The Journal of Turkish Family Physician

Araştırma | Research
Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

Evaluation of the knowledge and behaviors of Family Medicine residents on planetary health and environment-health relationship

Aile Hekimliği asistanlarının gezegen sağlığı ve çevre-sağlık ilişkisi konularında bilgi ve davranışlarının değerlendirilmesi

Hava Fatma Küçükbesleme[1] **Merthan Tunay**[2]

[1] *Sağlık Bilimleri Üniversitesi, Adana Şehir Eğitim ve Araştırma Hastanesi, Uzm. Dr., Adana. {ORCID:0009-0009-3600-7072}*
[2] *Sağlık Bilimleri Üniversitesi, Adana Şehir Eğitim ve Araştırma Hastanesi, Öğr. Gör. Dr., Adana. {ORCID:0000-0003-2838-5531}*

İletişim adresi:
Dr. Merthan Tunay
E-mail: E-mail: mtunay@yahoo.com

Geliş tarihi: *25/11/2025*
Kabul tarihi: *08/02/2026*
Yayın tarihi: *29/03/2026*

Ethics Committee Approval: Ethical approval for the study was obtained from the ACTR Hospital Clinical Research Ethics Committee. (2024-146). The authors declare that there is no conflict of interests.

Citation code: *Küçükbesleme HF, Tunay M. Evaluation of the knowledge and behaviors of Family Medicine residents on planetary health and environment-health relationship. Jour Turk Fam Phy 2026; 17(1):16-26 Doi: 10.15511/tjtfp.26.00116*

The Journal of Turkish Family Physician

Araştırma | Research
Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

Özet

Amaç: Bu çalışma, aile hekimliği asistanlarının gezegen sağlığı ve çevre-sağlık ilişkisi konusundaki bilgi ve davranışlarını değerlendirerek çevresel farkındalıklarını artırmayı hedeflemektedir. Ayrıca, WONCA'nın sürdürülebilirlik ve gezegen sağlığı vizyonuna paralel olarak, tıp eğitiminde müfredatı geliştirmeye yönelik öneriler sunmayı amaçlamaktadır.

Gereç ve Yöntem: Kesitsel tasarlanmış bu çalışma, Adana Şehir Eğitim ve Araştırma Hastanesi Aile Hekimliği Kliniğinde, 01.03.2024-30.04.2024 tarihleri arasında 94 aile hekimliği asistanı ile gerçekleştirildi. Katılımcılara sosyodemografik form, Ekosentrik, Antroposentrik ve Antipatik Tutum Ölçeği (EAATE) ve Atmosfer ile ilgili Çevre Problemleri Konularında Kavram Yanılgılarını Tespit Eden Üç Aşamalı Tanı Testi (AREPDiT) uygulandı.

Bulgular: Katılımcıların EAATE ölçeği skorları incelendiğinde, ekosentrik tutum ortalama puanı 62,76±12,34, antroposentrik tutum ortalama puanı 41,06±10,11, antipatik tutum ortalama puanı ise 15,45±9,02 olarak bulundu. AREPDiT sorularına verilen yanıtlarda bilimsel bilgi oranı, küresel ısınma ile ilgili sorulara %30,6, sera etkisi için %22,35, ozon tabakası için %31,65, asit yağmurları için %13,46 olarak bulundu.

Sonuç: Bu çalışmada, aile hekimliği asistanlarının ekosentrik etik tutumun açıkça baskın olduğu görülmüştür. Ancak, çevresel ve atmosferik olaylara ilişkin bilgi düzeyleri yaygın kavramsal yanılgılar ve bilgi eksiklikleri ortaya çıkarmış ve müfredata ek bir eğitim programının dahil edilmesi gerektiğini göstermiştir. Çevrenin insan sağlığına etkileri ve insanın çevrenin sağlığına olan etkileri üzerine müfredatın uzmanlık eğitiminde zenginleştirilmesi var olan kavram yanılgılarının ve bilgi eksikliklerinin giderilmesine yardımcı olacaktır.

