Tabari Biomedical Student Research Journal

OPEN ACCESS

REVIEW: Climate Change and the Looming Threat of Cardiovascular Diseases in Iran: A Narrative Review

Amir Hossein Goudarzian | Student Research Committee, Mazandaran University of Medical Sciences, Sari, Iran
Student Research Committee, Tehran University of Medical Sciences, Tehran, Iran

ARTICLE INFO

Submitted: 01 Sep 2023
Accepted: 29 Oct 2023
Published: 02 Dec 2023

Keywords:
Climate change;
Cardiovascular diseases;
Iran;
Narrative Review;
Temperature

Correspondence:
Amir Hossein Goudarzian, Student Research Committee, Tehran University of Medical Sciences, Tehran, Iran.
Email: amir_sari@yahoo.com
ORCID: 0000-0002-3266-101X

Citation:
Goudarzian AH. Climate Change and the Looming Threat of Cardiovascular Diseases in Iran: A Narrative Review. Tabari Biomed Stu Res J. 2023;5(3):40-47.

10.32598/tbsrj.v5i3.10542

ABSTRACT

In this narrative article, we delve into the intersection of climate change and the rising incidence of cardiovascular diseases (CVDs) in Iran, shedding light on the urgent need for comprehensive action to protect the nation's health and heritage. Against the backdrop of Iran's diverse landscapes and cultural heritage, the article sheds light on the profound impacts of climate change on public health. Rising temperatures, more frequent heatwaves, deteriorating air quality, and disruptions in food security are identified as key climate-related factors intensifying the prevalence of CVDs. Vulnerable populations, including low-income communities and marginalized groups, face a disproportionate burden. The narrative emphasizes the urgent need for comprehensive action, encompassing healthcare infrastructure, public awareness campaigns, and climate adaptation measures. Climate justice emerges as a critical element, ensuring equitable access to resources and healthcare. The conclusion calls for collective efforts to protect cardiovascular health, uphold climate justice, and secure a sustainable future for Iran and the world.

Introduction

As the world grapples with the devastating consequences of climate change, its impact on public health remains a pressing concern. In Iran, a country known for its diverse landscapes and rich cultural heritage, the effects of a changing climate are becoming increasingly evident (1). Beyond the immediate environmental challenges, there is a silent and potentially deadly threat lurking: the risk of cardiovascular diseases (CVDs) (2). From the arid deserts to the lush forests and towering mountain ranges, the country's unique geography has sustained its people for centuries. However, as the world grapples with the relentless march of climate change, the very foundations of Iran's health and well-being are under siege. Beyond the immediate environmental challenges, there is a silent and potentially deadly threat looming: the risk of CVDs (3, 4). In this narrative article, we delve into the intersection of climate change and the rising incidence of CVDs in Iran, shedding light on the urgent need for comprehensive action to protect the nation's health and heritage.

Methods

In this narrative review that was done in 2023, International (PubMed, Web of Science, Scopus, Cochrane) and Iranian (SID and

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Magiran) databases were search without limitation of publication time. Terms including “Climate Change, Cardiovascular Diseases, Acute Myocardial Infarction, Iran” were used for searching.

Results

Iran's climate is as diverse as its terrain, ranging from arid deserts to lush forests and high mountain ranges. However, climate change is altering the balance that has existed for centuries. Rising temperatures, shifting precipitation patterns, and more frequent extreme weather events are becoming the new norm (2). These changes are not just inconvenient inconveniences but are directly linked to the increased risk of CVDs. The undeniable impact of climate change in Iran is becoming increasingly evident. Rising temperatures, shifting precipitation patterns, and more frequent and severe extreme weather events are the harbingers of this new era (5). Prolonged droughts have sapped the vitality from once-fertile regions, water scarcity has become a daily reality for many, and soaring temperatures are rewriting the rules of survival. These changes are not mere fluctuations in weather; they are profound disruptions with far-reaching consequences for the people of Iran. As temperatures continue to climb, the very essence of daily life is evolving, and with it comes an intricate web of consequences, including the alarming increase in the risk of CVDs. In the pages that follow, we will explore how these climate-induced transformations are intrinsically linked to the surging prevalence of CVDs in Iran, unveiling a silent health crisis that demands immediate attention and concerted action (6).

