater connectedness and empathy with the natural environment, commitment to environmental protection and more pro-environmental behaviours than men."	Defining attributes Model and contrary case Antecedents and consequences
14	McKnight (2010)	Overcoming "ecophobia": Fostering environmental empathy through narrative in children's science literature	"Learning about the plants, insects, birds, and mammals in their local environment through direct observation will lay the foundation for concern for the natural world in other locations, as children progress from concrete to abstract reasoning. This approach emphasizes the development of environmental empathy" (e11).	Defining attributes Model case Antecedents and consequences
15	Musitu-Ferrer, Esteban-Ibañez, et al. (2019a)	Is school adjustment related to environmental empathy and connectedness to nature?	"Environmental empathy and connectedness to nature are two main constructs that explain variations in pro-environmental behaviour." "Environmental empathy refers to the ability to feel and understand issues related to the natural environment" (p. 102).	Defining attributes Model case Antecedents and consequences
16	Musitu-Ferrer et al. (2019b)	Relationships between parental socialization styles, empathy, and connectedness with nature: Their implications in environmentalism	Empathy with the environment is defined in the context of interpersonal relationships as an emotional reaction congruent with the emotional state of the other and identical or very similar to what the other person is feeling or could feel…It would have been impossible for human beings to have survived as a species if we had all been concerned exclusively with ourselves. However, empathy is not only the interpersonal ability to put to one side the egocentric impulses of inter-subjective identification, it is also the ability to identify with the environment, with the evolution of the biosphere understood as the shared place of all species, whose fate we share (p. 2461).	Defining attributes Antecedents and consequences Empirical referents
17	Prescott and Logan (2017)	Down to Earth: Planetary Health and biophilosophy in the Symbiocene epoch	Given the established connections between the measurable psychological construct of nature relatedness (affinity to the natural world) and numerous aspects of physical and emotional well-being (as well as pro-environmental behavior and empathy) [126–129], and relationships between the childhood self-exploration of natural environments to adulthood environmental citizenship and connections to the natural world [130] (that is, the world of biodiversity which sustains human life), the new era of the symbiocene is not back to nature, but rather forward with nature (p. 12).	Defining attributes Model and contrary case Antecedents and consequences

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Table 2 (*continued*)

No.	Author/s (Year)	Title	Use of the Term	Integration Section
18	Prescott et al. (2018)	The Canmore Declaration: Statement of Principles for Planetary Health. Challenges	2. Values and purpose: Attitudes, values and behaviors, and relationships sit at the heart of reaching planetary health goals, that is, human vitality (wellness) depends intimately on planetary vitality that in turn depends on humankind, on human kindness, empathy, mutualism, responsibility, and reciprocity at the individual, community, societal, and global levels; 9. Countering elitism, social dominance, and marginalization: Planetary health requires greater awareness of the impact of authoritarianism, and strong advocacy against collective narcissism, hubris, and social dominance orientation, factors that otherwise reduce empathy, marginalize outgroup voices, and impede the World Health Organization's stated goals for global health promotion; Summary statement of all the principles: The Canmore Declaration: for personal and planetary health in every community—promoting the interdependent vitality in all natural and anthropogenic ecosystems. Improving the health of all systems depends on mutualistic values; planetary consciousness; advocacy; unity of purpose; recognition of biopsychosocial interdependence; emotional bonds between people and the land; efforts to counter elitism, social dominance and marginalization; meaningful cross-sectoral and cross-cultural narrative; self-awareness; and a personal commitment to shaping new normative attitudes and behaviors.	Defining attributes Antecedents and consequences Empirical referents
19	Smith (2022)	Look to the ravens: Reconceptualizing communities of practice into ecosystems of practice	(Abstract) I propose to reconceptualize communities of practice to ecosystems of practice: Communities of practice that consider other-than-human actors to be key participants in the situated learning process.	Antecedents and consequences Empirical referents
20	Sugiyanto et al. (2024)	Strengthening student empathy in GeoCapabilities: Digital learning innovations and pedagogical strategies for disaster mitigation	Empathy increases the ability to imagine what is needed for a disaster response.	Empirical referents
21	United Nations (2023)	UN climate change	Sharing responsibility for a better humanity and greener Earth, global citizenship has been underscored more than ever as the driving force for people to take action with empathy in solidarity. The good news is that people are empathetic by nature. This natural trait, however, has been suppressed by the external environment to which we are subjected today. The fast pace of life, increasing employment insecurity, the stress of needing to excel at all times, and, more recently, the increasing frequency of extreme events driven by climate change have all dampened our sensitivity to the plight of other beings. We need to bring back our natural tendency to practice kindness.	Defining attributes Model and contrary case Antecedents and consequences
22	Ward et al. (2004)	Dear Earth: Cultivating planetary empathy for the health of all	For Aboriginal and Torres Strait Islanders, the First Nations people of Australia, empathy is more broadly positioned as sentient empathy. An example of sentient empathy undertaken by First Nations peoples is "Connection to Country." Country is the term often used by Aboriginal peoples to describe the land, waterways, seas, and skies to which they are connected and to where they belong. Aboriginal people and their cultural responsibilities through reciprocal relationships with country, which has sentient empathy at its core.	Defining attributes Model and contrary case Antecedents and consequences
23	Whitmee et al. (2015)	Safeguarding human health in the Anthropocene epoch: Report of The Rockefeller Foundation–Lancet Commission on planetary health	Firstly, conceptual and empathy failures (imagination challenges), such as an overreliance on GDP as a measure of human progress, the failure to account for future health and environmental harms alongside present-day gains, and the disproportionate effect of those harms on the poor and people in developing nations—ironically the groups who often have least say about policy matters.	Contrary case Antecedents and consequences

