Title: Assessment and Prediction of Workers' Vulnerability to Climate Change in Khorasan Razavi Province, Iran

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ABSTRACT

Background: The phenomenon of climate change has been declared by international organizations as one of the greatest health challenges of the century. This study aimed to assess the vulnerability of occupational risk factors of workers to climate change and predict the values of the relevant indicators in the future.

Materials and Methods: This study was conducted in 2021 in Khorasan razavi province. Occupational health indicators affected by climate change were extracted from a literature review. Then, information on available occupational and climatic indicators were collected and significant relationships between occupational health indicators and climate parameters were determined through stepwise regression modeling in SPSS software (P-value<0.05). Equations were formulated and occupational indicators were predicted based on optimistic (SSP1-2.6), moderate (SSP3-7.0), and pessimistic (SSP5-8.5) scenarios for the period 2021-2100.

Results: The results showed that occupational risk factors significantly affected by climate change in this province include heat and radiation. Wind speed and relative humidity as climate parameters had the greatest impact on the studied indicators. The predicted future average values indicated that the percentages of workers exposed to heat stress and radiation to increase by 2.6 and 2.9 times, respectively.

Conclusion: The effects of climate change have been confirmed in Khorasan razavi province of Iran and based on predictions in this study, these harmful effects will increase in work environments in the future, which could ultimately result in occupational accidents and work – related diseases. Therefore, it is recommended policymakers to determine and implement climate change mitigation and adaptation strategies to reduce the vulnerability of the workers in Iran.

Keywords: Climate change, Workers, Occupational health, Heat stress, Ultraviolet, Dust

Introduction

The global climate change has been stated as one of the fundamental threats to human health and has been referred to as the greatest challenge of the century by the World Health Organization (WHO) and the Intergovernmental Panel on Climate Change (IPCC) (1, 2). The climate change has led to an increasing environmental crises and related health hazards in affected communities (3). One of the challenging issues related to climate change in the world is examining the relationship between climate change and health. Previous studies have confirmed the increasing role of climate change in the prevalence of diseases that affected from climate change such as water-food borne diseases, Arthropod-Borne Diseases, occupational diseases (4, 6-7). There has been significant scientific evidences and planning regarding the relationship between public health and climate change, but there is limited studies about the effects of climate change on workers (8, 9). Additionally, some studies have predicted that in the most regions of Iran, the average temperature will increase by 4.5 degrees Celsius by the year 2100 (7, 10-11). Iran's geographical location and topographic features have exposed the country to climate change and related harmful consequences. The severity impacts of climate changes is greater in eastern and central provinces of Iran, such as Isfahan, Semnan, Khorasan razavi, Southern Khorasan, and the population is severely affected by the adverse health effects of climate change (11).

Workers are often among the first groups to be exposed to the effects of climate change for longer periods and with greater intensity compared to the general population (12). An important challenge in this regard is related to explaining how climatic events affect safety and health of workers, and preventive programs for mitigation, response, and adaptation to climate change (13). Outdoor workers such as agricultural, construction workers, emergency first responders including firefighters, police, pre-hospital personnel, public transportation and service workers are particularly affected from harmful impacts of climate change (14, 15). Indoor workers can also be vulnerable to the consequences of climate change such as increased temperature or air pollution. For instance, statistics from the U.S. Occupational Safety and Health Administration (OSHA) state that agricultural workers are particularly vulnerable to heat-related conditions, with the mortality and injuries rate 19.5 times higher compared to workers who are employed by other sectors and this trend continues to increase among agricultural workers between 2030-2100 (16). For worker populations such as migrant or day laborers, there are other economic and social limitations or lack of proper housing that can increase the vulnerability of these groups to climate change (17).

Currently, five categories of recognized climate change hazards including heat waves and increased temperature, air pollution, Ultraviolet (UV) radiation, weather-related disasters, and vector-borne diseases can affect work environments (8, 18). Moreover, the burden of related climate change diseases in workers from low and middle-income countries is greater due to frequent exposure to extreme weather events and high temperatures, especially since these countries have fewer available resources for mitigation and adaptation to climate change (19). In addition to implement mitigation and adaptation strategies at workplaces, it is also necessary to ensure from the preparedness and emergency response of health system to climate change (1, 13). Identifying the vulnerability of climate change hazards on workers' populations and implementing strategic measures to mitigate and adapt to climate change is inevitable for Iran and other countries. Regarding that the central and eastern provinces are more sensitive to climate change and a large portion of the working population in Khorasan razavi province is engaged in agricultural and mining activities, such as saffron cultivation, sand and gravel, and iron ore surface mines. Therefore, a significant number of workers in this province are accounted as outdoor workers that increases workers' exposure with occupational hazards related to climate change and making them more vulnerable to climate change. The aim of this study is assessing and predicting workers' vulnerability to climate change in Khorasan razavi province.

