Egyptian Journal of Community Medicine, 2024;42(2): 84-89

Egyptian Journal of Community Medicine

Family Medicine Physician Attitudes Towards Climate Change and Health in Egypt

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Submission Date:
2023-07-22

Revision Date:
2023-10-04

Acceptance Date:
2023-10-29

Key Words:
Climate change, health, family physicians, attitudes, Egypt

A B S T R A C T

Introduction: Climate change has a strong impact on numerous aspects of health. Although primary healthcare is the frontline of facing evolving public health issues, few studies have assessed the opinions of family physicians concerning climate change. **Objective**: To determine family medicine physician attitudes toward climate change and its impact on a family medicine setting in Egypt. **Method:** An online questionnaire was distributed on 127 family physicians attending postgraduate courses at an Egyptian university. Eighty-four forms were collected (66% response rate). **Results:** Eighty-one percent (81%) of the respondents were aged 25-39, and 76.2% were females. Despite 64% of physicians were acknowledging that climate change is impacting the health of their patients, only 17% feel at ease advising patients on this matter. Possible impacts of climate changes included mental health problems (90.5%), allergies (85.7%), and dehydration and heat stroke (71.4%). Furthermore, while 71% of physicians consider climate change to be pertinent to primary care, only 31% believe that physicians should actively engage in discussing it with their patients. Only a minority of the surveyed physicians (9.6%) reported feeling very well or well-informed about climate change and its effects on health. Despite that, 48% of the respondents agreed or strongly agreed that they feel comfortable while counseling patients on climate change and health. **Conclusions** Physicians are aware of climate change and its effects; however, they are hesitant about their role in addressing this topic with patients. A large opportunity exists for training family physicians on climate change and health and their role in educating patients.

INTRODUCTION

The impact of climate change on the environment, human health, and social and economic systems makes it the largest public health threat confronting humanity. The effects of climate change on health outcomes are significant, leading to an increase in mortality and morbidity rates, mental health issues, and disruption of social and economic systems. The World Health Organization predicts there will be a further 250,000 deaths per year between 2030 and 2050 due to the miscellaneous effects of climate change on health.[1] Egypt is a country that is highly susceptible to the effects of climate change due to its location in a water-scarce region, and reliance on agriculture.

The health impacts of climate change in Egypt are diverse and multifaceted, and include heat-related heat stroke, dehydration, respiratory problems, infectious disease outbreaks, exacerbation of chronic health conditions such as cardiovascular and respiratory diseases, due to exposure to air pollution and extreme temperatures. Climate change also has the potential to increase the transmission of vector-

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borne diseases, such as malaria and dengue fever, by creating more favorable conditions for disease-carrying insects.[2,3] In addition, several recent studies have revealed surprising associations between rising temperatures and chronic diseases, such as type 2 diabetes mellitus, chronic obstructive pulmonary disease, and an increase in risk of cardiovascular diseases.[4-6] These health consequences unequally affect more at-risk populations like the elderly, children, and underprivileged groups.[7]

Although there is increasing public awareness of the urgency to address climate change, and the critical role of healthcare professionals in this effort, previous research has indicated that the healthcare community is inadequately prepared to identify, prevent, or alleviate climate-related health issues, and to develop appropriate adaptation plans. [8] While there is an increasing volume of research on the health implications of climate change, only a few studies have assessed physicians' opinions on the health impacts of climate change.[9-11] While primary care is the foundation for public health, we have not been able to identify any research evaluating the opinions of physicians regarding climate change and health in the primary care setting in Egypt.[10-11]

Family medicine physicians could have a major role in the prevention and management of climate change-related diseases. As initial healthcare providers, they are often the first to be approached by individuals seeking medical attention and are thus in a unique position to recognize and tackle the health consequences of climate change on their patients. Nevertheless, there is insufficient research on the viewpoints of family medicine physicians towards climate change and their willingness to integrate it into their healthcare provision. Prior studies have demonstrated that healthcare providers have limited knowledge of the association between climate change and health consequences.[12-14]

This research aims to determine family medicine physician attitudes towards climate change in the family medicine setting in Egypt, which would ultimately aid in identifying effective strategies and interventions to improve health outcomes in Egypt.

METHODS

A descriptive cross-sectional study amongst family physicians registered for the current and previous academic years at the family medicine department, at an Egyptian University.

Using PASS 15 Program for sample size calculation, setting confidence interval at 95%, and a margin of error of ± 10%, it was estimated that a sample size of 90 family physicians would be suitable to detect an expected prevalence of positive attitude towards the relevance of climatic change to patients' health among family physicians of about 71%.[15]

The questionnaire for this survey was adapted after the study by Boland and Temte (2019).[15] Several questions were added and modified from two other recent specialty-specific physician surveys.[11, 16] Each question was structured in a dichotomous yes or no formulation, free text, or on a 5-point Likert scale, according to the nature of the question. An online survey was sent to participants who received an explanation of the research and completed surveys then were returned anonymously. Three questions addressed participant demographics. The survey included further inquiries regarding the physicians' attitude toward climate change, their evaluation of its influence on the community and on patients' health, and on a range of current and future health concerns. It also explored the relevance of climate change to primary care, the physicians' level of comfort and knowledge in discussing climate change and its impact on health with patients, and if they believe primary care physicians should play an active role in addressing this matter.

