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The relationship between climate change anxiety levels and fertility awareness levels in a sample of women in Turkey: a cross-sectional study

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Abstract

Objective This study aimed to examine the relationship between climate change anxiety and fertility awareness Among a sample of women in Turkey.

Materials and methods A cross-sectional study was conducted, collecting online data from 1,054 women between May and August 2025. The sample predominantly consisted of married and highly educated women recruited via online platforms. Data were gathered using the Socio-demographic Data Form, the Climate Change Anxiety Scale, and the Fertility Awareness Scale.

Results The majority of participants were aged 25–34 years (33.9%) and 35–44 years (31.1%). 44.2% of participants had a university degree or higher, and most were married (92.4%). The mean score on the Climate Change Anxiety Scale was 3.151, while the mean score on the Fertility Awareness Scale was 3.623. Higher fertility awareness scores were observed among women with fewer children ($p=0.005$). Furthermore, women who expressed a clear desire to have children showed significantly greater awareness of fertility issues ($p=0.016$). A significant positive correlation was found between climate change anxiety and Fertility Awareness Level ($p=0.000$).

Conclusions This study reveals a significant positive relationship between climate change anxiety and Fertility Awareness Level. Comprehensive educational programs are recommended to address the causes and consequences of climate change and alleviate fertility-related concerns among women with similar sociodemographic characteristics.

Keywords Women, Climate change, Anxiety, Fertility awareness, Public health

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Introduction

Climate refers to the average weather conditions observed over a long period in a specific geographical region [1] .Changes in climate resulting from human activities or natural processes are referred to as climate change [2] .The primary cause of climate change is the increase in the concentration of greenhouse gases in the atmosphere, which prevents solar radiation from being reflected back into space [3] .

Climate change is considered a significant public health issue that affects environmental conditions, impacting the overall health levels and demographic structure of societies [4, 5]. According to the World Health Organization (WHO), between 2030 and 2050, approximately 250,000 additional deaths per year could occur due to malnutrition, malaria, diarrhea, and heat stress [6]. Turkey is feeling the effects of climate change. Change more distinctly with each passing year. Rising temperatures, changes in rainfall patterns, rising sea levels, and the increasing frequency of extreme weather events are directly affecting the nation's ecosystems, agriculture, economy, and social structure [7].

Recent studies have shown that climate change not only causes direct health problems but also has indirect effects on demographic indicators such as fertility rates, population aging trends, and individuals' decisions to have children [8–11]. Therefore, climate change stands out as a potential determinant shaping individuals' reproductive choices.

In Turkey, the total fertility rate, which was 2.38 children in 2001, has been on a continuous downward trend since 2014, reaching 1.48 children in 2024. The total fertility rate has remained below the population replacement level of 2.10 for the past eight years [12]. This decline has resulted in a reduction in population growth and changes in the demographic structure. This decline in fertility is not only a numerical decrease but also leads to demographic change. For example, the average age of mothers, which was 26.7 years in 2001, increased to 29.2 in 2023. This trend indicates that women are increasingly opting to have children at later biological ages [13].

Studies have shown that concerns about climate change significantly reduce individuals' desire to have children [14] with those who trust in nature having higher fertility rates [15]. Moreover, climate change increases uncertainty about the future, which raises anxiety levels among prospective parents [16]. These findings suggest that concerns about climate change may have a significant impact on fertility behaviors. This study aims to contribute to the existing literature and shed light on future health policies by examining the relationship between women's levels of climate change anxiety and their levels of fertility awareness.

Materials and methods

Type of study

This is a cross-sectional and correlational study; therefore, the findings reflect associations between variables rather than causal relationships.

Location and time of the study

The data for this study were not collected face-to-face at any physical institution or organization. Data collection was conducted entirely online via social media platforms, and data were collected between May 5, 2025, and August 8, 2025.

Research population and sample

The study population consisted of women aged 18–49 who are accessible via social media and online platforms throughout Turkey. A priori power analysis using the G-Power 3.1.9.2 program was used to determine the sample size for the study. According to the power analysis performed using the G*Power 3.1.9.2 program (effect size $d = 0.30$, $\alpha = 0.05$, $1\text{-}\beta = 0.80$), the study aimed to reach at least 300 participants [17]. A total of 1054 women participated in the study. The final sample predominantly consisted of married women and those with a university degree or higher.