Material and Methods

This cross-sectional study was conducted in Khorasan razavi province, 2021. This study was designed in three phases including systematic review, descriptive analysis, modeling and prediction.

Phase 1- systematic review

We conducted a systematic review to identify which and how occupational health indicators affect from climate change in this phase of study. Our research question focused on the occupational indicators that have been affected by climate change. We searched international electronic databases, including PubMed, Web of Science, and Scopus for international English articles, SID and Mgiran for Persian articles. Furthermore, the authors reviewed available electronic resources such as books, the website of universities, and documents from international organizations. The

search strategy was used using Medical Subject Headings (MeSH)): ("Climate change") AND (indicator* OR component* OR Hazard*) AND (Health OR "Occupational health") AND (worker* OR personnel OR employee* OR occupant*). The applied search strategy was the same for all databases. The obtained full-text articles were studied to extract the occupational health hazards or indicators that were affected from climate change at workplaces (Fig. 1). Furthermore, the climatic parameters were recognized in this study.

Phase 2- Descriptive analysis

The data of occupational health indicators and climatic parameters were collected from Environmental and Occupational Health Center (EOHC) of Ministry of Health (MOH) and Iran Meteorological Organization (IMO), respectively. The data of EOHC were collected from 2005-2019 and data from IMO were available in recent 30 years. Subsequently, the time trend graphs of retrospective analysis of occupational health and climate parameters were created by Excel software.

Phase 3- Modeling and climate projection

For climate projection, 5 models of GFDL-ESM4, IPSL-CM6A-LR, MPI-ESM1-2-HR, MRI-ESM2 -0, and UKESM1-0-LL from the Coupled Model Inter comparison Project Phase 6 (CMIP6) were used. The applied climatic variables for projection were minimum air temperature, maximum air temperature, average air temperature, precipitation, relative humidity, and wind speed. Furthermore, significant relationships between occupational health indicators and climate parameters were identified by implementing regression tests in this phase. The variables that showed significant relationships, were applied through stepwise regression modeling using SPSS, version 22. Subsequently, the obtained equations from stepwise regression modeling were formulated using Excel software version 2019. Finally, occupational health indicators were predicted based on optimistic (SSP1-2.6), moderate (SSP3-7.0), and pessimistic (SSP5-8.5) scenarios for the period 2021-2100, and the most vulnerable cities to climate change was identified in Khorasan razavi province.

Ethical consideration

This study was approved by the ethical and research committee of Semnan University of Medical Sciences (IR.SEMUMS.REC.1400.157).

Results

Phase 1- A total of 32 records including studies and other sources (reports and documents) was included in the study and analyzed. The records covered various occupational hazards and indicators that were affected from climate change.