One of the most immediate and tangible impacts of climate change in Iran is the surge in heatwaves. Historically, Iran has experienced hot summers, but the intensifying heat is pushing the boundaries of human endurance. Prolonged exposure to extreme heat is not merely uncomfortable; it poses a severe threat to public health. Beyond the immediate risks of heat-related illnesses such as heatstroke, there exists a subtler, yet equally insidious danger - the relationship between heatwaves and CVDs (3, 7). Studies have demonstrated that exposure to high temperatures can significantly elevate blood pressure (8, 9). This phenomenon is particularly worrisome because hypertension, or high blood pressure, is a leading risk factor for heart attacks and strokes. As Iran's heatwaves become more frequent and prolonged, the prevalence of hypertension is on the rise, posing a grave risk to public health. The mechanism behind this connection is multifaceted. Extreme heat can lead to dehydration, which in turn can cause blood volume to decrease, thus raising blood pressure (10). Moreover, high temperatures prompt blood vessels to constrict, making the heart work harder to pump blood throughout the body. Over time, this strain on the cardiovascular system can lead to the development of hypertension, a condition that can remain asymptomatic until it culminates in a catastrophic event like a heart attack or stroke. In Iran's urban centers, where many citizens are exposed to extreme heat due to concrete jungles that absorb and radiate heat, and where air conditioning is a luxury for some, the risk of heat-induced hypertension is particularly pronounced. Furthermore, the elderly, children, and individuals with pre-existing cardiovascular conditions are especially vulnerable to the adverse effects of heatwaves, compounding the public health threat (10, 11). As heatwaves become increasingly common, the synergy between extreme temperatures and hypertension becomes more apparent. Addressing this intricate interplay between climate change and cardiovascular health is imperative for safeguarding the well-being of Iran's population. Mitigation strategies that include urban planning, healthcare infrastructure development, and public education on heat-related health risks are crucial steps toward countering the mounting threat posed by rising temperatures (12).

While the heatwaves in Iran grab headlines, another insidious consequence of climate change, often overshadowed but equally

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]

perilous, is the worsening air quality. Iran's major cities, like Tehran, Isfahan, and Mashhad, grapple with chronic air pollution, a problem driven by factors such as rapid urbanization and heavy reliance on fossil fuels for energy and transportation (13). Climate change exacerbates air quality issues in multiple ways. Rising temperatures can enhance the formation of ground-level ozone, a key component of smog, and amplify the chemical reactions that produce fine particulate matter (PM2.5), both of which are hazardous to human health. These pollutants can infiltrate the respiratory system, leading to inflammation, oxidative stress, and the buildup of plaque in arteries—a cascade of events that significantly contributes to CVDs (14). Fine particulate matter (PM2.5), in particular, poses a grave risk. These tiny particles, smaller than a human hair's width, can penetrate deep into the lungs and even enter the bloodstream. Once in the circulatory system, they trigger inflammation and contribute to the formation of atherosclerosis—the narrowing and hardening of arteries—ultimately leading to heart attacks, strokes, and other cardiovascular ailments (7). Furthermore, ground-level ozone, which forms when volatile organic compounds and nitrogen oxides react in the presence of sunlight, can cause respiratory problems and increase the risk of heart attacks. Long-term exposure to elevated ozone levels is associated with a higher likelihood of developing hypertension, thus amplifying the cardiovascular risk. In Iran, where air pollution remains a persistent issue, the compounding effects of climate change on air quality could have dire consequences for public health (15). Vulnerable populations, such as children, the elderly, and those with pre-existing cardiovascular conditions, face an elevated risk of suffering from the cardiovascular consequences of poor air quality (16). Mitigating this dual threat of climate change and air pollution necessitates concerted efforts to reduce greenhouse gas emissions through transitioning to cleaner energy sources, improving public transportation, and enhancing urban planning to reduce traffic congestion. Simultaneously, robust air quality monitoring and public health initiatives are essential for raising awareness and providing timely interventions to protect individuals at risk. In the face of these intertwined challenges, understanding the complex relationship between climate change, air quality, and cardiovascular health is critical. Failure to address these issues comprehensively could lead to a public health crisis of unprecedented proportions in Iran (3, 4, 10).