Data collection method and tools

In this study, an online survey method was used for data collection. The survey form was prepared using Google Forms and distributed to volunteer female participants accessible via social media platforms (Instagram, WhatsApp groups, etc.). The survey form included an introductory information form along with the Climate Change Anxiety Scale and the Fertility Awareness Scale. Participants voluntarily completed the form on their own devices.

Socio-demographic data form

The form was prepared by researchers based on the literature. It consists of questions regarding the women's age, educational status, marital status, employment status, income level, place of residence, family type, number of children, and other related factors.

Climate change anxiety scale

The Anxiety Scale used in the study was adapted into Turkish by Özbay and Alcı (2021) and has undergone reliability and validity testing [18]. The original version of the scale was developed by Alan Stewart (2021) [19]. It is a five-point Likert scale consisting of 10 items and a single dimension. Özbay et al. (2021) found the Cronbach's Alpha value of the scale to be 0.98. In the present study, the scale demonstrated good internal consistency, with a Cronbach's alpha coefficient of 0.92.

Fertility awareness scale (FAS)

Developed by Özşahin and Aksoy Derya (2022), the Fertility Awareness Scale (FAS) is a Likert-type measure consisting of 19 items and two dimensions [20].

The Physical Awareness Subscale consists of items 7, 9, 10, 11, 12, 13, 15, 17, 18, and 19 (10 items),

and the Cognitive Awareness Subscale consists of items 1, 2, 3, 4, 5, 6, 8, 14, and 16 (9 items). Items on the scale are scored from 1 to 5 (1-Never, 2-Rarely, 3-Sometimes, 4-Most of the time, and 5-Always). There are no reverse items on the scale. The lowest possible total score on the FAS is 19, and the highest possible score is 95. The range for the Physical Awareness subscale is 10–50, and for the Cognitive Awareness subscale, it is 9–45. As the total score on the FAS increases, the level of awareness also increases. When evaluating the total score obtained from the FAS, if the total score is between 19 and 43, awareness is rated as low; if it is between 44 and 69, awareness is rated as medium; and if it is between 70 and 95, awareness is rated as high. The Cronbach's alpha internal consistency coefficient was 0.887 for the total FAS score, indicating good reliability. However, the alpha values for the Physical Awareness (0.623) and Cognitive Awareness (0.659) subscales were below the commonly accepted threshold of 0.70, suggesting limited internal consistency at the subscale level. Therefore, in the present study, analyses and interpretations primarily focused on the total FAS score, and findings related to subscales were interpreted with caution. In the present study, the Cronbach's alpha coefficient of the scale was found to be 0.86.

Ethical aspects of the study

Ethical approval for this study was obtained from the Health Sciences Ethics Committee of Çanakkale Onsekiz Mart University with decision number 03/20 dated 04/30/2025. Permission to use the scales in the study was obtained from the responsible authors via email. Data were collected via an online platform (Google Forms). On the first page of the questionnaire, participants were clearly informed about the purpose and scope of the study, the principle of voluntariness, and the conditions of data confidentiality and anonymity. Permission for the use of the scales was obtained via electronic correspondence with the scale developers. Following the Helsinki Declaration, the purpose of the research was explained verbally and in writing to the participants, ensuring that personal information would remain confidential and that participation was entirely voluntary. Participants' consent was obtained through online informed consent. Each participant gave their consent. Women who were willing to participate were asked to read and answer the questions carefully Those who answered "Yes" to the question "Do you agree to participate in the study?" were included in the study.

Data evaluation

The Windows IBM SPSS 24.0 software package was used for data analysis. Descriptive statistics (mean, standard deviation, percentage, frequency) were used to summarize participants' characteristics. Independent Samples t-tests and One-Way ANOVA were conducted to examine differences between groups. Simple linear regression analysis was performed to assess the association between climate change anxiety and fertility awareness. Given the cross-sectional and correlational nature of the study, all analyses were interpreted as associative rather than causal.

Findings

Table 1 shows that, when looking at the demographic characteristics of the individuals participating in the study, a large part of the sample is in the 25–34 age group (33.9%) and the 35–44 age group (31.1%), indicating that the young and middle-aged groups are predominant. 44.2% of participants had a university degree or higher, indicating that the study was conducted with a highly educated group. In terms of marital status, the vast majority of participants were married (92.4%). 57.5% of participants stated that they were not working, which may be a noteworthy factor in assessments of non-working individuals' perceptions of climate change. In terms of economic status, more than half of the participants stated that their income and expenditure were balanced (54.7%).