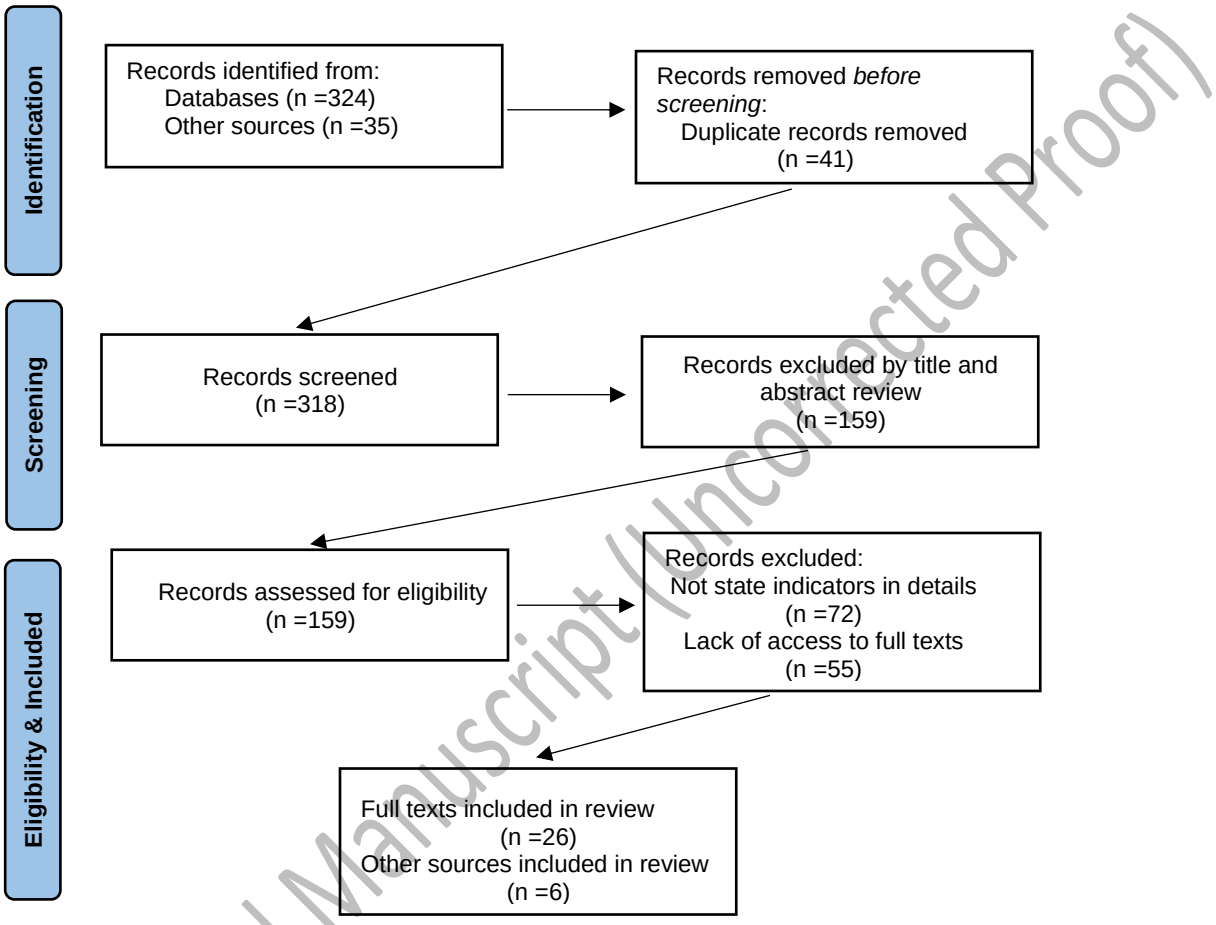


Fig1. Flow diagram of screening process for review according to PRISMA Checklist

Twenty-two occupational health and occupational diseases indicators related to climate change, were extracted from the systematic review. These indicators were number of occupational death, accidents and injuries, the percentage of workers exposed to heat stress, harmful Ultra Violet (UV) radiation and dust, percentage of enterprises without appropriate ventilation and Health, Safety and Environment (HSE) office, Percentage of workers without access to appropriate rest space, ventilation, safe drinking water, percent usage of Personal Protective Equipment (PPE) and

working clothes, number of loss days because of occupational disease, number of occupational skin cancer, occupational heat-related, respiratory, cardio vascular and chronic diseases, percentage of illiterate, smoking workers, percentage of workers who take medicine and percentage of workers with inappropriate Body Mass Index (BMI). The collected data were limited to three indicators due to the lack of data in this study. The available data were related to percentage of workers exposed to harmful heat stress, UV radiation and dust at workplaces. Further, the climatic parameters under study were seven factors, including minimum, mean and maximum temperature, relative humidity, precipitation, wind speed, and freezing days.

Phase 2- The information on three occupational health indicators and climatic parameters was available over the past 15 years (2005-2019) and 30 years (1989-2019), respectively. The descriptive analysis of occupational health indicators in Khorasan razavi have been demonstrated in Fig. 2.