one's worldview, perceptions, and interactions with the planet (Logan, Berman, Berman, et al., 2021). Implicit biases often influence how individuals and societies prioritize human needs over planetary well-being, perpetuating harmful practices that degrade the health of the planet (Brand et al., 2023; Faerron Guzman & Potter, 2021). Recognizing these biases is essential for developing a more inclusive and equitable perspective that values the worth of all living beings and natural systems.

The fourth defining attribute identified in the literature is a sense of responsibility and the belief that individuals have an ethical obligation to protect and preserve the planet for future generations (Gardiner, 2022). This attribute underscores the moral duty to act in ways that mitigate harm and actively promote the health of the planet and all life on Earth (Ialenti, 2021). A sense of responsibility includes the commitment to engage in activities that support ecological sustainability and involves advocating for systemic changes that address the root causes of environmental degradation, thereby promoting a sustainable planet (Chen et al., 2023; Evans-Agnew et al., 2023; Macias-Zambrano et al., 2024; Prescott et al., 2018).

The final defining attribute is a pro-environmental response, which pertains to the tangible actions and behaviors that demonstrate a commitment to planetary empathy (Ward et al., 2024). This includes practices such as environmental stewardship, advocacy, and behavioral change, in both personal and professional contexts (Musitu-Ferrer, Esteban-Ibañez et al., 2019; Pongsiri et al., 2019; Redvers et al., 2020). A meaningful response involves not only recognizing the need for change but actively participating in efforts to create a more regenerative and equitable world (Chen et al., 2023; Holm, 2012; Lucznik et al., 2022; Macias-Zambrano et al., 2024; Prescott & Logan, 2017). It requires individuals to take concrete steps that contribute to the health and resilience of the planet, its ecosystems, and its inhabitants (Pongsiri et al., 2019; Prescott et al., 2018; United Nations, 2023).

Step 5: Model Case

The purpose of a model case is to illustrate the defining attributes of the concept being studied (Anåker & Elf, 2014). The following model case illustrates the key attributes of planetary empathy for a healthcare professional.

Jamie had grown up living close to a lush, green, temperate rainforest that had given him a love of nature and a deep sense of belonging. Studying environmental science as his first degree caused Jamie to reflect on his reciprocal relationship with planet Earth and his responsibility for environmental stewardship. He recognized how cultures of human exceptionalism and dominance are resulting in biodiversity loss, pollution, and extreme weather events impacting both ecosystems and human health; he became increasingly concerned about the disproportionate impact of these on Indigenous peoples and marginalized groups.

Jamie ate a predominantly plant-based diet, was careful with recycling, and he reduced food waste by composting. He consciously sought to give back to the environment, rather than just taking from it. Jamie voted for political parties that demonstrated a commitment to phasing out fossil fuels, joined a rewilding initiative, and engaged in environmental activism when he learned there were plans to commence logging in his local rainforest.