Table 2, when the scores obtained from the climate change scale were examined according to whether participants had experienced an event related to climate change, it was observed that the average score of participants who had experienced such an event ($\bar{x}$ = 3.290 ± 0.920) was higher than that of participants who had not experienced such an event ($\bar{x}$ = 2.740 ± 0.917). The p-value obtained from the statistical analysis ($p = 0.000$) was below the significance level of $\alpha = 0.05$. This result indicates that the anxiety levels of female participants regarding climate change showed a statistically significant difference depending on whether they had experienced an event related to climate change. Accordingly, women who have previously experienced an event related to climate change have significantly higher levels of anxiety than women who have not had such an experience.

Table 3 shows that when fertility awareness levels were examined according to participants' age categories, the highest average score was found among women aged 25–34 ($\bar{x}$ = 3.762 ± 0.655). This group was followed by

Table 1 Descriptive characteristics

Variables		*n*	%
Age Category	18–24 Age Range	157	14.9
	25–34 Age Range	357	33.9
	35–44 Age Range	328	31.1
	45 and Over Age Range	211	20
Education Level	Elementary	197	18.7
	Middle School	116	11.0
	High School	275	26.1
	University and above	465	44.2
Marital Status	Married	973	92.4
	Divorced / Widowed	80	7.6
Employment Status	Employed	448	42.5
	Not working	605	57.5
Income Level	Income Less Than Expenses	280	26.6
	Income Equals Expenses	576	54.7
	Income Exceeds Expenses	197	18.7
Location	Province	546	51.9
	District	400	38.0
	Village / Town	107	10.2
Family Type	Nuclear Family	935	88.8
	Extended Family	84	8.0
	Broken Family	34	3.2
History of Miscarriage	No	826	78.4
	Yes	227	21.6
Parental Status	I do not have children	91	8.6
	I have 1 child	348	33.0
	I have 2 children	395	37.5
	I have 3 or more children	219	20.8
Desire to Have Children	I Want Children	187	17.8
	I Do Not Want Children	643	61.1
	Undecided	196	18.6
	Other	27	2.6
Climate Change Event Experience Status	Yes	780	74.1
	No	273	25.9
Adequacy of Climate Change Knowledge Level	Inadequate	249	23.6
	Not sure	495	47.0
	Sufficient	309	29.3
The Impact of Climate Change on Health	Yes	893	84.8
	Not sure	100	9.5
	No	60	5.7
Scale			**Mean ± SD**
Climate Change Scale			3.151 ± 0.950
Fertility Awareness Scale			3.623 ± 0.691

women aged 35–44 (x^{-} = 3.625 ± 0.729), women aged 18–24 (x = 3.600 ± 0.636), and women aged 45 and above (x = 3.451 ± 0.698). The p-value obtained from the statistical analysis (0.000) was less than the specified alpha level of 0.05, indicating that women's fertility awareness levels differed significantly across age groups. According to the results of the Tukey Post Hoc Test applied to determine which age groups showed significant differences, the awareness levels of women aged 18–24 did not show a statistically significant difference when compared to the 25–34, 35–44, and 45 and older age groups. Similarly, no significant difference was found between the 25–34 age group and the 35–44 age group. However, it was observed that the awareness levels of women in the 25–34 age group were significantly higher than those of women aged 45 and above. Likewise, women in the