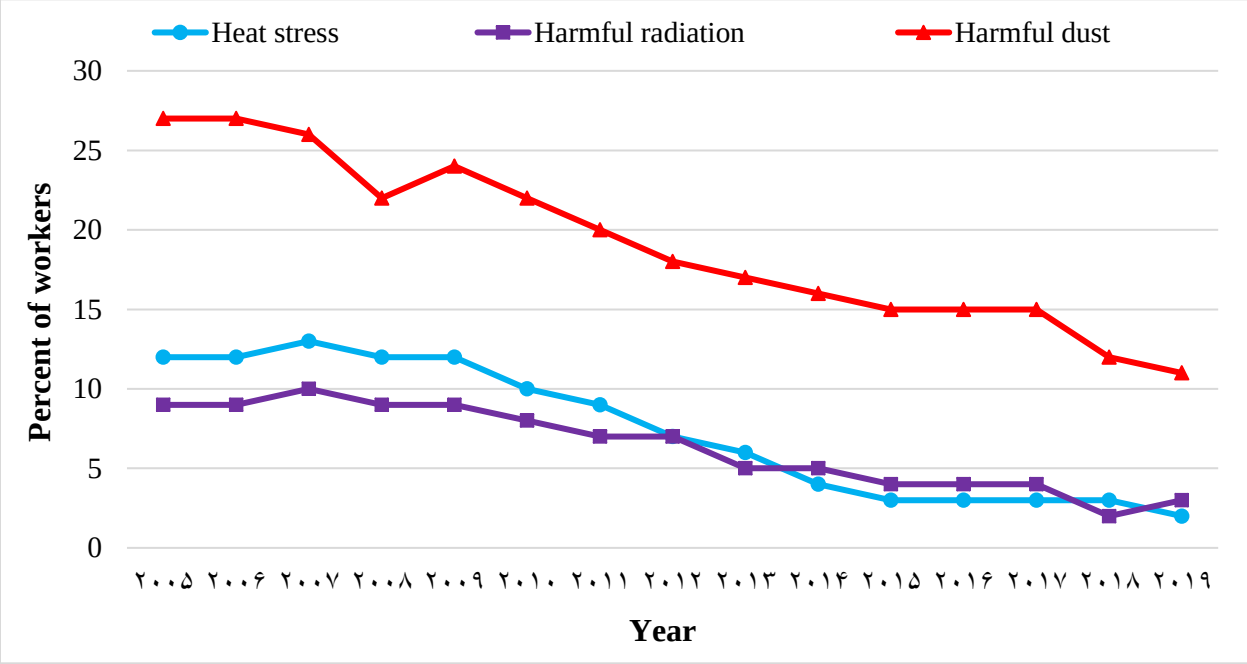


Fig. 2- Time trend of percent of workers exposed to harmful heat stress, UV radiation, and dust in Khorasan razavi (2005-2019)

Despite the increasing trend of temperature and the decreasing trend in precipitation over the past 30 years, retrospective data analysis of occupational health indicators showed that the percentage of workers exposed to heat stress, harmful UV radiation, and dust in workplaces have been decreased over the past 15 years.

Table 1 shows the descriptive analysis of climatic parameters in Khorasan razavi province over a 30-year period.

Table 1. Descriptive trend changes of climatic parameters understudy in Khorasan razavi province (1989-2019)

Climatic Parameter	Trend
Minimum temperature	Significant increasing in spring, summer, autumn and winter seasons
Mean temperature	Significant increasing in summer, autumn and winter seasons
Maximum temperature	Significant increasing in spring and winter seasons
Relative humidity	Significant decreasing in spring, summer and winter seasons
Precipitation	The average precipitation over 30 years in the province has been 209.5 millimeters, which is less than the average precipitation in Iran (232.4 millimeters) and is considered one of the low precipitation areas in the world. The distribution of rainfall across the province is also not uniform, and generally, the amount decreases from the north to the south of the province.
Wind speed	Significant decreasing in summer, autumn and winter seasons

Phase 3- Then, the significant relationships between climatic parameters and occupational health indicators were obtained by regression test. The significant level was considered as 0.05 (Table 2).