When Jamie decided on a career change, studied, and graduated as a healthcare professional, he began to understand how disruptions to the health of the planet were affecting not only fragile ecosystems, but also people's health and well-being, with shifting disease patterns, anxiety, injuries, and dislocation occurring, often as a result of extreme weather events. Jamie became committed to doing what he could to educate his patients and safeguard marginalized individuals and communities against escalating environmental risks.

At the same time, Jamie was saddened and frustrated by some of the healthcare practices he observed—excessive waste production, use of plastic water bottles and cutlery, disposal of antibiotics and other medications down the drain, and unnecessary glove usage, to name just a few. He was also disappointed by the lack of awareness that many of his colleagues displayed about the impact of healthcare on the environment, as well as the impact of climate change, pollution, and biodiversity loss on people's health.

Instead of becoming despondent, Jamie's values dissonance drove him to advocate for change. Learning that some healthcare organizations had "green groups," he harnessed the slowly growing support of his unit, and they started their own "sustainability in action" group. They brainstormed ideas, ran in-service sessions, and began to recycle glass, water bottles, cardboard, and IV lines. At first, there were setbacks and not everyone was supportive of the group's initiatives. But in time, the momentum grew and there were many thoughtful conversations about healthcare professionals' responsibility to care for the planet and how human health and environmental health are interconnected. Jamie soon realized that the small wins with recycling had become the catalyst for meaningful dialog and transformed ways of thinking and behaving.

Jamie brought a renewed motivation to his work, recognizing that his personal and professional values were now aligned. His enthusiasm was contagious, and the staff began to develop a transdisciplinary approach to environmental issues. Green groups flourished throughout the hospital, recycling became "business as usual," and staff advocated for changes to the organization's procurement policies, which led to the purchase of more ethically sourced items.

Jamie and the team recognized there was a long way to go, but they were hopeful that their modest initiatives would form a small part of a growing movement that saw his healthcare organization achieve their net-zero targets and, just as importantly, have a positive impact on the health of the planet and its inhabitants.

Step 6: Contrary Case

Contrary cases include none or few of the defining attributes of the concept and are used to contrast two situations based on different sets of assumptions (Anåker & Elf, 2014). The contrary case presented here illustrates the absence of planetary empathy in a healthcare professional's personal and professional life.

Lucas is a healthcare professional working in a large metropolitan hospital. He grew up in a large city and attended an elite private school. While Lucas has some understanding of climate change and environmental threats, he does not recognize the reciprocal nature between the health of the planet and human health. To Lucas, the link between fossil fuels, climate change, and patient outcomes is tenuous at best, and he feels that these types of issues are for environmentalists and politicians to debate, not healthcare professionals.

Despite working in a busy healthcare environment with patients who are various impacted by the social determinants of health, Lucas' life experiences mean that he has a limited understanding of equity issues and how some people are disproportionally impacted by environmental factors.

Lucas considers the growing interest in sustainability initiatives at his hospital, and the drive to become a net-zero organization, peripheral to his core responsibilities as a healthcare professional. When patients present with conditions exacerbated by environmental factors, such as asthma due to pollution, or heat-related illnesses, Lucas focuses solely on the person's clinical needs, disregarding any connection between their health and planetary degradation.

Lucas does not give a lot of credence to concerns about how waste from mines can impact water quality or how air pollution

might impact cardiorespiratory health. While he recognizes that pollution and climate change may be issues, he views them as distant threats that do not directly impact his family, his lifestyle, or his clinical practice.

Lucas displays little understanding of the interconnectedness of health and the environment. He believes his role begins and ends with responding to patient symptoms and is not cognizant of environmental conditions that may contribute to his patients' suffering. His lack of reflection on the environment underscores his worldview and means that he does not have a sense of respect for or feelings of reciprocity with the world around him.

Step 7: Antecedents and Consequences

According to Walker and Avant (2019), antecedents are the events or attributes that must arise prior to a concept's occurrence. The antecedents to planetary empathy include:

1. A sense of awe when spending time in nature (Chen et al., 2023; Gagliano, 2018; McKnight, 2010).
2. The realization that historic ways of viewing the natural world no longer serve us, and that "domination over" must be replaced with a sense of "belonging to" nature (Faerron Guzman & Potter, 2021; LeClair & Potter, 2022; Prescott & Logan, 2017; Whitmee et al., 2015).
3. A deep curiosity and conscious awareness of the inextricable connection between human and planetary health (Brand et al., 2023; Chen et al., 2023; LeClair & Potter, 2022; Musitu-Ferrer, Esteban-Ibañez, et al., 2019a; Musitu-Ferrer, León-Moreno, et al., 2019b; Prescott & Logan, 2017).
4. Recognition that the planet that has sustained humans for generations is now at risk (Brand et al., 2023; Faerron Guzman & Potter, 2021; Holm, 2012; Whitmee et al., 2015).