Table 2 Level of concern about climate change and sociodemographic

Variables		Mean ± SD
Age Category	18–24 Age Range	3.121 ± 0.797
	25–34 Age Range	3.071 ± 0.976
	35–44 Age Range	3.252 ± 0.959
	45 and Over Age Group	3.150 ± 0.989
F Value		2.135
P		0.094
Educational Status	Elementary	3.075 ± 1.011
	Middle School	3.142 ± 0.898
	High School	3.126 ± 0.946
	University and above	3.200 ± 0.939
F Value		0.897
P		0.442
Marital Status	Married	3.150 ± 0.950
	Divorced / Widowed	3.156 ± 0.953
t-Value		– 0.050
P		0.961
Working Condition	Operating	3.198 ± 0.945
	Not Working	3.116 ± 0.953
t-Value		1.395
P		0.163
Income Level	Income Less Than Expenses	3.252 ± 0.995
	Income Equals Expenses	3.102 ± 0.910
	Income Exceeds Expenses	3.148 ± 0.992
F Value		2.360
P		0.095
Location	Province	3.315 ± 0.952
	District	3.166 ± 0.926
	Village / Town	3.061 ± 1.030
F Value		0.538
P		0.584
Family Type	Nuclear Family	3.139 ± 0.943
	Extended Family	3.329 ± 0.999
	Broken Family	3.126 ± 1.027
F Value		1.068
P		0.344
Low Birth Weight History	No	3.140 ± 0.958
	Yes	3.180 ± 0.921
t-Value		– 0.692
P		0.489
Parental Status	No Children	3.078 ± 0.864
	I have 1 child	3.135 ± 0.957
	I have 2 children	3.195 ± 0.936
	I have 3 or more children	3.127 ± 1.000
F Value		0.538
P		0.656
Desire to Have Children	I Want Children	3.084 ± 0.957
	I Do Not Want Children	3.163 ± 0.953
	Undecided	3.173 ± 0.933
	Other	3.148 ± 0.996
F Value		0.381
P		0.767
Climate Change Event Experience Status	Yes	3.290 ± 0.920
	No	2.740 ± 0.917

Table 2 (continued)

Variables		Mean ± SD
t-Value		2.706
P		0.000
Adequacy of Climate Change Knowledge Level	Inadequate	3.239 ± 0.954
	Not sure	3.064 ± 0.930
	Sufficient	3.218 ± 0.971
F Value		3.927
P		0.020
The Impact of Climate Change on Health	Yes	3.231 ± 0.921
	Not sure	2.486 ± 1,027
	No	2.829 ± 0.947
F Value		24.686
P		0.000

35–44 age group also have a significantly higher level of awareness compared to the 45 and older group. These findings suggest that fertility awareness is particularly higher among women aged 25–44 and decreases significantly for those aged 45 and older.

When fertility awareness levels were examined according to the participants' educational status, the highest average score was found among women with a university degree or higher (x^{-} = 3.704 ± 0.632). This group was followed by middle school graduates (x^{-} = 3.648 ± 0.725), high school graduates (x^{-} = 3.634 ± 0.695), and elementary school graduates (x^{-} = 3.401 ± 0.755). The p-value obtained from the statistical analysis (0.000) is less than the alpha value of 0.05, indicating a significant difference in women's fertility awareness levels based on their educational status. According to the results of the Tukey Post Hoc Test applied to determine which groups this difference occurred between, the fertility awareness level of women with an elementary school education was significantly lower than that of women with middle school, high school, or university and above education level. On the other hand, there was no statistically significant difference among women with middle school, high school, and university and above education levels. These findings suggest that women with education levels above elementary school have similarly high levels of awareness about fertility, but elementary school graduates show lower awareness in this regard.

When examining fertility awareness levels according to participants' income levels, it was found that the highest average score was among women with equal income and expenditure (x = 3.630 ± 0.686). This group was followed by those with income levels lower than their expenses (x^{-} = 3.497 ± 0.708) and those with income levels higher than their expenses (x^{-} = 3.378 ± 0.649). The p-value obtained from the statistical analysis (0.000) is less than the alpha level of 0.05, indicating that women's fertility awareness levels differ significantly based on income level. According to the results of the Tukey Post Hoc Test conducted to determine which groups showed differences, the fertility awareness levels of women whose income was less than their expenses were found to be significantly lower than those of women whose income was equal to their expenses and those whose income was higher than their expenses. On the other hand, while the awareness levels of women whose income equaled their expenses were higher than those of women whose income exceeded their expenses, a significant difference was also found between these two groups. These findings suggest that achieving economic balance, and particularly income-expense balance, may positively affect women's fertility awareness levels.

Table 4 presents information regarding the significance of the model based on the results of the multiple regression analysis. According to the ANOVA (F) test conducted to assess the overall significance of the research model, the model was found to be statistically significant as a whole (F = 12.362; $p < 0.001$). The proportion of variance in the dependent variable explained by the independent variables (R^2) was determined to be 0.125. This finding indicates that the independent variables included in the model explain 12.5% of the total variance in the dependent variable.