Table 2. Results of correlation test between health indicators and climatic parameters in Khorasan-e razavi Province

Climatic Parameter / Health Indicator	[1]T_{min}	[2]T_{mean}	[3]T_{max}	Relative Humidity	Precipitation	Wind Speed	Freezing Days
Occupational death	0.041*	0.101	0.963	0.197	0.433	0.026*	0.286
Occupational accidents	0.554	0.045*	0.043*	0.207	0.931	0.001**	0.387
Occupational injuries	0.799	0.304	0.194	0.074	0.660	0.546	0.537
Percent of workers which exposed to heat stress	0.035*	0.785	0.237	0.015*	0.637	0.01*	0.163
Percent of workers which exposed to dust	0.002**	0.005**	0.018*	0.001**	0.001** r = -0.408	0.931	0.015*
Percent of workers which exposed to harmful radiation	0.051	0.255	0.101	0.005**	0.027* r = -0.279	0.045*	0.173

*Significant P-value at 0.05 level; **Significant P-value at 0.01 level
[1]Minimum temperature
[2]Mean temperature
[3]Maximum temperature

The results of modeling health indicators and climatic parameters in Khorasan razavi province showed that the occupational health indicators affected by climate change in this province are the percentage of workers exposed to harmful occupational factors including heat, dust, and radiation. Ultimately, the significant climatic parameters included in the model for the mentioned occupational health indicators were relative humidity for the percentage of workers exposed to harmful radiation and dust, and maximum temperature for the percentage of workers exposed to harmful heat (Table 3).

Table 3. Stepwise linear regression for health indicators and climatic parameters in Khorasan razavi Province

Health Indicator (Dependent variable)	Climatic Parameter(s) (Independent variable)	Unstandardized Coefficients		Modeling Equation
		B	Std. Error	
Percent of workers which are exposed to heat stress(y)	(Constant) Wind speed (X)	0.235 3.38	3.593 1.141	$y = 0.235 + 3.38X$
Percent of workers which are exposed to dust (y)	(Constant) Relative humidity (X)	91.983 -1.541	11.571 0.275	$y = 91.983 + (-1.541)X$
Percent of workers which are exposed to radiation (y)	(Constant) Relative humidity (X)	41.984 -0.66	9.766 0.228	$y = 41.984 + (-0.66)X$

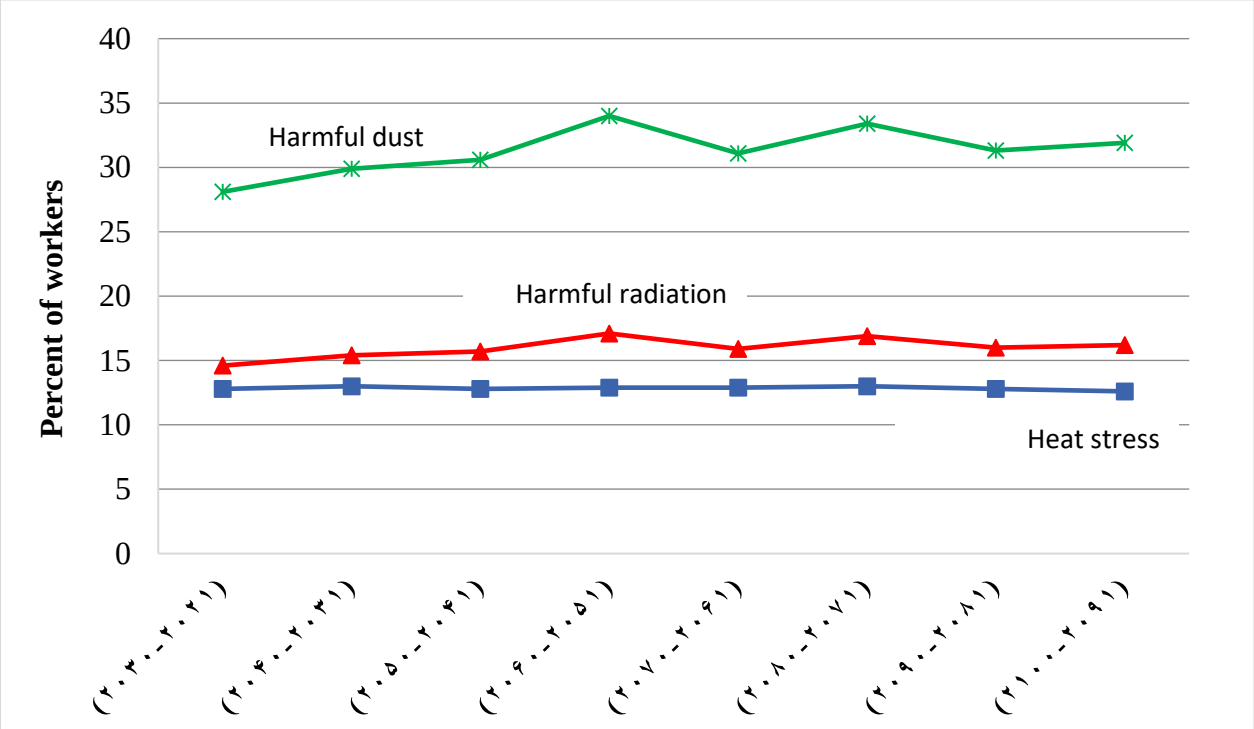
Furthermore, the result of predicting climatic parameters in the next 8 decades based on optimistic (SSP1-2.6), moderate (SSP3-7.0), and pessimistic (SSP5-8.5) scenarios have been indicated in Table 4.