Consequences are events or attributes that occur as a result of the occurrence of the concept (Walker & Avant, 2019). The consequences, or outcomes of planetary empathy include:

1. Hope for the future and a belief in the individual and collective ability to create a healthier, more equitable world for current and future generations (Gagliano, 2018; United Nations, 2023).
2. A new and/or renewed appreciation that there are multiple ways of knowing, including indigenous and spiritual epistemologies (Brand et al., 2023; LeClair, 2021; Ward et al., 2024; Faerron Guzman & Potter, 2021).
3. Replacement of anthropocentric perspectives with a kincentric, or reciprocal approach that views humans and nature as part of an extended ecological family (Faerron Guzman et al., 2021; LeClair, 2021; Musitu-Ferrer, León-Moreno et al., 2019; Prescott et al., 2018; Smith, 2022).
4. Working toward, not only "correcting" the wrongs humans have inflicted on the planet, but also the commitment to leave a legacy of regeneration and planetary flourishing (Faerron Guzmán et al., 2021; Holm, 2012; Ialenti, 2021; United Nations, 2023).
5. Engagement in proactive behaviors that promote sustainability, address climate change, and improve the health of the planet and its people (Chen et al., 2023; Holm, 2012; Lucznik et al., 2022; Macias-Zambrano et al., 2024; Prescott & Logan, 2017; Prescott et al., 2018; United Nations, 2023).

Step 8: Empirical Referents

Empirical referents are the means by which the defining characteristics or attributes can be recognized (Walker & Avant, 2019). Individuals with high levels of planetary empathy are more likely to engage in prosocial behaviors that mitigate the adverse impacts of healthcare on the environment and minimize the damaging effects of pollution, biodiversity loss, and climate change on human health and the environment (Decety et al., 2016; Yin & Wang, 2023). Such behaviors may include connecting with nature, living sustainably, increasing one's consumption of plant-based foods, political activism, and advocacy. For healthcare professionals, planetary empathy may manifest as appropriate waste segregation and management, working with colleagues to form climate action groups, providing patient education on the interconnection between human and planetary health, implementing staff training programs, and advocating for the procurement of sustainably sourced consumables.

Empirical referents also refer to how the defining characteristics or attributes can be measured or examined (Walker & Avant, 2019). In this new field of research, observational studies, along with pre- and post-intervention studies using self-report scales, could be used to explore and measure healthcare professionals' planetary empathy levels. Consideration should also be given to mixed-methods approaches that allow for the integration of qualitative and quantitative approaches to better answer research questions related to planetary empathy, where little is known about the topic (Creswell & Plano Clark, 2018).

Definition

Based on steps 1 to 8 of this concept analysis, we offer the following definition of planetary empathy, which we describe as the "Five R" process (see Figures 1 and 2):

> "Planetary empathy is a cyclical process that begins with deep reflection on our intrinsic interconnection within nature, and stemming from knowledge, beliefs and values about planet Earth. It includes a reciprocal relationship with nature that values mutually beneficial ways of living. Integral to planetary empathy is a recognition of how implicit biases can affect our ways of knowing, being and doing, and the courage to be open to and curious about other worldviews. Planetary empathy includes assumption of responsibility for creating a healthier and more equitable world for current and future generations. Importantly, planetary empathy leads to a behavioral response that is both individual and collective, that catalyses transformative action to safeguard the health of the planet, now and into the future, and provides a legacy of regeneration."

Discussion

Planetary empathy extends the traditional notion of empathy beyond human interactions to encompass a holistic understanding of the interconnectedness between human health and the health of our planet. It recognizes the reciprocal relationships between humans and the environment, encouraging all individuals, including healthcare professionals, and those in all sectors to integrate sustainability into their personal and professional lives to promote both human and ecological well-being. In healthcare, this perspective is crucial as it encourages practices that not only address immediate patient needs, but the needs of future generations and long-term planetary impacts (Xu et al., 2021). Planetary empathy, in line with the concept of "Health in All Policies," expands the focus from person-centered care to encompass care for the planet, highlighting that human health is inseparable from planetary health (World Health Organization, 2024). This approach emphasizes the need for transformative changes across all disciplines to address the interconnected nature of health and environmental challenges. By integrating a systems thinking approach, planetary empathy allows for an understanding of the complex interdependent relationships within the healthcare ecosystem and across sectors, and identifies strategic points for sustainable transformative changes.