Table 5 presents the coefficients, t values, and significance levels of the multiple regression analysis examining the effects on the dependent variable.The results indicate that Climate Change Scale scores, included in the model as a continuous variable, were a positive and statistically significant predictor of the dependent variable (β = 0.267, $p < 0.001$). Examination of the standardized coefficients showed that perception of climate change had the greatest explanatory contribution to the dependent variable among all variables included in the model. Accordingly, higher levels of climate change awareness or attitudes were associated with higher scores on the dependent variable.

Table 3 Fertility level and sociodemographic characteristics

Variables		Mean ± SD
	18–24 Age Range	3.600 ± 0.636
Age Category	25–34 Age Range	3.762 ± 0.655
	35–44 Age Range	3.625 ± 0.729
	45 and Over Age Range	3.451 ± 0.698
F Value		7.499
P		0.000
	Elementary	3.401 ± 0.755
Educational Status	Middle School	3.648 ± 0.725
	High School	3.634 ± 0.695
	University and above	3.704 ± 0.632
F Value		9.208
P		0.000
Marital Status	Married	3.629 ± 0.690
	Divorced / Widowed	3.554 ± 0.707
t-Value		0.927
P		0.354
Work Status	Working	3.660 ± 0.664
	Not working	3.596 ± 0.709
t Value		1.481
P		0.139
	Income Less Than Expenses	3.497 ± 0.708
Income Level	Income Equals Expenses	3.630 ± 0.686
	Income Exceeds Expenses	3.378 ± 0.649
F Value		10.064
P		0.000
	Province	3.618 ± 0.677
Location	District	3.644 ± 0.691
	Village / Town	3.572 ± 0.759
F Value		0.487
P		0.615
	Nuclear Family	3.630 ± 0.685
Family Type	Extended Family	3.560 ± 0.781
	Broken Family	3.597 ± 0.644
F Value		0.419
P		0.658
Low Birth Weight History	No	3.635 ± 0.682
	Yes	3.581 ± 0.724
t-Value		1.039
P		0.299
	No Children	3.525 ± 0.637
Child Ownership	I have 1 child	3.698 ± 0.653
	I have 2 children	3.645 ± 0.695
	I have 3 children	3.504 ± 0.746
F Value		4.334
P		0.005
	I Want Children	3.769 ± 0.575
Desire to Have Children	I Do Not Want Children	3.594 ± 0.716
	Undecided	3.589 ± 0.686
	Other	3.547 ± 0.769
F Value		3.443
P		0.016
Climate Change Event Experience Status	Yes	3.657 ± 0.670
	No	3.526 ± 0.739

Table 3 (continued)

Variables		Mean ± SD
t-Value		2.706
P		0.007
Adequacy of Climate Change Knowledge Level	Inadequate	3.522 ± 0.728
	Not sure	3.558 ± 0.687
	Sufficient	3.808 ± 0.632
F Value		16.416
P		0.000
The Impact of Climate Change on Health	Yes	3.637 ± 0.690
	Not sure	3.628 ± 0.683
	No	3.498 ± 0.704
F Value		1.799
P		0.166

Table 4 Model fit statistics of the linear regression analysis

R^2	Adjusted R^2	*F* Value	*P* Value
0,125	0,125	12,362	0,000

The dummy variables representing education and income levels showed statistically significant differences compared with their respective reference categories. With primary school education or lower used as the reference category, having a middle school ($p = 0.046$), high school ($p = 0.019$), or university education ($p = 0.012$) was associated with a significant positive effect on the dependent variable. A similar pattern was observed for income level. Compared with the low-income group, participants in the medium-income ($p = 0.002$) and high-income ($p < 0.001$) groups had significantly higher scores on the dependent variable. Notably, the effect of the high-income group ($\beta = 0.155$) demonstrated stronger predictive power than the education subcategories. In contrast, age and number of children were not significantly associated with the dependent variable ($p > 0.05$).

After controlling for basic sociodemographic variables, a two-step hierarchical regression analysis was conducted to assess the additional contribution of climate change concern. The model including only demographic variables explained 5.5% of the variance ($R^2 = 0.055$), whereas the inclusion of climate change concern increased the explained variance to 12.5% ($R^2 = 0.125$). The observed increase in explained variance ($\Delta R^2 = 0.070$) indicates that climate change concern accounted for an additional 7% of the variance in the dependent variable beyond that explained by basic demographic characteristics.