Table 4. Predicted time trend of climatic parameters understudy in Khorasan razavi (2021-2100)

Climatic parameter	Trend changes		
	(SSP1-2.6)	(SSP3-7.0)	(SSP5-8.5)
Minimum temperature	increasing	increasing	increasing
Mean temperature	increasing	increasing	increasing
Maximum temperature	increasing	increasing	increasing
Relative humidity	not significant	not significant	not significant
Precipitation	not significant	not significant	not significant
Wind speed	not significant	not significant	not significant

The predicted results for occupational health indicators across 8 time periods (2021-2100 AD) in Khorasan razavi province demonstrated that the percentage of workers exposed to harmful occupational heat and radiation will have a decreasing trend at the provincial level, while the percentage of workers exposed to dust will have an increasing trend. Comparing results the mean values of these occupational health indicators in the current and predicted situations showed that in the coming decades, the percentages of workers exposed to harmful occupational heat and radiation will increase by 2.6 and 2.9 times, respectively (Fig. 3).

Fig. 3- Predicted Time trend of percent of workers exposed to harmful heat stress, UV radiation, and dust in Khorasan razavi (2021-2100)



The predicted mean values for the mentioned health indicators during the 2021-2100 period among the cities of Khorasan razavi province showed that the most vulnerable cities affected from climate change are Torbatjam and Gonabad in the indicators of percentage of workers exposed to heat stress, harmful UV radiation and dust, respectively.

Discussion

This study was conducted to determine the vulnerability of workers in the scope of occupational risk factors from climate change in Khorasan razavi province. Climate is the average weather condition of an area taken over a prolonged period of time. It is the statistics of climate parameters such as temperature, humidity, pressure, rainfall, sunshine intensity and other meteorological elemental measurements in a given area over a long period of time, usually 30years and above (20). The previous studies and changes in climatic parameters revealed that climate change has been occurred in Iran and unfortunately, this country can suffer severely from climate change in the next few years (7, 21-23).

Agriculture is the main stain of economy in the Khorasan razavi province. A large portion of the working population is engaged in agriculture specific Zaffran cultivation in this province (24). Additionally, a significant number of surface mines such as sand and gravel, iron, and etc. are scattered across the geographical areas under study and a large population of staff in services or pre-hospital sectors are employed in outdoor areas. This situation increases workers' exposure to occupational heat and radiation factors, making them more vulnerable to climate change in compare to staff who works in enclosed areas or industry section (25-26). Therefore, the trend of indicators changes was predicted in the next eight decades (2021–2100) in the province understudy. Due to climate change and findings, the predicted percentages of workers exposed to heat stress and harmful UV radiation will increase by 2.6 and 2.9 times, respectively. This result confirms with IPCC and WHO reports. The 6th assessment report of IPCC states that the global surface temperature will continue to increase until at least mid-century under all emissions scenarios considered. Depending on the scenario, the IPCC estimates that by 2100, global surface temperature is likely to be 1.0°C to 5.7°C higher compared to the 1850-1900 baseline (27). Furthermore, WHO reported that climate change-induced alterations in cloud cover, air pollution, and surface reflectivity may affect UV radiation levels, and suggests that by 2100, annual UV radiation doses could increase by 2-3% in tropical regions (28).

