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Biocentric and Life Course Perspectives on Risk Perception of COVID-19 and Climate Change: A Narrative Review

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Abstract

Background: *Climate change (CC) and the COVID-19 pandemic are global crises that demand urgent policy attention. Although different in cause and timeline, both threaten health, livelihoods, and social stability. This study examines risk perception for COVID-19 and CC using a biocentric, Life Course perspective. We treat them as "two sides of the same coin."*

Methods: *We performed a narrative review. Databases searched: Scopus, Web of Science, PubMed, and Google Scholar. Keywords included: COVID-19, climate change, global warming, risk perception, understanding, life center, and biocentric. Relevant studies were screened and synthesized to extract key findings.*

Results: *Both hazards have global health impacts and need coordinated biocentric responses. COVID-19 is acute and fast; CC is chronic and slow. Both show poor public understanding of long-term risk. Risk awareness varies by population and life stage. Policies often ignore ecological and intergenerational effects.*

Conclusions: *Risk perception for CC and COVID-19 remains uneven and underdeveloped. A Life Course approach centering biology, ecology, and development across lifespans can improve responses. We recommend greater public engagement and participatory solutions. Policymakers should shift from human-centered to Life Course frameworks to support ecological health and intergenerational resilience.*

Keywords: COVID-19, Climate change, Risk perception, Life Course perspectives, Biocentric approaches.
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Introduction

COVID-19 began as a severe outbreak and increased mortality. It caused lockdowns, separation, and social distancing[1]. Media coverage was intense and widespread. This coverage likely changed community risk perception and altered behavior[2].

Risk evaluation depends on many individual and societal factors. Cultural and contextual elements shape how people perceive hazards[3]. Climate change (CC) is another major human-driven global threat. CC has complex ecological and social effects that harm human health[4].

Perception of CC is shaped by personal experience and cultural behavior. Social barriers form from cultural dimensions, past experiences, and individual attitudes[5]. A biocentric approach highlights the intrinsic value of organisms and ecosystems in studying health and disease. It focuses not only on humans but also on nonhuman species, pathogens, vectors, and the broader ecosystem[5]. This view emphasizes multilevel biological interactions: molecular, organismal, population, and ecosystem levels. It also stresses evolutionary processes and reciprocal relationships between species and their environments. These interactions help generate and maintain patterns of infectious and noninfectious disease. In epidemiology, biocentric approaches complement, not replace, human-centered methods. They broaden the unit of analysis to include wildlife and environmental reservoirs, pathogen ecology, and cross-species transmission. This integration improves surveillance, causal inference, and understanding of emergence, persistence, and spillover risks[6-8]. By placing humans within a web of biological interdependencies, biocentric thinking supports One Health and Eco health frameworks. It encourages interdisciplinary methods—such as field ecology, genomics, and systems modeling—to capture the complex drivers of population health. The biocentric approach centers on emotional experience and feedback. It frames humans as part of a living, interconnected universe[8, 9].

Risk perception is subjective. Understanding it requires grasping people's worldviews[3].

The psychometric paradigm outlines two main risk dimensions: dread and unknown. Dread reflects fear and lack

of control[10]. Unknown refers to hazards that are unobservable or unfamiliar .Risk perception is central to behavior change theories[11]. Awareness can prompt precaution, but action also depends on health beliefs and specific cognitions[3].

COVID-19 is a global public-health emergency. It spread rapidly and harmed physical and mental health[12]. The pandemic created uncertainty and worry. High exposure to social media is linked to increased anxiety and depression. Thus, understanding risk perception can inform health policy[12].

Research links CC and pandemics. Studies find relationships between COVID-19 spread and environmental factors like temperature and humidity[13]. Both COVID-19 and CC involve risks shaped by experiences, beliefs, attitudes, and institutional processes[3]. Vulnerable populations are more prone to psychological consequences.

The pandemic raised risk factors for mental health problems[14]. Lockdowns and distancing caused social isolation and income loss[15]. They increased loneliness, inactivity, and reduced access to services. Some people increased their alcohol use and online gambling[16]. Older and vulnerable groups lost family and social support[13, 16]. It is important to study how people worry about COVID-19 and CC[6]. We must examine how perceived risk affects emotions and mental health[10]. Fear is intrinsic to COVID-19 and is hard to control. The many uncertainties and demands make fear persistent[3].

We propose shifting from an anthropocentric (human-centered) view to a biocentric Life Course approach. This shift supports sustainable development across knowledge, work, education, health, and lifespans[8]. The six biocentric fields of actions and health management include: Expanded awareness and connections with the wholeness, ethical actions, and ecological awareness of the complex of living beings, Experiences and expressions of life potentials, Experiences of lively corporeality, Affective communications with all living elements, and Contacts with identity and inner orientation[8].