These findings suggest that climate change concern contributes to fertility awareness beyond basic sociodemographic characteristics; however, the overall explanatory power of the model remains modest, indicating that fertility awareness is likely influenced by multiple psychosocial and contextual factors not captured in the present analysis.

Table 5 Multivariable linear regression analysis of factors associated with fertility awareness

	Unstandardized coefficients		Standardized coefficients Beta	t	*p*	95% CI for B	
	β	SD				Lower Bound	Upper Bound
Constant	0,596	0,120		21,558	0,000	2,360	2,832
İklim Değişikliği Ölçeği	0,194	0,021	0,267	9,105	0,000	0,152	0,236
Education (Middle School)	0,157	0,079	0,071	1,994	0,046	0,002	0,312
Education (High School)	0,154	0,066	0,098	2,350	0,019	0,025	0,283
Education (University)	0,174	0,069	0,125	2,510	0,012	0,038	0,310
Income Level (Equal)	0,151	0,048	0,109	3,172	0,002	0,058	0,245
Income Level (Higher)	0,275	0,062	0,155	4,422	0,000	0,153	0,396
Child Ownership (One Children)	0,123	0,083	0,084	1,493	0,136	– 0,039	0,286
Child Ownership (Two Children)	0,163	0,090	0,114	1,801	0,072	– 0,015	0,341
Child Ownership (Three and More Children)	0,097	0,098	0,057	0,985	0,325	– 0,096	0,290
Age (25–34)	0,118	0,067	0,081	1,774	0,076	– 0,013	0,249
Age (35–44)	0,023	0,074	0,016	0,315	0,753	– 0,122	0,168
Age (45 and Higher)	– 0,110	0,083	– 0,064	– 1,332	0,183	– 0,273	0,052

Discussion

This study examined the relationship between women's climate change anxiety levels and fertility awareness levels and demonstrated a significant association between them. The findings suggest that women with higher levels of climate change anxiety tend to report greater awareness of reproductive planning and fertility-related issues, and that this anxiety may be associated with differences in childbearing intentions. These results support the view that climate change is not only an environmental issue but also a public health matter that may be connected to individual reproductive preferences and broader demographic patterns.

In the present study, fertility awareness levels differed significantly according to the number of children. Women with one or two children demonstrated higher fertility awareness scores compared to women with three or more children. This finding may reflect greater engagement with fertility-related information among women who are still in the reproductive decision-making phase. Similarly, the literature suggests that concerns about climate change may be associated with reproductive decision-making. For example, Smith et al. (2023) reported that climate change concerns were linked to reduced consideration of having children, with this association appearing stronger among women [14]. Schneider-Mayerson and Leong (2020) also indicated that climate change may contribute to heightened uncertainty about the future, which has been associated with a greater tendency to postpone or reconsider parenting decisions [10].

The findings of this study are partially consistent with the results of Groth et al. (2020), who noted that individuals who trust nature have higher fertility rates [21]. However, although our study found a positive relationship between high fertility awareness and high climate change anxiety, this does not always align with the intention to have children. This suggests that individuals experience a conflict between environmental concerns and their biological reproductive window.

The total fertility rate in Turkey, has fallen to 1.48 by 2024 (Turkish Statistical Institute, 2024), highlighting the need for education programs and further research into the potential role of climate change in this downward trend [12]. The study shows that women with a clear desire to have children are more conscious and aware about fertility issues. Indeed, Hickman et al. (2021) noted that the uncertainties caused by climate change increase potential parents' concerns about the living conditions of future generations and, therefore, reduce their intention to have children [22]. In this context, it suggests that women with high awareness may be inclined to delay or limit having children due to environmental concerns.

In conclusion, the study findings demonstrate that the relationship between climate change and fertility awareness is meaningful and positive. The study by Topsakal and Çevik (2025) highlights the complex interaction between women's awareness of climate change and their desire for fertility and emphasizing the need for more comprehensive, multivariate research in this area [23].

However, midwives and nurses are knowledgeable about climate change and aware of its effects on maternal and child health. They implement practices such as breastfeeding support, fertility regulation, and promotion of adequate/balanced nutrition in this regard [24]. Environmental concerns are becoming increasingly important among the psychosocial factors that shape individuals' reproductive choices. Therefore, public health and women's health nurses need to consider climate change concerns in their counseling processes.