Anahtar kelimeler: Gezegen sağlığı, aile hekimleri, çevre sorunları, ekosentrik tutum, antroposentrik tutum.

Summary

Aim: This study aims to evaluate the knowledge and attitudes of family medicine residents regarding planetary health and the environment-health relationship, thereby contributing to the enhancement of their environmental awareness. In parallel with WONCA's vision of sustainability and Planetary Health, it also seeks to offer recommendations for the development and integration of a curriculum into medical education.

Materials and Methods: This cross-sectional study was conducted at the Family Medicine Clinic of Adana City Training and Research Hospital between 01.03.2024 and 30.04.2024, involving 94 family medicine residents. Participants completed a sociodemographic form, the Ecocentric and Anthropocentric Attitudes Toward the Environment scale (EAATE), and A Three-Tier Diagnostic Test to Assess Misconceptions on Atmosphere-Related Environmental Problems (AREPDiT).

Results: Examination of the participants' EAATE scale scores revealed a mean ecocentric attitude score of 62.76 ± 12.34, a mean anthropocentric attitude score of 41.06 ± 10.11, and a mean antipathetic attitude score of 15.45 ± 9.02. When responses to the AREPDiT questions were evaluated, the proportion of scientifically accurate answers was 30.6% for global warming, 22.4% for the greenhouse effect, 31.7% for the ozone layer, and 13.5% for acid rain.

Conclusion: The study showed that family medicine residents predominantly hold ecocentric ethical views, yet they have substantial misconceptions and knowledge gaps regarding environmental and atmospheric phenomena. Strengthening the residency training with content on both the impact of the environment on human health and human impact on the environment is essential to address these deficiencies.

Keywords: Planetary health, family physicians, environmental issues, ecocentric attitude, anthropocentric attitude.

The Journal of Turkish Family Physician

Araştırma | Research
Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

Introduction

The environment and humans are two fundamental elements that profoundly affect each other and are mutually interrelated. Humans live within their surroundings as part of nature; however, human activities disrupt natural balances and impact the environment. Human endeavors such as industrial processes, urbanization, agriculture, and energy production can lead to environmental issues, including air, water, and soil pollution. In the present day, the "One Health" approach has emerged as a pivotal solution for addressing health-related challenges worldwide.[1–3] One of the core objectives of the Planetary Health concept is to harness knowledge and research findings from diverse disciplines to analyze and address the impacts of human activities—such as climate change, pollution on the degradation of Earth's natural systems and the health of human populations and all living beings.

Family physicians, serving as the primary point of contact for individuals with healthcare providers, predominantly deliver their services in the communities where patients reside. They bear significant responsibility for preserving the positive effects of the environment on health or mitigating its negative impacts. Moreover, family physicians possess the capability to identify environmental risk factors such as water quality, nutrition, heat, and air at an early stage, thereby preventing them from causing health problems in individuals.

In this context, the present study aims to assess family physicians' knowledge levels and misconceptions regarding atmospheric environmental problems (global warming, greenhouse effect, ozone layer depletion, and acid rain); to identify the ethical foundations underlying their motivations for environmental protection; and to explore the potential for physicians to address for more effectively addressing environment-related health risks (e.g., air pollution and climate change impacts) through prevention strategies or patient education

Materials and methods

1.1. Study type

This cross-sectional study was conducted between March 2024, and April 2024, at the Family Medicine Clinic of Health Sciences University Adana City Training and Research (ACTR) Hospital.

1.2. Study group

The study population consisted of family medicine residents at the Family Medicine Clinic of ACTR Hospital. Using the Epi Info statistical software, the sample size was calculated as 92, based on a population size of 140 with a 95% confidence interval and a 0.06 margin of error. Questionnaires with incomplete data from 6 participants were excluded, and the study was concluded with 94 residents who met the inclusion criteria. Inclusion criteria were: being a family medicine residency trainee and providing informed consent by completing the required form.