COVID-19 is more than an individual health issue; it is an identity crisis affecting emotional bonds and life structures[8]. Governments used lockdowns, travel limits, and curfews to control the spread. These measures also harmed mental health, dignity, and social cohesion[16]. Biocentric interventions focus on life and restoring a sense of meaning and sanctity. The pandemic shows the need to rebuild this connection in many cultures.

Although, Climate change initially had a slow start over the earlier decades and has had comprehensive effects on all aspects of the individual, social, and environmental life in communities. The current study aimed to investigate the risk perception in the two major global issues, COVID-19 and CC, based on the bio-centric field of actions.

Materials and Methods

In this Narrative review, we searched PubMed, Scopus, Web of Science, and Google Scholar from 2019 to December 2024 to identify relevant studies. We used the keywords "COVID-19", "climate change", "global warming", "risk perception", "understanding", "life-center", and "biocentric" to locate articles and documents addressing these topics. We included original articles published in English or Persian that reported on at least one of the issues CC or COVID-19. Editorials, notes, and letters to the editor were excluded. To select the studies, two trained researchers first independently screened the titles and abstracts based on the inclusion criteria. These two researchers then independently reviewed the full texts of articles. A senior researcher resolved any conflicts or disagreements.

Results

Risk perception is subjective and shaped by social, cultural, emotional, cognitive, and individual differences across people and countries. This view aligns with the biocentric approach, which frames humans as part of nature rather than separate from it. Both CC and COVID-19 have captured national and international policymakers' attention and public concern as global crises (Table 1).

Table 1. Consequences of COVID-19 and climate change

Consequences	Example
Psychological aspect	Depression[13, 16]
	Anxiety[13, 16, 28]
	Anger stress[16]
	Post-traumatic stress[16]
	Social isolation[13]
	Loneliness[13, 16]
	Stigma insomnia[16, 28]
	Decreased social support[13]
	Panic buying[13]
	Inactivity[13]
Physical health aspect	Increased access to food[13, 16, 29], alcohol[13, 16, 28]
	Demoralization[30-32]
Economic aspect	Loss of income[13, 16]
	Lost jobs[33]
Lockdown or traffic restrictions	Lockdown and physical distancing[13]

Several studies link environmental factors to COVID-19 outcomes[17]. For example, research in Indonesia found a meaningful association between average temperature and COVID-19 spread[18]. Other studies report that high urban air pollution significantly increased COVID-19 mortality[19]. These results suggest that environmental conditions influence infectious-disease dynamics.

Research also shows lessons from COVID-19 that apply to CC. First, nations facing more severe climate risks tended to experience higher COVID-19 mortality in some analyses[20]. Second, better preparedness for climate events correlated with lower coronavirus mortality. Third, collectivist societies often showed lower COVID-19 death rates. Fourth, pandemic resilience depended on health system capacity (e.g., hospital beds), the proportion of older adults, and economic resilience[20].

However, public concern patterns can be complex. A UK survey comparing April 2019 and June 2020 found little evidence that climate concern declined during the pandemic; some respondents even ranked CC above COVID-19 as a public concern[21]. Another multinational study (USA, Italy, China) found that rising attention to COVID-19 reduced attention to unrelated threats such as CC and terrorism at both micro and macro levels. It also found that direct negative experiences with COVID-19 (e.g., bereavement, economic hardship) were positively associated with heightened concern about other threats, suggesting cross-influence between personal experience and broader risk perception[22].

Long-term environmental degradation may also affect mental health. Loss of natural habitats and species extinction can contribute to identity disturbance and personality changes[23, 24]. Psychological barriers to action on CC include lack of knowledge, ideological conflict with pro-environmental steps, perceived high cost of solutions, and distrust or dismissal of experts[25].

Both COVID-19 and CC affect human health, but their temporal profiles differ. COVID-19 often produces acute, visible health effects that provoke immediate response. Climate-change health impacts often appear gradually and are harder to perceive[26], though extreme events (e.g., flash floods[3], dust storms[27]) can cause sudden, severe health and economic harm. These differences help explain variation in public risk perception and policy response.

Discussion

Extreme exposure to COVID-19 news and coverage is linked to higher rates of psychological disorders[34]. Without clear risk communication, fear and panic rise, and people turn to unreliable sources[15]. Misinformation about COVID-19 is therefore a major public-health threat[15, 35] .Accurately reporting uncertainties to the public and policymakers is crucial because the uncertainties themselves create confusion[36, 37]. Poor communication leaves a knowledge vacuum that gets filled by mistakes, falsehoods, and deliberate disinformation, sometimes from well-meaning but uninformed individuals, sometimes from actors with ideological or political motives[38].