Eco-anxiety caused by climate change, which is a major public health problem, has negative effects on sexual and reproductive health, and these effects are expected to increase over time. Previous studies support the relationship between eco-anxiety related to climate change and women's fertility preferences [25–28]. The findings of the present study are consistent with these results. Interventional studies are recommended to increase knowledge and awareness of the mental health impacts of environmental concerns, promote effective coping strategies, and strengthen psychological resilience.

Given the increasing impacts of climate change, pregnant women have expressed significant health-related concerns about their children, including the risk of disease, exposure to extreme weather events, and food and water insecurity [29]. One study suggests that climate change education can reduce climate change anxiety among pregnant women, while also improving their awareness and enhancing their perceptions, knowledge, behaviors, and policy expectations related to climate change [30]. Educational programs that mitigate the effects of climate change on maternal and child health and alleviate climate-related anxiety should be disseminated throughout society.

Conclusions and recommendations

This study reveals a significant relationship between women's levels of climate change anxiety and their levels of fertility awareness. The findings show that women with higher climate change anxiety are more aware of fertility issues, but that this anxiety may negatively affect their intentions to have children. Environmental concerns are becoming increasingly important among the psychosocial factors that shape individuals' reproductive choices.

Based on the findings of this study, the development of more concrete and actionable initiatives addressing climate change anxiety and fertility awareness among women is recommended. First, educational programs and public awareness campaigns focusing on climate

change anxiety and fertility awareness may be designed, particularly targeting women of reproductive age. Such initiatives could contribute to a better understanding of the potential effects of climate-related concerns on reproductive health.

Within the scope of preconception counseling and family planning services, it is recommended that public health nurses and women's health nurses integrate climate change–related anxiety into their counseling processes. In this context, nurses and midwives may assess individuals' climate change concerns using brief screening questions and provide guidance to support informed and conscious reproductive planning.

In addition, in-service training programs for nurses and midwives addressing the effects of climate change on human health—particularly its implications for women's and reproductive health—are recommended. Such training may enhance healthcare professionals' awareness of climate-related health risks and strengthen the quality of counseling services.

During the development of national health policies, it is important to consider the social and demographic impacts of climate change. Policies should support environmental sustainability while also taking into account psychosocial factors that may indirectly influence individuals' reproductive decision-making processes.

Finally, considering the cross-sectional design of the present study, further research employing larger samples and alternative study designs, such as longitudinal studies, is needed to more comprehensively examine the causal relationships between climate change anxiety and fertility awareness.

Limitations of the study

This study has several limitations. Participants provided self-reported data during the data collection process, which increases the risk of bias. The sample is limited to women from a specific geographical region and age range, so the findings cannot be generalized to all women in Turkey. Due to the limited number of studies on this topic, a detailed discussion could not be conducted. Although the total Fertility Awareness Scale score demonstrated good internal consistency, the subscale reliability was below the recommended threshold; therefore, the primary analyses were based on the total score and subscale findings were interpreted with caution.The relative homogeneity of the sample in terms of marital status, educational level, and digital access may have limited the generalizability of the findings and influenced the observed associations. In particular, higher educational attainment may have functioned as a common correlate of both climate change anxiety and reproductive planning. Therefore, future studies including more diverse samples are warranted.

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Authors' contributions
Seda CANGÖL SÖGÜT: writing – review and editing, writing – original draft, methodology, investigation, formal analysis, supervision, conceptualization. EDA CANGÖL: writing – review and editing, writing – original draft, methodology, investigation, formal analysis, supervision, conceptualization. Tuğba ÇETİNOL TAŞTEMEL: writing – review and editing, writing – original draft, methodology, investigation, formal analysis, supervision, conceptualization.

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Data availability
The data that support the findings of this study are available from Seda Cangöl Sögüt but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are how ever available from the authors upon reasonable request and with permission of Seda Cangöl Sögüt.

Declarations

Ethics approval and consent to participate
Ethical approval for this study was obtained from the Health Sciences Ethics Committee of Çanakkale Onsekiz Mart University with decision number 03/20 dated 04/30/2025. Following the Helsinki Declaration, the purpose of the research was explained verbally and in writing to the participants, ensuring that personal information would remain confidential and that participation was entirely voluntary. Permission to use the scales in the study was obtained from the responsible authors via email. Participants' consent was obtained through online informed consent. Each participant gave their consent.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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