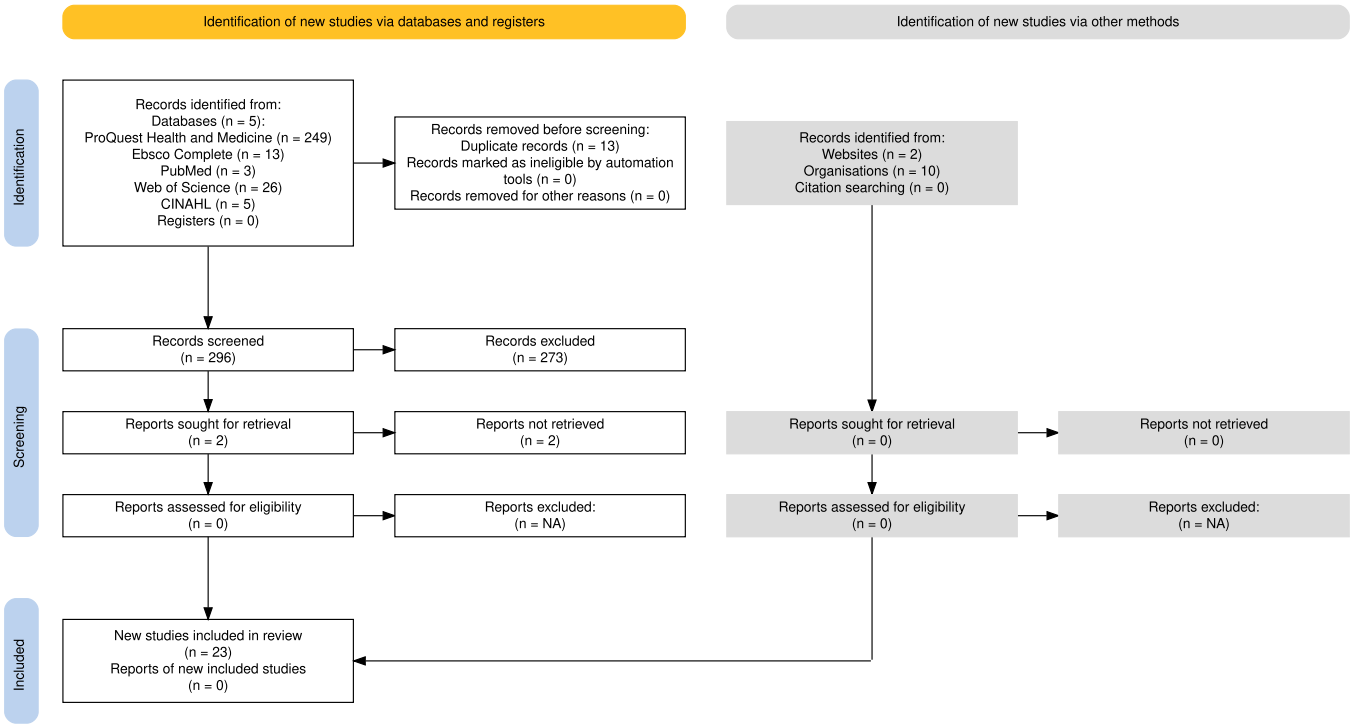

Figure 1. PRISMA flowchart.

Figure 2. The five "R" cyclical process of planetary empathy.

The holistic perspective of planetary empathy extends far beyond environmental empathy, which focuses primarily on fostering a caring attitude and proactive behaviors toward environmental issues (Chen et al., 2023). Instead, planetary empathy encompasses a broader, more inclusive view that recognizes interdependence of all life forms and the systems that sustain them. This perspective encourages the adoption of practices that are not only ecologically sustainable but also socially just, recognizing the intricate linkages between individual, community, and planetary health. Planetary health moves beyond environment issues, advocating for integrated solutions that promote health, resilience, and sustainability across all domains of health and well-being.