Therefore, the importance of developing and implementing strategies to decrease the effects of harmful agents and adapt to climate change is inevitable, particularly concerning harmful occupational heat and radiation factors and the affected workers population in the province understudy. Moreover, adequate supervision and continuous occupational health inspections of outdoor occupations and workers under the coverage of each health centers should be carried out

by occupational health experts that are affiliated to MOH (29). This approach needs to implement the required changes in the existing inspection forms and collecting data about the vulnerability occupational indicators that affected from climate change. Depending on worker's sensitivity, exposure and occupational health risk factors to climate change, the appropriate preventive strategies are considered by health officials in the vulnerable areas. The similar result of a study highlights on a comprehensive operational program to reduce the vulnerability of outdoor workers in Iran, where no national regulations exist to protect them from heat stress. This program includes six main components with 69 strategies, targeting the reduction of sensitivity and exposure levels, and increasing adaptation to heat stress at workplaces (1). Such these programs can ensure the implementation of engineering control measures, the use of appropriate PPE, and the establishment of HSE units in workplaces, that result to decrease the percentage of workers who exposed to occupational health risk factors in the retrospective analysis in this study. Furthermore, it is need to establish the mitigation and adaptation strategies of climate change at workplaces to decrease the working population's exposure to a significant level of health assurance.

Limitation

Unfortunately, due to the lack of information and the failure to collect the necessary indicators extracted from literature review at the national level, only three out of the 22 indicators could be examined in this study. Additionally, due to the unavailability of statistics on occupational diseases affected by climate change, such as heat-related diseases, cardiovascular diseases, skin cancers, etc., it was not possible to accurately and clearly estimate the average changes in related occupational diseases affected by heat and radiation in worker populations in this province over the next 80 years. Conducting this study could have provided valuable data for planning health and medical services and implementing strategies and programs to prevent and mitigate occupational diseases which were affected climate change by health officials and decision-makers at local, provincial and national levels.

Conclusion

The findings of this study indicated that the percent of workers in eastern regions of Iran will be more exposed to heat stress and UV radiation due to climate change at workplaces, and more workers may be involved in occupational accidents and related diseases. Therefore, developing and implementing strategies to mitigate and adapt to climate change in work environments is

essential and unavoidable in Iran. Furthermore, more strict occupational health regulations and supervision by health system can decrease the impacts of climate change at workplaces. Conducting periodic auditing and monitoring by occupational health inspectors would be helpful for achieving this goal.

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Authors' contributions

MR designed the study. FF and ZRM collected data and contributed to entering data into dataset and analyzed. MR and FF prepared the manuscript. All authors read and approved the final manuscript.

Conflict of interest

The authors have no relevant financial or non-financial interests to disclose. No potential conflict of interest was reported by the author(s).