1.3. Procedures

The forms used in the study were completed either under the supervision of the thesis student or via an online survey form, with the questionnaire taking approximately 20 minutes to complete. The questionnaire consisted of 80 questions in total, comprising participants' demographic information, the Ecocentric and Anthropocentric Attitudes Toward the Environment scale (EAATE), and the A Three-Tier Diagnostic Test to Assess Misconceptions on Atmosphere-Related Environmental Problems (AREPDiT). The first 10

Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

questions addressed demographic data. The subsequent 5 questions evaluated the relationship between family medicine practice and the environment-health interconnection, using 5-point Likert-type responses. This was followed by 26 questions from the EAATE scale and the remaining 39 questions from the AREPDiT scale. The authors state that the two scales used can be utilized by scientists working in environmental education and in similar research in the field of social psychology. Permission to use both scales employed in this study was obtained from the original authors.

The Ecocentric and Anthropocentric Attitudes Toward the Environment scale was originally developed by Thompson and Barton. This scale was adapted into Turkish by Sinan Erten.[4,5] The authors have stated that in the scale they developed, they seek answers to the questions: "What is the relationship between environmental knowledge and attitudes towards the environment, and pro-environmental behaviors? Does humanity have an ethical understanding towards the nature with which it lives intertwined? What kinds of dilemmas are experienced in these ethical understandings?" Researching ethical attitudes in family physicians is important for positively shaping the attitudes they will assume for planetary health in the future. The first 11 questions of the scale pertain to ecocentric attitudes, the next 8 questions to anthropocentric attitudes, and the following 7 questions to apathetic attitudes. The items are scored on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree."

A Three-Tier Diagnostic Test to Assess Misconceptions on Atmosphere-Related Environmental Problems was developed by Arslan, Çiğdemoğlu, and Moseley.[6] The scale was translated into Turkish by Çiğdemoğlu and Arslan in 2017, with validity and reliability reported.[7] The authors state that this test will enable distinguishing the state of participants with high school and higher education levels having conceptual misconceptions on topics such as global warming, the greenhouse effect, ozone layer depletion, and acid rain from mere lack of knowledge, and that in this direction, appropriate teaching methods will be designed to support the creation of meaningful learning environments. The scale consists of 13 questions: Questions 1, 2, 5, and 6 address global warming; 3–4 cover the greenhouse effect; 7–8–9–10 focus on ozone layer depletion; and 11–12–13 deal with acid rain.

1.4. Statistical analysis

Data analysis was performed using SPSS 24.0 at a 95% confidence level. Descriptive statistics, including mean, standard deviation, median, frequency, percentage, minimum, and maximum were employed to assess the study data. For comparisons between two groups, the Student's t-test was used for normally distributed parameters, while the Mann-Whitney U test was applied for non-normally distributed parameters. For numerical data comparisons across more than two groups, the One-Way ANOVA test was used for normally distributed data, and the Kruskal-Wallis test was used for non-normally distributed data. The chi-square test was utilized for comparisons involving two or more categorical variables. A p-value of <0.05 was considered statistically significant.

1.5. Ethical considerations

Ethical approval for the study was obtained from the ACTR Hospital Clinical Research Ethics Committee (2024-146). We conducted our study in accordance with the Declaration of Helsinki.

The Journal of Turkish Family Physician

Araştırma | Research
Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

Results

The mean age of the participants was 32.20 ± 6.37 years, and the mean duration of professional experience was 7.10 ± 6.49 years. The sample consisted of 40.4% females (n=38) and 59.6% males (n=56). Regarding marital status, 39.4% (n=37) were single and 60.6% (n=57) were married. Furthermore, 40.4% (n=38) of participants had children, and 59.6% (n=56) did not. The percentage of participants who owned a pet was 23.4% (n=22), while 76.6% (n=72) did not. Regarding the type of region where participants had spent the longest period of their lives, 4.3% (n=4) lived in rural areas, 74.5% (n=70) in urban areas, and 21.3% (n=20) in districts/towns. Membership in an environmental non-governmental organization was reported by only 2.1% (n=2) of the participants, whereas 97.9% (n=92) had no such membership (Table 1).