As climate change continues its relentless march, its effects extend beyond the realm of temperature and weather patterns. Iran's agricultural landscape, deeply reliant on water resources and sensitive to shifting climatic conditions, is facing unprecedented challenges. These challenges, including reduced crop yields, altered growing seasons, and decreased water availability, are threatening the nation's food security (17). The implications of this burgeoning food crisis for cardiovascular health are multifaceted. A sustainable and diverse diet plays a pivotal role in maintaining a healthy cardiovascular system. Yet, climate change-induced disruptions to food production can lead to changes in dietary patterns, potentially increasing the risk of obesity, diabetes, and other risk factors for CVDs (18, 19). One key concern is the changing availability of fresh produce. As climatic shifts affect the timing and success of crop harvests, the availability of fruits and vegetables may become inconsistent. A diet low in these vital food groups can deprive individuals of essential vitamins, minerals, and antioxidants, which help maintain heart health by reducing inflammation and supporting overall cardiovascular function. Conversely, the increasing prevalence of processed and ultra-processed foods, often high in unhealthy fats, sugars, and salt, can contribute to weight gain, high blood pressure, and elevated cholesterol levels—risk factors that contribute to CVDs (20). As food insecurity deepens, vulnerable communities may resort to diets high in inexpensive but less nutritious options, exacerbating the risk of CVDs. In

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]

addition to the nutritional aspects, climate change-induced food scarcity can contribute to socioeconomic stress and displacement, further increasing the burden on mental and physical health (17). Mental health challenges are closely linked to cardio-vascular health, as chronic stress can contribute to hypertension and other CVD risk factors. Mitigating these risks necessitates a multifaceted approach that includes agricultural adaptation strategies to protect food security, support for sustainable farming practices, and public health campaigns promoting balanced diets and healthy eating habits (19). Additionally, policies that address the social determinants of health, such as income inequality and access to education, can help alleviate the burden of CVDs in a changing climate. The intricate relationship between climate change, food security, and cardiovascular health in Iran demands holistic and proactive measures. By prioritizing the resilience of the agricultural sector, promoting nutritious diets, and addressing the social and economic factors contributing to CVDs, Iran can mitigate the looming threat to public health and pave the way for a healthier future in a changing climate (19).

Vital strategies and precautions against risk factors

- **Heatwaves**

Climate change is leading to more frequent and intense heatwaves. To protect cardiovascular health, it's crucial to stay informed about heatwave warnings and advisories in your region. Many meteoro-logical services provide early alerts for extreme heat events. Plan ahead by knowing where cooling shelters and air-conditioned spaces are located in your area. High temperatures can lead to dehydration, which can strain the cardiovascular system. During heatwaves, prioritize staying well-hydrated by drinking plenty of water. Avoid excessive consumption of caffeinated or alcoholic beverages, as they can contribute to dehydration (21). Certain individuals are more susceptible to heat-related health issues, including the elderly, young children, and those with pre-existing cardiovascular conditions. Check on elderly family members, neighbors, or friends during heatwaves, and ensure they have access to cooling and hydration. Regular physical activity is essential for cardiovascular health, but during extreme heat, adapt your exercise routine. Consider indoor workouts in air-conditioned spaces or opt for lower-intensity activities, like swimming, that help maintain fitness without excessive heat exposure (22). Learn the signs of heat-related illnesses like heat exhaustion and heatstroke, which can be life-threatening. Symptoms may include heavy sweating, nausea, rapid heartbeat, confusion, and loss of consciousness. If someone exhibits these symptoms, seek immediate medical attention. Use fans, air conditioning, and cooling vests to stay comfortable and reduce the risk of heat stress. If you don't have access to air conditioning at home, consider spending time in public spaces like shopping malls or community centers during the hottest parts of the day (22, 23).