Statistical analysis: Data from valid questionnaires were revised, coded, tabulated, and then entered a PC using Statistical Package for Social Science (SPSS 24 for Windows). The data was revised and cleaned. Descriptive statistics were presented as number and percentage of qualitative data. Chi-Square test was done to examine the relationship between two qualitative variables.

RESULTS

Of the 127 family medicine residents and staff physicians registered at the family medicine department at the Faculty of Medicine of an Egyptian University approached via an online survey, eighty-four (84) completed the survey, with a 66% response rate. Most respondents were under 50 years of age, with the age group 25- to 39- years comprising the largest proportion of respondents at 81%. Also, 76.2%

Table 1: Physician demographics and relation to belief in climate change's effect on patient health

		Univariate factor versus belief in impact of climate change on patients' current health	
		No. %*	x², p value
Age in years	25 – 39	44 (64.7)	7.906, 0.019
	40 – 49	12 (100)	
	50 – 64	4 (100)	
Gender	male	20 (100)	10.500, 0.001
	female	40 (66.7)	

** Row percent*

Table 2: Physician beliefs about climate change and its impact on patient care

	N	%
Physicians believing that climate change is occurring	84	100.0
Physicians experiencing the effects of climate change within their community	76	90.5
Physicians believing in the relevance of climate change to direct patient care	44	52.4
Physicians witnessing climate change affecting their patients' current health	60	71.4

of the participants were females. Additionally, a statistically significant higher percent of more senior physicians and male physicians believed that "climate change impacts their patients' current health" (p-value 0.019 and 0.001, respectively, Table 1).

All family physicians participating in this study reported believing that "climate change is occurring". Ninety percent (90%) of the physicians reported "experiencing the effects of climate change within their community". More than half of the physicians claimed that "climate change is relevant to direct patient care" and 71.4% reported they had observed climate change "affecting their patients' current health" (Table 2).

When we asked the physicians their opinion on which aspects of health were mainly affected by climate change currently, 90.5% specified mental health problems, 85.7% specified allergies, and 71.4% specified dehydration and heat stroke. When we asked them how they anticipated the case to be within 10 to 20 years, they anticipated that climate change would have a significantly higher influence on all denoted areas with 90.5% specifying dehydration and heat stroke. They did not anticipate an increase in allergies, and they even anticipated mental health issues to slightly decrease (Figure 1).

A minority of the surveyed physicians (9.6%) reported "feeling very well or well informed on climate change and its health impacts". Despite that, 48% of the respondents agreed or strongly agreed that "they feel comfortable while counseling patients on climate change and health". Also, 57.1% of the study group believed that "physicians discuss the impact of climate change on health" with less than 10% of their patients. Furthermore, 81% of the family physicians believed that "they should have an active role in addressing climate change" with their patients. Furthermore, almost 62% of the physicians expressed their need of more information on the topic of climate change and health (Table 3).

DISCUSSION

Climate change is one of the greatest global health threats of our time. Health professionals should have a role in combatting climatic change. They have the potential to promote worldwide initiatives aimed at reducing emissions and safeguarding individuals from the effects of climate change. Furthermore, they could have a role in educating patients about the effects of climate change on their health; however, evidence of their willingness to do so remains scarce. Also, few studies have assessed whether climate change is directly affecting patients in the family medicine setting.

In general, the study findings indicate that family medicine physicians in Egypt are aware of the existence and impact of climate change on health, with all participants reporting that they "believe climate change is occurring". This reinforces the importance of addressing climate change in healthcare delivery in

Egypt to prevent and mitigate the impact of climate-sensitive diseases. The study also identifies some key findings that can be used to develop interventions that address the issue of climate change in healthcare

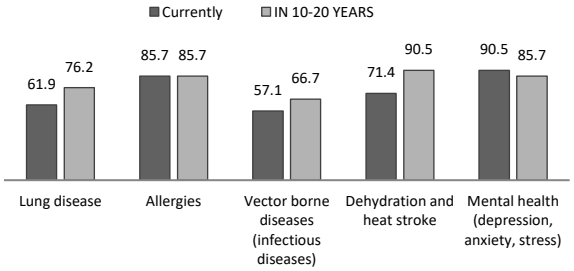

Figure 1: Physician perception of the impact of climate change on different aspects of patient's health

delivery.