Table 1. Participants' sociodemographic characteristics

		Mean±SD	Min-max
Age		32.20±6.37	25-58
Professional experience		7.10±6.49	1-34
		n	%
What is your gender?	Female	38	40.4
	Male	56	59.6
What is your marital status?	Single	37	39.4
	Married	57	60.6
Do you have children?	No	56	59.6
	Yes	38	40.4
Do you have pets?	Yes	22	23.4
	No	72	76.6
Where did you spend the longest period of your life?	Rural	4	4.3
	District	20	21.3
	City	70	74.5
Are you a member of an environmental civil society organization?	Yes	2	2.1
	No	92	97.9

Analysis of participant responses on health, the environment, and family practice revealed predominantly positive views, indicating a recognition of family medicine's unique role in advancing environmental health (Table 2).

In our study, the mean scores on the sub-dimensions of the Ecocentric and Anthropocentric Attitudes Toward the Environment scale (EAATE) were as follows: ecocentric attitude 62.76 ± 12.34, anthropocentric attitude 41.06 ± 10.11, and apathetic attitude 15.45 ± 9.02 (Table 3).

In our study, the response combinations of the participants to the AREPDiT questions were categorized as scientific knowledge, lucky guess/lack of confidence, lack of knowledge, and conceptual misconception. One of the questions with the highest number of correct answers falling into the scientific knowledge category was Question 2, which addressed the consequences of global warming, while the question with the highest correct response in the scientific knowledge category was Question 7, which asked about the function of the ozone layer. The question with the lowest number of correct answers was Question 12, which concerned the consequences of acid rain.

The most prevalent conceptual misconception among participants who gave incorrect answers in the first or second tier (or both) and were confident in their incorrect answers in the third tier (thus classified as having a conceptual misconception) was the belief that greenhouse gases are entirely harmful to humanity. Other common misconceptions included the ideas that filters installed on factory chimneys and vehicle exhausts would reduce ozone layer depletion and that acid rain burns everything it comes into contact with. The questions revealing the greatest lack of knowledge were Questions 11 and 12, both related to acid rain (Table 4).

The Journal of Turkish Family Physician

Araştırma | Research
Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

Table 2. Participants' responses regarding health, environment, and family medicine practice

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	n (%)				
Health is not merely the absence of diseases, but a state of complete well-being in physical, mental, social, and ecological terms. Personal health also encompasses the health of the planet.	0 (0)	1 (1.1)	1 (1.1)	15 (16.0)	77 (81.9)
The period from the Industrial Revolution—when humanity's impact on the Earth reached its highest levels—to the present day and beyond has been defined as the Anthropocene epoch. Up until this era, humans were influenced by the world, but now the world has begun to be affected by humans.	0 (0)	1 (1.1)	10 (10.6)	28 (29.8)	55 (59.8)
The provision of Family Health Center (FHC) services in close proximity to patients enables physicians to observe the impact of the environment on human health.	1 (1.1)	4 (4.3)	6 (6.4)	38 (40.4)	45 (47.9)
As family physicians, we are uniquely positioned to promote information on planetary health and behavioral changes with so-called co-benefits—such as active transportation. low-emission energy sources, and more plant-based diets—that can enhance both individual and planetary health.	6 (6.4)	9 (9.6)	22 (23.4)	30 (31.9)	27 (28.7)
Implementing active recycling practices in FHCs can increase awareness of environmental health among the registered population.	5 (5.3)	5 (5.3)	7 (7.4)	32 (34.0)	45 (47.9)

Table 3. Statistics on Ecocentric and Anthropocentric Attitudes Toward the Environment Scale