- **Air quality**

Climate change is contributing to worsening air quality in many regions. To protect cardiovascular health, it's vital to stay informed about air quality conditions in your area (24). Monitor local air quality indices, which are often available through government agencies or weather apps. Be particularly vigilant during times when climate change-related factors, like heat and increased wildfires, can exacerbate air pollution (25). When air quality is poor due to high levels of pollutants such as particulate matter (PM2.5), ozone, or wildfire smoke, it's advisable to limit outdoor activities, especially for vulnerable groups like children, the elderly, and individuals with pre-existing cardiovascular conditions. If outdoor exercise is a regular part of your routine, consider indoor alternatives during days of compromised air quality. Investing in air purifiers for your home can help improve indoor air quality, particularly if you live in

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]

areas prone to poor outdoor air quality due to climate-related factors like wildfires (26). High-efficiency particulate air (HEPA) filters can help remove fine particulate matter, reducing your exposure to harmful pollutants. Recognize that children, the elderly, and individuals with pre-existing cardiovascular conditions are at higher risk of experiencing health effects from poor air quality. Pay special attention to their well-being and ensure they have access to clean indoor air during periods of compromised outdoor air quality (27). Support policies and initiatives aimed at reducing air pollution and greenhouse gas emissions, which are major drivers of climate change and poor air quality. Encourage the transition to cleaner energy sources, stricter emissions standards for vehicles and industries, and the expansion of public transportation to reduce traffic-related pollution (24, 28).

- **Food safety**

Climate change poses significant challenges to food production and security. Support sustainable and climate-resilient agricultural practices, such as crop diversification, efficient irrigation, and soil conservation. These practices not only enhance food security but also reduce the environmental impact of agriculture. Encourage diets that emphasize plant-based foods like fruits, vegetables, whole grains, legumes, and nuts (29). Plant-based diets are not only associated with lower CVD risk but also have a smaller carbon footprint compared to diets heavy in animal products. Reducing meat consumption, especially red and processed meats, can benefit both cardiovascular health and the environment. Choose locally grown and seasonal foods whenever possible. This reduces the carbon footprint associated with transporting food long distances and supports local farmers. It can also ensure a fresher and more nutrient-rich diet. Food waste contributes to both environmental degradation and food insecurity (30). Take steps to minimize food waste by planning meals, using leftovers creatively, and composting organic waste. This reduces the demand for excessive food production, which can contribute to climate change. Raise awareness about the link between dietary choices, climate change, and cardiovascular health. Educate individuals and communities about the benefits of adopting climate-friendly diets that align with both personal well-being and environmental sustainability (31, 32).

- **Mental health condition**

Acknowledge that climate change can have significant mental health impacts. The stress, anxiety, and uncertainty associated with climate-related events, such as extreme weather events, displacement, and loss of livelihoods, can contribute to mental health challenges. Raise awareness within communities, healthcare systems, and educational institutions about the mental health effects of climate change. Encourage open discussions about climate-related stressors and their potential impact on mental well-being (33). Ensure access to mental health services and support, especially in communities vulnerable to climate-related events. Healthcare providers should be trained to recognize and address the mental health needs of individuals and communities affected by climate change (34). Promote community resilience by fostering support networks and social cohesion. Communities that come together during and after climate-related events can provide crucial emotional support, reducing the mental health burden. Establish mental health outreach programs that target vulnerable populations, including those affected by climate-induced disasters. These programs can provide counseling, coping strategies, and resources to help individuals and communities manage stress and anxiety. Incorporate climate education and coping skills into school curricula and community workshops (35). Teaching individuals how to manage stress and anxiety related to climate change can empower them to protect their mental health. Participate in advocacy efforts that call for climate action and policies aimed at mitigating climate change. Reducing greenhouse gas emissions

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]

can alleviate some of the climate-related stressors and mental health impacts. Promote activities that enhance mental resilience and well-being, such as mindfulness practices, nature-based therapies, and stress-reduction techniques. Encourage individuals and communities to prioritize self-care during and after climate-related events (33).

Conclusion

As we navigate the turbulent waters of climate change, it becomes increasingly evident that its far-reaching consequences extend beyond the environment alone. The intersection of climate change and CVDs in Iran highlights a pressing concern that demands our immediate attention. In the diverse landscapes of Iran, from its soaring mountain ranges to its arid deserts, the impacts of a changing climate are reshaping lives. The rising temperatures, more frequent heatwaves, worsening air quality, and disruptions to food security are all contributing factors that pose a silent and potentially deadly threat to cardiovascular health. As we look to the future, let us remember that the fight against climate change and the battle for cardiovascular health are intrinsically linked. By taking comprehensive action, raising awareness, and fostering resilience, we can forge a path toward a healthier, more sustainable future for Iran and the world. It is a path we must embark upon together, with urgency and determination, for the well-being of current and future generations.