Unlike the traditional human-centered lens of empathy, planetary empathy advocates for empathy that transcends geographical and professional boundaries, urging all individuals to recognize their reciprocal relationships with the environment. This broader perspective is essential not only for healthcare professionals, but for all sectors, acknowledging the shared responsibility to mitigate the effects of climate change, biodiversity loss, and pollution. Planetary empathy integrates the health of the planet with the health of human beings, recognizing this reciprocity. It requires action and recognition for our shared responsibility to protect the planet, understanding that empathy without action is incomplete (Halpern, 2001). This holistic approach of empathy is supported by systems thinking, which allows for an understanding of the complex, interdependent relationships within the healthcare system and more broadly, society.

Systems thinking further enhances our understanding of planetary empathy by reflecting on interconnectedness, feedback loops, and emergent properties. This approach emphasizes the integration of human, environmental, and systemic health through a comprehensive lens (Voulvoulis et al., 2022). Systems thinking recognizes the interconnectedness of all system components, the feedback loops that can either exacerbate or mitigate issues, and the emergent properties that arise from these interactions (Iyer et al., 2021). By identifying leverage points, such as sustainable healthcare practices, systems thinking can help create lasting positive changes. For instance, environmental degradation can lead to health issues, which in turn affect social and economic stability, creating a feedback loop that perpetuates both human and ecological harm.

The key attributes of planetary empathy include reflection, reciprocity, and recognition of the interdependence between all forms of life. It necessitates a sense of responsibility for planetary health and intergenerational and interspecies equity and responding with action. Supported by systems thinking, planetary empathy offers a comprehensive framework for fostering sustainability and resilience in all sectors, including healthcare. This concept emphasizes responsibility, not just for healthcare professionals, but for all individuals.

Empathy toward the planet has profound implications for healthcare practices. Jamie's model case demonstrates how planetary empathy can drive meaningful change by integrating sustainability into both personal and professional practices. Jamie's deep appreciation for nature and understanding of the human-planet relationship led him to enact sustainable practices both personally and professionally. In contrast, Lucas' contrary case highlights apathy, a lack of reflection, reciprocity, and responsibility. Her focus is narrowly confined to immediate patient care, disregarding the interconnectedness of human and planetary health. These contrasting cases highlight the need for healthcare professionals to embrace planetary empathy, while recognizing its relevance across all sectors to promote human and ecological well-being.

Despite its potential, integrating planetary empathy into healthcare faces several challenges and barriers. Entrenched anthropocentric views, resource constraints, and a lack of awareness or education are significant obstacles (Kotcher et al., 2021; Martin et al., 2024). Systems thinking can create a paradigm shift and help identify leverage points to overcome these barriers, such as education and training, political engagement, and shaping the public discourse (Voulvoulis et al., 2022) to drive empathy for the planet and corresponding actions. Strong leadership and advocacy from healthcare professionals and across sectors are also critical, as strong policy support can address entrenched institutional practices toward sustainability (Ward et al., 2024).

Implications for Research, Practice, Education, Policy, and Leadership

There is a need to socialize the notion of planetary empathy among healthcare professionals and to challenge the view that empathy is exclusively person-based. Promoting a deeper understanding and broader acceptance of planetary empathy will help embed these values into the culture of healthcare. The concept of planetary empathy inherently calls for inter- and transdisciplinary collaboration, even outside of traditional healthcare roles. The complex and interconnected nature of planetary health issues requires input from various fields, including healthcare, environmental science, sociology, and policy studies (Jochem et al., 2023). Collaborative efforts can lead to more comprehensive and effective strategies for promoting planetary empathy. For instance, partnerships between healthcare providers and environmental scientists can help develop innovative solutions to reduce the environmental impact of healthcare practices. By integrating the principles of planetary empathy into standards for practice and accreditation guidelines, planetary considerations could become a routine part of healthcare practice.

To maximize the impact of planetary empathy in healthcare, there is a pressing need for further research, particularly empirical studies that can provide a solid evidence base for its application. Such research should aim to develop reliable and valid measures of planetary empathy, to identify the most effective strategies for fostering planetary empathy among healthcare professionals, and to investigate its impact on broad societal health outcomes. In addition, future research should address the concept of empathic balance, which is essential for maintaining emotional resilience in the face of planetary health challenges (Prewitt Diaz, 2024). Healthcare professionals must be equipped with strategies to engage deeply in planetary empathy without experiencing emotional fatigue or disengagement, especially when confronted with the scale of climate-related disasters and environmental degradation. Further investigation is required to explore how this balance can be sustained in practice.