		Ecocentric	Anthropocentric	Anthropocentric
Total (Mean±SD)		62.76±12.34	41.06±10.11	15.45±9.02
Gender (Mean±SD)	Male 56	65.66±9.25	43.08±8.98	19.05±10.97
	Female 38	58.5±14.98	38.07±11.02	19.05±10.97
p		0.005	0.018	0.001
Marital status (Mean±SD)	Single 37	61.21±10.46	41.08±9.01	13.97±6.92
	Married 57	63.77±13.42	41.05±10.84	16.42±10.10
p		0.330	0.980	0.200
Do you have children? (Mean±SD)	Yes 38	65.07±13.41	41.94±10.99	16.76±10.25
	No 56	61.19±11.42	40.84±9.51	14.57±8.06
p		0.130	0.480	0.250
Do you have a pet? (Mean±SD)	Yes 22	60.86±17.30	38.18±11.11	13.68±5.95
	No 72	63.34±10.47	41.94±9.69	16.00±9.74
p		0.410	0.120	0.290

The Journal of Turkish Family Physician

Araştırma | Research
Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

Table 4. Correct response rates for A Three-Tier Diagnostic Test to Assess Misconceptions on Atmosphere-Related Environmental Problems

			Scientific knowledge	
Question	Answer	Reason for your answer	n	%
1. The event referred to as global warming.	It is the periodic increase in the temperature of the atmosphere due to the greenhouse effect	It is the disruption of the natural concentrations of gases such as carbon dioxide and methane in the atmosphere.	18	19.1
2.Which one of the following might be one of the consequences of global warming?	Drought	If global warming increases, there will be more deserts in the world.	45	47.9
3. Which of the following describes the phenomenon called the greenhouse effect?	It is the absorption by various gases in the atmosphere of the rays reflected from the Earth	The greenhouse effect is the trapping by greenhouse gases in the atmosphere of the long-wavelength rays reflected back from the Earth.	31	33.0
4. Is the greenhouse effect beneficial or harmful to us?	It can be both beneficial and harmful.	The greenhouse effect is a natural phenomenon. It is harmful when it exceeds normal levels.	11	11.7
5. Which of the following is not effective in stopping global warming?	Using unleaded gasoline	Lead has a toxic effect on living organisms.	16	17.0
6. What should administrators/managers do to stop global warming?	They should carry out afforestation campaigns.	A tree absorbs 1 ton of carbon dioxide throughout its lifetime.	37	39.4
7.The Ozone Layer	Filters the UV rays of the sun	The ozone layer absorbs the sun's UV rays which is potentially damaging to life on the Earth	47	50.0
8. Which of the following is one of the causes of the thinning of the ozone layer?	Products containing chlorofluorocarbons (CFCs)	Aerosols containing chlorofluorocarbons cause the thinning of the ozone layer.	28	29.8
9. Which of the following is one of the consequences of the thinning of the ozone layer?	Increase in skin cancer and cataract cases	Increased ultraviolet rays have negative effects on human health.	19	20.2
10. What can we do to stop the thinning of the ozone layer?	We should not use deodorants and other sprays containing chlorofluorocarbons (CFCs).	Reducing the use of products containing chlorofluorocarbons decreases the thinning of the ozone layer.	25	26.6
11. Which of the following is a correct statement about acid rain?	It forms when waste products from the burning of fossil fuels mix into the water cycle.	Acid rain is caused by air pollution resulting from the burning of fossil fuels.	12	12.8
12. Which of the following is one of the consequences of acid rain?	It damages buildings, statues, and historical structures.	It contributes to the corrosion of materials such as marble and limestone in structures.	8	8.5
13. Which of the following is one of the measures we can take against acid rain?	We should reduce the use of fossil fuels as an energy source.	The waste generated from the use of fossil fuels causes acid rain.	18	19.1

No statistically significant difference was found in the comparison of participants' attitudes according to their mean AREPDiT scores. When the relationship between AREPDiT scores and sociodemographic variables was examined, female participants were found to have significantly higher mean scores than males based on gender. No significant differences were observed between mean AREPDiT scores and any other sociodemographic variables.

Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

Discussion

In our study, when we applied the Ecocentric and Anthropocentric Attitudes Toward the Environment scale to the participants, the finding that the mean ecocentric score was higher revealed that family medicine residents are aware that humans are not the masters of nature, that nature does not need humans to exist, but that humans need nature to survive. The anthropocentric attitude is accepted as an approach that measures the value of nature based on the benefits it provides to humans; conservation is carried out primarily for human well-being. Studies in the literature conducted on physicians regarding this topic are limited. In a study by Karakuş et al. with pre-service teachers, it was found that a high proportion of prospective teachers exhibited an ecocentric approach in their attitudes toward the environment.[8] Erten et al. also determined in their study that the ecocentric attitude rate was higher.[9] Bozdemir et al. concluded that physicians' ethical approaches to the environment were closer to an environment-centered perspective.[10] Karahan et al., in their study with nursing students, reached the conclusion that the ecocentric attitude rate was higher.[11] This situation can be explained by the influence of environmental awareness and sustainability education at the higher education level. As the duration of education increases and scientific content grows, a more holistic ecocentric perspective develops instead of the anthropocentric viewpoint.

With the Three-Tier Diagnostic Test to Assess Misconceptions on Atmosphere-Related Environmental Problems applied to family medicine residents, we aimed to determine their knowledge levels, conceptual misconceptions, and knowledge gaps regarding global environmental problems observed in the atmosphere, namely the greenhouse effect, global warming, ozone layer depletion, and acid rain.[6] This test consists of 13 questions, each comprising three tiers. To distinguish a misconception from a mere lack of knowledge, a confidence response index was added as the third tier for each item. There may be many reasons why participants establish incorrect cause-effect relationships and connections among these phenomena. Information pollution spread through platforms such as media, the internet, and social media can make it difficult for people to access accurate information on these issues. Misinformation or misleading explanations can cause different environmental problems to be confused with one another. People may not have sufficient knowledge about environmental issues or may not have received adequate education in these areas. Alternatively, individuals' perceptions and levels of interest in environmental problems may vary. Environmental issues are often at the center of public debates and policies. During these discussions, different environmental problems may be addressed together or linked to one another, which may have led people to make such connections.

In their study titled "Challenges and Opportunities in Planetary Health for Primary Care Providers," Xie et al. emphasized that family physicians are opinion leaders who serve communities spread over wide areas and advocate evidence-based interventions, and are regarded as trustworthy by society.[12] They argue that family physicians can support positive policies that benefit the environment by encouraging the transition from fossil fuel-based transportation to active transportation, thereby increasing physical activity, and by motivating behavioral changes such as healthy eating.[12]

In our study, which aims to increase family physicians' knowledge and awareness of planetary health, it is

Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

crucial to recognize the significant role that primary health care services play in addressing climate change. In their study titled "The Health Service Response to Climate Change: Evaluating the Carbon Footprint of the UK National Health Service," Tennison et al. stated that, given the fact that the NHS, which largely provides primary health care services, is responsible for approximately 4–5% of global greenhouse gas emissions in the health sector, it plays a critical role in mitigating climate change.[13] They also reported that it can not only lead to significant emission reductions but often results in better patient care as well.[14]

The report published in The Lancet in 2025 emphasized that health sector-related carbon emissions fell by 16% in 2021 and 2022, and that climate change education targeted at health professionals is steadily increasing.[15]

In Sarcone et al.'s study, Italian medical students and residents demonstrate strong engagement and concern regarding environmental health and the ecological footprint of healthcare, yet significant knowledge gaps persist. The authors emphasize the necessity of integrating climate change, health, and sustainability topics into medical education to better prepare future healthcare professionals.[16]

In a study by Redvers et al., it was noted that the scarcity of clinical recommendations, educational efforts, and policy guidelines for health professionals and health systems hinders the implementation of sufficiently positive practices. They recommended reducing waste, promoting recycling, encouraging planet-friendly diets, and decreasing fossil fuel use in health systems to ensure continuous and sustainable medical care that considers both patient and planetary health.[17] These recommendations align with the practices we proposed such as enriching the curriculum, patient education, and family physicians serving as role models to address the knowledge deficiencies and conceptual misconceptions identified in our study.