Acknowledgments

Many thanks to student research committee of Mazandaran University of Medical Sciences for financial support.

Conflicts of Interest

None has been declared.

References

1. Mansouri Daneshvar MR, Ebrahimi M, Nejadsoleymani H. An overview of climate change in Iran: facts and statistics. Environmental Systems Research. 2019;8(1):1-10.
2. McCutcheon K, Vachiat A, Manga P. Climate Change and Cardiovascular Disease in Africa. Wits Journal of Clinical Medicine. 2022;4(3):135-40.
3. Sharif Nia H, Gorgulu O, Naghavi N, Froelicher ES, Fomani FK, Goudarzian AH, et al. A time-series prediction model of acute myocardial infarction in northern of Iran: the risk of climate change and religious mourning. BMC cardiovascular disorders. 2021;21:1-11.
4. Nia HS, Chan YH, Froelicher ES, Sharif SP, Yaghoobzadeh A, Jafari A, et al. Weather fluctuations: predictive factors in the prevalence of acute coronary syndrome. Health promotion perspectives. 2019;9(2):123.
5. Khraishah H, Alahmad B, Ostergard Jr RL, AlAshqar A, Albaghdadi M, Vellanki N, et al. Climate change and cardiovascular disease: implications for global health. Nature Reviews Cardiology. 2022;19(12):798-812.
6. Baaghideh M, Mayvaneh F. Climate change and simulation of cardiovascular disease mortality: A case study of Mashhad, Iran. Iranian Journal of Public Health. 2017;46(3):396.
7. Alahmad B, Khraishah H, Althalji K, Borchert W, Al-Mulla F, Koutrakis P. Connections Between Air Pollution, Climate Change, and Cardiovascular Health. Canadian Journal of Cardiology. 2023.
8. Weller RB, Wang Y, He J, Maddux FW, Usvyat L, Zhang H, et al. Does incident solar ultraviolet radiation lower blood pressure? Journal of the American Heart Association. 2020;9(5):e013837.
9. Modesti PA, Morabito M, Massetti L, Rapi S, Orlandini S, Mancia G, et al. Seasonal blood pressure changes: an independent relationship with temperature and daylight hours. Hypertension. 2013;61(4):908-14.
10. Nia HS, Gorgulu O, Sharif SP, Froelicher ES, Haghdoost AA, Golshani S, et

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]