In this study, physicians aged 40 or more and male physicians showed a statistically significant higher percent of belief that "climate change impacts their patients' current health" (p-value 0.019 and 0.001, respectively). Other studies conducted in Egypt, had previously found that women and young people tend to be more aware of environmental issues, including climate change.[3, 17]

This study reveals that more than half of the physicians believed that climate change is relevant to direct patient care, and most respondents (71.4%) claimed they had beheld climate change affecting their patients' current health. This result is consistent with the findings of previous studies, which found that healthcare providers have an important role in addressing the impact of climate change on health outcomes.[12, 15, 18]

Physicians should be aware of the numerous ways in which climate change can impact their patients' health and should be prepared to respond accordingly. According to the opinion of the study group, climate change has the highest level of impact on mental health and allergies, with a majority of physicians predicting that dehydration and heat stroke will increase in the next 10 to 20 years. In the study by Bolande and Temte (2019), [15] physicians also reported that allergies were the most impacted aspect of health. On the other hand, their participants anticipated that climate change would have a higher impact on all aspects of health within 10-20 years except allergies. Other studies conducted in Egypt and globally identified respiratory and cardiovascular diseases, heat stress, and waterborne diseases as the main health impacts of climate change.[3,19, 20]

This study identified that only a minority of the surveyed physicians "feels well-informed about climate change and its health impacts". Many physicians were convinced that "they have a role to play in addressing climate change with their patients", but a minority reported; "feeling comfortable discussing the impact of climate change on health with their patients". This insecurity in discussing the effects of climate change could be due to a lack of training on the subject, taking into consideration that a large proportion (almost 90%) did not feel knowledgeable about the topic. Similarly, in the study by Boland and Temte (2019),[15] almost 70% of family physicians reported they were not knowledgeable about the topic of climate change.

The study's key limitation is the relatively small sample size which may affect the generalizability of findings to the entire population of family medicine physicians in Egypt. Also it is possible that only physicians who were interested in the topic replied to the invitation to participate, giving rise to possible selection bias. Nevertheless, this study could inspire future studies to investigate factors influencing physicians' readiness to address climate change and its impact on health.

Recommendation:

It is important for healthcare providers to have an active role in educating their patients about climate change and its impact on health outcomes. Arising from this, further studies are needed to investigate family physicians' attitudes towards climate change in Egypt. Also, further studies are needed to address this topic among physicians in other specialties. Tailored efforts should be directed towards physicians to raise their awareness about the effect of climate change on patient health. This could help family physicians understand their role in preventing and mitigating the

Table 3: Physician knowledge, comfort, and expected role regarding climate change and health

		no.	(%)
How do you describe your knowledge about topics of climate change and health?	Very well informed	4	4.8
	Well informed	4	4.8
	Moderately informed	40	47.6
	Slightly informed	36	42.8
I feel comfortable with counseling patients about climate change and health	Strongly agree	4	4.8
	Agree	32	38.1
	Neither agree nor disagree	32	38.1
	Disagree	12	14.3
	Strongly disagree	4	4.8
With what proportion of your patients do you discuss the impact of climate change on their health	50-75%	8	9.5
	25-50%	16	19.0
	10-25%	12	14.3
	<10% of patients	48	57.1
Physicians should have an active role in addressing climate change with their patients.	Strongly agree	24	28.6
	Agree	44	52.4
	Neither agree nor disagree	12	14.3
	Disagree	4	4.8
	Strongly disagree	0	0
Do you feel that you need more information regarding the effect of climate change on health?	Yes	52	61.9
	No	32	38.1

effect of climate change on at-risk populations. Additionally, targeted interventions that address climate-sensitive diseases and prioritize healthcare delivery to prevent and mitigate the impact of climate change on health outcomes in Egypt should be developed. Also, the current study highlighted the importance of providing education and training for healthcare providers about the impact of climate change on health outcomes and the potential interventions that could be implemented. The targeted interventions should provide them with the knowledge and expertise to respond to the impact of climate-related diseases. Overall, these findings can guide the development of innovative interventions that can address the impact of climate change on health outcomes in Egypt and asses the country's preparedness and specifically the Ministry of Health regarding the health effect accompanying climate change in Egypt.

CONCLUSIONS

The study highlights the importance of understanding the attitudes and perceptions of family medicine physicians toward climate change and its impact on health in Egypt. Physicians were found to be aware of climate change and its effect on patients; however, they were unsure of their role in addressing this matter. A large opportunity exists for training family physicians on climate change and health and their role in educating patients.

Ethical Considerations

Approval of the Research Ethical Committee of the Faculty of Medicine, Ain Shams University was obtained, (no. FMASU R167/2023) and informed consent was obtained from participants. All data was collected anonymously.

***Funding source*:** This work did receive any fund.
***Conflict of interest*:** All authors have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.
Acknowledgement: The authors would like to thank all family physicians who have participated in completing the research.
***Author contributions*:** Mohamed Momen: conceptualization, literature search, methodology

writing, data collection, statistical analysis and critical review and editing; Ibrahim Allam, conceptualizing, data collection, Nashwa Ismail Basyoni**:** literature search, discussion writing, and critical review and editing the original draft and revisions. All authors have read and agreed to the published version of the manuscript.

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Cite this article as: *Mohamed Momen, et al,* Family Medicine Physician Attitudes Towards Climate Change and Health in Egypt. *Egyptian Journal of Community Medicine*, 2024;42(2):84-89.
DOI: 10.21608/ejcm.2023.224435.1266