In their article, Sergeant et al. emphasize the critical role of family physicians in planetary health and climate change mitigation, introducing an innovative model termed the 'low-carbon fruit tree' for primary care. This model presents a metaphorical 'fruit tree' framework that visualizes 19 practical, high-impact, and easily implementable initiatives to reduce greenhouse gas emissions in everyday clinical practice, while offering actionable recommendations for family physicians to integrate sustainable practices into routine patient care.[18]

In their studies, Blau et al. emphasized that, among the urgent actions needed to reduce the environmental impact of health services, family physicians and teaching clinics can reduce their ecological footprint and contribution to climate change by decreasing waste generation, energy, and resource consumption for planetary health both today and in the future.[19] These recommendations are consistent with our suggestions for addressing the identified knowledge gaps and misconceptions through curriculum enrichment, patient education, and role modeling by family physicians.

Conclusion

In this study, when the environmental ethical attitudes of family medicine residents were examined, the ecocentric ethical attitude which holds that nature has value in and of itself, independent of its usefulness to humans, and therefore deserves protection was found to be clearly dominant. The fact that anthropocentric and especially apathetic ethical attitudes remain at very low levels

Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

should be considered a positive finding.

However, their knowledge levels regarding environmental and atmospheric phenomena revealed widespread conceptual misconceptions and knowledge gaps, indicating the need to incorporate an additional educational program into the curriculum.

Family physicians should also serve as role models in environmental protection by promoting positive environmental behaviors in individuals and fulfilling their role as community leaders. Educational programs delivered at family health centers, recycling projects, and similar initiatives are among the primary care roles that can be utilized to shape society.

By integrating modules on the health impacts of climate change, the One Health approach, and sustainable health practices into basic medical science and public health courses, students can be enabled to place their ecocentric attitudes in a clinical context at an early age.

In situations that threaten human health such as climate change, air pollution, water pollution, exposure to toxic chemicals, depletion of water resources, and food insecurity resulting from various environmental degradations, family physicians can establish cause-and-effect relationships and provide effective health services.

Study limitations and strengths

Our study is a cross-sectional study conducted in a single hospital. The completion of questionnaires by residents in the presence of a physician may increase the risk of social desirability bias, potentially leading patients to provide responses that do not fully reflect their true condition. Additionally, the two scales used in the study had their validity and reliability studies conducted among teachers. Although these scales have been adapted or commonly used in various contexts, their psychometric properties may not be fully optimal for the resident/medical population, which could affect the accuracy and interpretation of the measurements in this specific group.

Finally, data collection involved both face-to-face and online methods. While this hybrid approach increased participation flexibility and potentially reduced some selection bias, it may have introduced variability in response conditions, which should be considered when interpreting the results.

Ethics Committee Approval: Ethical approval for the study was obtained from the ACTR Hospital Clinical Research Ethics Committee. (2024-146).

The study has not received any form of support. There is no institution or individual to be acknowledged for their assistance. There is no conflict of interest with any institution or person within the scope of the study.

Author contribution statement: All authors have contributed equally.

Yıl: 2026 Cilt: 17 Sayı: 1 / e-ISSN: 2148-550X
doi: 10.15511/tjtfp.26.00116

References:

1. Mwangi W, de Figueiredo P, Criscitiello MF. One Health: Addressing global challenges at the nexus of human, animal, and anvironmental health. PLoS Pathog 2016 Sep 15;12(9):e1005731.

2. Zinsstag J, Schelling E, Waltner-Toews D, Tanner M. From "one medicine" to "one health" and systemic approaches to health and well-being. Prev Vet Med 2011 Sep;101(3–4):148–56.