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References

1. Monazzam MR, Asghari M, Farhang Dehghan S, Hajizadeh R, Beheshti MH, Monazzam M, et al. Presentation of an Operational Program to Reduce vulnerability of outdoor workers to to heat stress and climate change. Iran Occupational Health Journal. 2019;16(3):71-83.
2. Intergovermental Panel on Climate Change (IPCC). Special report on climate chane and cities. Bulgaria; 2024.
3. Nunfam VF, Van Etten EJ, Oosthuizen J, Adusei-Asante K, Frimpong K. Climate change and occupational heat stress risks and adaptation strategies of mining workers: Perspectives of supervisors and other stakeholders in Ghana. Environmental Research. 2019;169:147-55.
4. Mansouri Daneshvar MR, Ebrahimi M, Nejadsoleymani H. An overview of climate change in Iran: facts and statistics. Environmental Systems Research. 2019;8(1):7.
5. Heidari H, Golbabaei F, Shamsipour A, Forushani AR. Occupational heat stress in outdoor settings considering the regional climate change in the future decades in Iran. Iran Occupational Health. 2019;16(2):33-47.
6. Gholami-Borujen F, zazouli MA, fallahi S. A Review of the Effects of Climate Change with an Emphasis on Burden of Waterborne Diseases %J Iranian Journal Of Health Sciences. 2018;6(4):47-56.
7. Rahimi M, Fatemi F, Rezaei Mohammdi Z. Impacts of climate change on occupational health indicators in the three climatic regions of Iran. International Journal of Environmental Health Research. 2024;34(1):535-46.
8. Masuda YJ, Castro B, Aggraeni I, Wolff NH, Ebi K, Garg T, et al. How are healthy, working populations affected by increasing temperatures in the tropics? Implications for climate change adaptation policies. Global Environmental Change. 2019;56:29-40.
9. Huckelba AL, Van Lange PAM. The Silent Killer: Consequences of Climate Change and How to Survive Past the Year 2050. 2020;12(9):3757.
10. Najafi S, Sharafati A, Moghaddam HK. Impact of climate change adaptation strategies on groundwater resources: a case study of Sari-Neka coastal aquifer, Northern Iran. Environmental Earth Sciences. 2023;82(23):571.
11. Abedi Sarvestani A, Shahraki MR. Climate change adaptation methods at the household level: Evidence from the Oghan watershed, north of Iran. Environmental Science & Policy. 2023;142:42-9.
12. Kiefer M, Rodríguez-Guzmán J, Watson J, Van Wendel De Joode B, Mergler D, Da Silva AS. Worker health and safety and climate change in the Americas: Issues and research needs. Revista Panamericana de Salud Publica/Pan American Journal of Public Health. 2016;40(3):192-7.
13. Levi M, Kjellstrom T, Baldasseroni A. Impact of climate change on occupational health and productivity: A systematic literature review focusing on workplace heat. Medicina del Lavoro. 2018;109(3):163-79.
14. Applebaum KM, Graham J, Gray GM, LaPuma P, McCormick SA, Northcross A, et al. An Overview of Occupational Risks From Climate Change. Current environmental health reports. 2016;3(1):13-22.
15. Roelofs C, Wegman D. Workers: the Climate Canaries. American Journal of Public Health. 2014;104(10):1799-801.
16. Moda HM, Filho WL, Minhas A. Impacts of climate change on outdoor workers and their safety: Some research priorities. International Journal of Environmental Research and Public Health. 2019;16(18).
17. EPA. Climate change and the health of occupational groups United States: EPA 2016.

18. Adam-Poupart A, Labr, Egrave, Che F, Smargiassi A, Duguay P, et al. Climate Change and Occupational Health and Safety in a Temperate Climate: Potential Impacts and Research Priorities in Quebec, Canada. Industrial Health. 2013;51(1):68-78.
19. Zare S, Shirvan HE, Hemmatjo R, Nadri F, Jahani Y, Jamshidzadeh K, et al. A comparison of the correlation between heat stress indices (UTCI, WBGT, WBDT, TSI) and physiological parameters of workers in Iran. Weather and Climate Extremes. 2019;26:100213.
20. Indigenous technologies used by farmers for combating climate change hazard in crop production in Umuahia agriculture zone of Abia state. International Journal of Educational Studies. 2025;4(1):218-31.
21. Mousavi A, Ardalan A, Takian A, Ostadtaghizadeh A, Naddafi K, Bavani AM. 2020b. Health system plan for implementation of Paris agreement on climate change (COP 21): a qualitative study in Iran. BMC Public Health. 20:1388.
22. Nasirian H, Naddafi K. A new perspective on climate change in the geography of Iran: current and potential future implications. Journal of Environmental Health Science and Engineering. 2025;23(2):25.
23. Rahimi D, Hasheminasab S, Bashirian F. Impact of climate change on river flow in the Zagros Mountain Region, Iran. Journal of Mountain Science. 2025;22(7):2527-40.
24. Momeni Damaneh J, Ahmadi J, Jafarpour Z. Identification of Suitable Areas for Cultivation of Saffron (Crocus sativus L.) Using Artificial Intelligence-Based Models in Khorasan Razavi Province. 2024.
25. Pires Bitencourt D, Alves Maia P, Cauduro Roscani R. The heat exposure risk to outdoor workers in Brazil. Archives of Environmental and Occupational Health. 2020;75(5):281-8.
26. Habibi P, Moradi G, Moradi A, Heydari A. The impacts of climate change on occupational heat strain in outdoor workers: A systematic review. Urban Climate. 2021;36.
27. Intergovermental Panel on Climate Change (IPCC). Sixth assessment report. 2023.
28. V. PZ, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, et al. The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 2021.
29. Sadeghi F, Bahrami A, Fatemi F. The effects of prioritize inspections on occupational health hazards control in workplaces in Iran. J Res Health Sci. 2014;14(4):282-6.