In a 2020 study by Settersten et al.[39], "Understanding the effects of COVID-19 through a life course lens," it was stated that the COVID-19 pandemic is shaking up fundamental assumptions about the human life course in societies around the world. Life course can make an important contribution to understanding the effects of this pandemic on individuals, families, and populations. The pandemic is also changing health, personal control and planning, social and family relationships, education, work and careers, and migration and mobility.

Over time, repeated waves of COVID-19 reduced people's sensitivity to the threat; many stopped taking public-health guidance seriously, which prolonged the pandemic[1]. Studies of how people interpret scientific uncertainty support this: Budescu found large individual differences in how laypeople read Intergovernmental Panel on Climate Change (IPCC) probability statements, with many reducing them to approximate "50%" interpretations and varying by background and beliefs[38]. Translating complex scientific findings about CC and pandemic risk into public understanding is therefore difficult and easily distorted[40].

Lack of trust and competing worldviews complicate communication about CC. Political ideology and cultural worldview shape whether people see climate science as threatening to the status quo, which reduces acceptance of scientific messages[41]. In some contexts, such as parts of the U.S., public skepticism toward global warming and scientists remains high[38]. For CC, the slow, long-term nature of impacts weakens perceived urgency; for COVID-19, the acute severity and harsh measures (lockdowns, isolation) caused fatigue and burnout, further undermining the effect of risk messaging. Chronic exposure to bad news and prolonged quarantine increase stress and can impair immunity, so risk communication strategies must be reconsidered to avoid unintended health harms.

At first glance, COVID-19 appears purely harmful, but it also changed behaviors and systems in ways that might indirectly benefit climate outcomes (e.g., reduced travel and emissions). It is too early to draw firm conclusions, but the pandemic has altered some health behaviors in directions that could improve mental health and environmental outcomes if sustained.

The Finite Pool of Worry (FPW) hypothesis suggests people have limited emotional capacity for concern, so heightened worry about one threat can reduce concern about others; however, empirical support is mixed[22]. Both COVID-19 and CC impose short- and long-term physical and mental harms that threaten the core biocentric value of life. Restoring respect, dignity, and connectedness—the core of a biocentric worldview therefore important for resilience. Pandemic restrictions interfere with basic biocentric needs, but many such measures were necessary to protect human life and the planet. CC risks potentially driving a sixth mass-extinction remain an existential threat[42, 43]. Paradoxically, the pandemic temporarily reduced some emissions and offered a glimpse of alternative lifestyles; yet vaccines and public health measures alone may not end the pandemic soon, and the net long-term impact on CC remains uncertain[44].

The pandemic also produced severe social and economic fallout: early 2020 saw dramatic unemployment claims[45], with U.S. unemployment spiking and millions applying for benefits[33]. Regions with fragile health systems, such as parts of Africa, face compounded burdens from scarce resources and

COVID-19[12]. Given ongoing waves of infection and the persistent, long-term stresses of CC, environmental damage, fatalities, and socio-economic instability, urgent, effective action on both fronts is required.

The biocentric approach applies across personal health, public health, social policy, and models of human coexistence[8]. One major barrier to constructive communication about CC and health is psychological resistance and misunderstanding of scientific messages[16, 25]. Health during pandemics requires psychobiological alignment, maintaining self-regulation and resilience that the biocentric core emphasizes[46]. Because humans and nature interact bidirectionally, strengthening respect and connection to nature can help address both human and ecological crises. Since CC effects span decades or centuries, collective responsibility from individuals, organizations, and governments is essential; otherwise, the combined consequences of COVID-19 and CC will threaten civilization.

Finally, biocentric research is still limited. COVID-19's evolving and unpredictable effects mean risk perception changes over time, producing variable results. This highlights the need for more applied research on how risk perception evolves and how biocentric interventions can support resilience.

Some evidence links CC to the COVID-19 pandemic. However, we still lack a clear conclusion about that connection. Mental and physical health problems from COVID-19 and CC appear unavoidable. Unexpected, random consequences could cause irreversible tragedies. This risk grows because we do not fully understand how our actions affect the planet and people. We must seek a deeper understanding of these links to survive. We also need to restore balance between humans, other creatures, and nature. Without real, widespread environmental awareness and effective actions to reduce CC, a sustainable future is unlikely. The combination of pandemics, severe climate events, and harmful human behavior threatens that future.

Ethical Considerations

This study was approved by the Ethics Committee of Ardabil University of Medical Sciences.

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Conflict of Interest

The authors declare that the research has been conducted in the absence of any financial relationships which could be a potential conflict of interest.

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