3. Spínola ACF, Arman IH, Bentounsi Z, Cordovil C, Gökdemir Ö. WONCA Europe's new Family Medicine definition and sustainable healthcare knowledge. The Anatolian Journal of Family Medicine 2024;7(1):44–5.

4. Gagnon Thompson SC, Barton MA. Ecocentric and anthropocentric attitudes toward the environment. J Environ Psychol 1994 Jun;14(2):149–57.

5. Erten S. Ekosentrik, antroposentrik ve çevreye yönelik antipatik tutum ölçeğinin Türkçeye uyarlama çalışması. Eurasian Journal Of Educational Research 2007;28:67–74.

6. Arslan HO, Cigdemoglu C, Moseley C. A Three-Tier Diagnostic Test to Assess Pre-Service Teachers' Misconceptions about global warming, greenhouse effect, ozone layer depletion, and acid rain. Int J Sci Educ 2012 Jul;34(11):1667–86.

7. Arslan HÖ, Çiğdemoğlu C. Atmosfer ile ilgili çevre problemleri konularında kavram yanılgılarını tespit eden Üç Aşamalı Tanı Testinin Türkçeye uyarlanması. Yüzüncü Yıl Eğitim Fakültesi Dergisi. 2017 Jun 15;14(1):671–99.

8. Karakuş G, Çimen O. Öğretmen adaylarının çevre sorunlarına yönelik etik yaklaşımlarının incelenmesi. Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi 2020;40(2):411–35.

9. Erten S, Aydoğdu C. Türkiyeli ve Azerbaycanlı öğrencilerde, ekosentrik, antroposentrik ve çevreye karşı antipatik tutum anlayışları. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi 2011;41:158–69.

10. Bozdemir H, Faiz M. Öğretmen adaylarının çevreye yönelik ekosentrik, antroposentrik ve antipatik tutumları. Sakarya University Journal of Education 2018 Apr 15;8(1):61–75.

11. Karahan G. Hemşirelik öğrencilerinin ekosentrik, antroposentrik ve çevreye yönelik antipatik tutumları. Yüksek Lisans Tezi. İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü; 2009.

12. Xie E. Challenges And Opportunities İn Planetary Health For Primary Care Providers. Lancet Planet Health 2018 May;2(5):e185-7.

13. Tennison I, Roschnik S, Ashby B, Boyd R, Hamilton I, Oreszczyn T, et al. Health care's response to climate change: a carbon footprint assessment of the NHS in England. Lancet Planet Health 2021 Feb;5(2):e84–92.

14. Merchant C. Radical Ecology. 1st ed. Vol. 1. London, Routledge. 1992.

15. Romanello M, Walawender M, Hsu SC, Moskeland A, Palmeiro-Silva Y, Scamman D, et al. The 2025 report of the Lancet Countdown on health and climate change: climate change action offers a lifeline. The Lancet 2025 Dec;406(10521):2804–57.

16. Sarcone A, Angelillo S, Di Gennaro G, Belfiore MG, Pileggi C, Costa D, et al. The ecological footprint of healthcare: awareness, knowledge, and attitudes of medical students and medical residents. Front Public Health 2025 Nov 5;13:1711363.

17. Redvers N, Wright K, Hartmann-Boyce J, Tonkin-Crine S. Physicians' views of patient–planetary health co-benefit prescribing: a mixed methods systematic review. Lancet Planet Health 2023 May;7(5):e407–17.

18. Sergeant M, Zahid D, Zvereva E, Douglass R, Kroeker L, Tieu M, et al. The low-carbon fruit tree for primary care. Healthc Manage Forum 2025 Jul 14;38(4):331–8.

19. Blau E, Asrar FM, Arya N, Schabort I, Abelsohn A, Price D. Greener medical homes: Environmental responsibility in family medicine. Can Fam Physician 2016 May;62(5):381–4.