Integrating planetary empathy into nursing, medical, and allied health undergraduate and postgraduate education is fundamental to attitudinal change and the promotion of health professionals' commitment to prosocial behaviors that mitigate the adverse impacts of healthcare on the environment and minimize the damaging effects of pollution, biodiversity loss, and climate change on human health. This could be achieved by scheduling opportunities for learners to connect with and be fully present in nature enabling them to reflect on the interconnectedness of human and planetary health, as well as their personal and professional values and views. By equipping future healthcare professionals with these knowledges, skills, and attitudes, we can foster new generations of practitioners who are committed to demonstrating empathy to the planet. These practitioners will understand that planetary empathy demands decisive actions in order to ensure the health and well-being of both current and future generations.

Policy development is another critical area where planetary empathy can have significant impact. Systems thinking can help identify key leverage points both inside of and outside of the healthcare system where strategic policy changes can lead to substantial improvements (Voulvoulis et al., 2022). For example, both

government and healthcare organization policies that encourage the use of renewable energy sources, divesting from fossil fuels, and promoting energy efficiency can significantly reduce the carbon footprint and positively impact planetary health. Additionally, healthcare organizations can implement policies that prioritize the procurement of sustainable and ethically sourced medical supplies through the end-to-end supply chain (World Health Organization, 2024). Advocacy for planetary health policies, supported by a robust evidence base and strong leadership, can lead to systemic changes that promote health equity and environmental stewardship. This approach not only aligns healthcare with the United Nations Sustainable Development Goals (United Nations, 2015), but also fosters a holistic view that integrates the well-being of people and the planet.

Effective leadership is essential for integrating planetary empathy into healthcare systems, education, and broader society. Interdisciplinary healthcare leadership can drive the adoption of planetary health practices and policies by bridging gaps between different professions (Rosa et al., 2021). Leaders in healthcare, policy, and society must collaborate to create a unified approach to planetary health, promoting a culture based on planetary empathy. This involves not only advocating for policy changes but also leading by example within both healthcare organizations and communities. By aligning organizational values with principles of planetary empathy, healthcare leaders can inspire staff and stakeholders to commit to sustainable practices.

Furthermore, intersectoral leadership can influence public opinion and drive systemic change by promoting planetary empathy. Leaders across various sectors, including government, education, industry, and not-for-profits, can work together to address the interconnected challenges of human and planetary health. By forming coalitions and partnerships, these leaders can advocate for comprehensive policies that support environmental sustainability, social justice, and public health (Rosa et al., 2021). Engaging in public discourse, leveraging media platforms, and participating in community initiatives are ways in which leaders can amplify the importance of planetary empathy and mobilize collective action toward a healthy planet.

Limitations and Strengths

One limitation of this study is that the term “planetary empathy” is not currently used in healthcare literature and was only identified in two non-healthcare papers. We therefore had to construct our concept based on a synthesis of definitions from these other fields of inquiry. However, this is also a strength of this study, as the concept being put forward is a first for the healthcare sector, and moving forward, it may provide a united starting point to promote research and education on this new topic to develop.

Conclusion

This concept analysis sought to identify what planetary empathy is and why it is important for health, healthcare, and healthcare professionals. We found that planetary empathy encompasses a profound understanding of the interconnectedness between human health and the planet, necessitating a shift from traditional, human-centric views of healthcare to a more kincentric, holistic, systems thinking approach. Through an analysis of relevant literature and by undertaking a conceptual analysis, we identified that planetary empathy is a cyclical process that entails reflexivity, reciprocity with nature, recognition of implicit biases, a deep sense of responsibility for creating a healthier and more equitable world, and responses that seek to catalyze transformative changes to safeguard the health of the planet.

Healthcare professionals who care deeply for the planet are more likely to be engaged, active, vigilant, proactive, and dedicated to fostering a healthier and more equitable world for current and future generations. This is critical in addressing the complex challenges of climate change, biodiversity loss, and environmental degradation, which have profound implications for human health. Planetary empathy is instrumental in fostering a holistic approach that integrates planetary health priorities into healthcare practice, education, and policy, and enables healthcare professionals to lead transformative changes that benefit both humanity and the planet. The concept of planetary empathy not only challenges healthcare professionals to expand their scope of empathy, but also provides a framework for actionable change that integrates the health of the planet with the health of all.

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Declaration of Competing Interest

The authors declare no conflicts of interest.

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