al. Prevalence of acute myocardial infarction and changing meteorological conditions in Iran: fuzzy clustering approach. Iranian journal of public health. 2020;49(5):923.
11. Hadley MB, Vedanthan R, Ebi KL, Fuster V. Climate cardiology. BMJ Global Health. 2022;7(6):e008860.
12. Petrovic N, Madrigano J, Zaval L. Motivating mitigation: when health matters more than climate change. Climatic Change. 2014;126:245-54.
13. Mousavi A, Ardalan A, Takian A, Ostadtaghizadeh A, Naddafi K, Bavani AM. Climate change and health in Iran: a narrative review. Journal of Environmental Health Science and Engineering. 2020;18:367-78.
14. Gostimirovic M, Novakovic R, Rajkovic J, Djokic V, Terzic D, Putnik S, et al. The influence of climate change on human cardiovascular function. Archives of environmental & occupational health. 2020;75(7):406-14.
15. Shrikhande SS, Merten S, Cambaco O, Lee T, Lakshmanasamy R, Röösli M, et al. "Climate Change and Health?": Knowledge and Perceptions among Key Stakeholders in Puducherry, India. International Journal of Environmental Research and Public Health. 2023;20(6):4703.
16. Khraishah H, Ganatra S, Al-Kindi SG. Climate Change, Environmental Pollution, and the Role of Cardiologists of the Future. American College of Cardiology Foundation Washington DC; 2023. p. 1127-32.
17. Kakaei S, Zakerimoghadam M, Rahmanian M, Dolatabadi ZA. The impact of climate change on heart failure: a narrative review study. Shiraz E-Medical Journal. 2021;22(9).
18. GHanizadeH G, Heidari M, Seifi B, Jafari H, PakJouei S. The Effect of Climate Change on Cardiopulmonary Disease-A Systematic Review. Journal of Clinical & Diagnostic Research. 2017;11(12).
19. Kelishadi R, Poursafa P. A review on the genetic, environmental, and lifestyle aspects of the early-life origins of cardiovascular disease. Current problems in pediatric and adolescent health care. 2014;44(3):54-72.
20. Abrignani MG, Lombardo A, Braschi A, Renda N, Abrignani V. Climatic influences on cardiovascular diseases. World journal of cardiology. 2022;14(3):152.
21. Cheng J, Xu Z, Bambrick H, Prescott V, Wang N, Zhang Y, et al. Cardiorespiratory effects of heatwaves: A systematic review and meta-analysis of global epidemiological evidence. Environmental research. 2019;177:108610.
22. Münzel T, Hahad O, Sørensen M, Lelieveld J, Duerr GD, Nieuwenhuijsen M, et al. Environmental risk factors and cardiovascular diseases: a comprehensive expert review. Cardiovascular Research. 2022;118(14):2880-902.
23. Jarmul S, Dangour AD, Green R, Liew Z, Haines A, Scheelbeek PF. Climate change mitigation through dietary change: a systematic review of empirical and modelling studies on the environmental footprints and health effects of 'sustainable diets'. Environmental research letters: ERL [Web site]. 2020;15:123014.
24. Jacobsen AP, Blumenthal RS. Cardiovascular disease is the condition, air pollution the risk factor, fossil fuel combustion the cause. Journal of the American College of Cardiology. 2022;79(2):e131-e.
25. Lu K, Kang J, Wang G. The Impact of Air Quality on Cardiovascular Disease in Shanghai. Journal of Healthcare Engineering. 2022;2022.
26. Morishita M, Thompson KC, Brook RD. Understanding air pollution and cardiovascular diseases: is it preventable? Current cardiovascular risk reports. 2015;9:1-9.
27. Roshan G, Ghanghermeh A, Mohammadnejad V, Fdez-Arróyabe P, Santurtún A. Predicting climate change impact on hospitalizations of cardiovascular patients in Tabriz. Urban Climate. 2022;44:101184.
28. Lokotola CL, Wright CY, Wichmann J. Temperature as a modifier of the effects of air pollution on cardiovascular disease

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]

hospital admissions in Cape Town, South Africa. Environmental Science and Pollution Research. 2020;27:16677-85.
29. Giosuè A, Recanati F, Calabrese I, Dembska K, Castaldi S, Gagliardi F, et al. Good for the heart, good for the Earth: proposal of a dietary pattern able to optimize cardiovascular disease prevention and mitigate climate change. Nutrition, Metabolism and Cardiovascular Diseases. 2022;32(12):2772-81.
30. Stranges S, Luginaah I. Nutrition and health: Time for a paradigm shift for climate change. Nutrition, Metabolism and Cardiovascular Diseases. 2022;32(12):2782-5.
31. Friel S. Climate change, food insecurity and chronic diseases: sustainable and healthy policy opportunities for Australia. New South Wales public health bulletin. 2010;21(6):129-33.
32. Desai Y, Khraishah H, Alahmad B. Focus: Climate Change and Environmental Health: Heat and the Heart. The Yale Journal of Biology and Medicine. 2023;96(2):197.
33. Berry HL, Bowen K, Kjellstrom T. Climate change and mental health: a causal pathways framework. International journal of public health. 2010;55:123-32.
34. Lawrance E, Thompson R, Fontana G, Jennings N. The impact of climate change on mental health and emotional wellbeing: current evidence and implications for policy and practice. Grantham Institute briefing paper. 2021;36.
35. Jacobsen AP, Khiew YC, Duffy E, O'Connell J, Brown E, Auwaerter PG, et al. Climate change and the prevention of cardiovascular disease. American Journal of Preventive Cardiology. 2022:100391.

[Downloaded from tbsrj.mazums.ac.ir on 2026-11-18]

[DOI: 10.32598/tbsrj.v5i3.10542]