

An Investigation of Turkish Teachers' Disaster Awareness According to Demographic, Professional, and Personal Variables

Serpil GERDAN¹ , Nilay KARASAKAL² , Esmâ BULUŞ KIRIKKAYA³ 

¹Doç. Dr., Kocaeli Üniversitesi, İzmit Meslek Yüksekokulu, Kocaeli, Türkiye / Assoc. Prof. Dr., Kocaeli University, İzmit Vocational High School, Kocaeli, Türkiye

²Doç. Dr., Kocaeli Üniversitesi, İzmit Meslek Yüksekokulu, Kocaeli, Türkiye / Assist. Prof. Dr., Kocaeli University, Kandıra Vocational High School, Kocaeli, Türkiye

³Prof. Dr., Kocaeli Üniversitesi, Eğitim Fakültesi, Kocaeli, Türkiye / Prof. Dr., Kocaeli University, Faculty of Education, Kocaeli, Türkiye

ABSTRACT

Due to its geographical location, our country is frequently exposed to natural disasters, resulting in significant loss of life and property. Considering the losses caused by the two major earthquakes in Turkey on February 6, 2023, and the anticipated Istanbul (Marmara) earthquake, disaster awareness and education are of critical importance. Teachers are one of the key building blocks in preparing society for disasters. Reducing the potential risks of disasters and designing sustainable educational programs that will increase the disaster resilience of society is possible by increasing the knowledge and awareness levels of teachers. This research was conducted using the relational screening model, a general screening model, which is a quantitative research method, to determine the disaster awareness levels of teachers working in Kocaeli. The sample consisted of teachers working at different school levels, including preschool, primary, secondary, and high school. Data for the study were collected online between January 7, 2025 and February 20, 2025 using the Disaster Awareness Scale (DAS), which had been previously prepared and validated by the researchers. The data were analyzed using SPSS 20.00 software. According to the findings, male teachers had higher disaster awareness than female teachers, awareness was higher for approximately half of the survey items in favor of teachers aged 40 and over, and awareness was higher in favor of preschool and classroom teachers.

Keywords: Awareness, Disaster, Earthquake, Education, Teacher

Öğretmenlerin Afet Farkındalıklarının Çeşitli Değişkenlere Göre İncelenmesi

Öz

Ülkemiz coğrafi konumu itibarıyla özellikle doğal kaynaklı afetlere sık sık maruz kalmakta ve ciddi can ve mal kayıpları meydana gelmektedir. 06 Şubat 2023 yılında Türkiye’de yaşanan 2 büyük depremin neden olduğu kayıplar ve beklenen İstanbul (Marmara) depremi düşünüldüğünde afet farkındalığı ve eğitimi kritik öneme sahiptir. Toplumun afetlere hazır hale gelmesinde önemli yapı taşlarından biri de öğretmenlerdir. Afetlerin olası risklerinin azaltılması ve toplumun afet dirençliliğini arttıracak sürdürülebilir eğitim programlarının tasarlanması öğretmenlerin bilgi ve farkındalık düzeylerinin artırılmasıyla mümkündür. Bu araştırma Kocaeli’nde görev yapan öğretmenlerin afet farkındalık düzeylerinin belirlenmesi amacıyla nicel araştırma yöntemlerinden ilişkisel tarama modeli kullanılarak gerçekleştirilmiştir. Araştırmanın örneklemi, okul öncesi, ilköğretim, ortaokul ve lise olmak üzere farklı okul düzeylerinde çalışan öğretmenlerden oluşmaktadır. Çalışmaya ait veriler araştırmacılar tarafından daha önce hazırlanmış olan geçerlik ve güvenirliği yapılmış Afet Farkındalık Ölçeği (AFÖ) ile 07.01.2025 – 20.02.2025 tarihleri arasında çevrimiçi olarak toplanmış ve veriler SPSS 20.00 programı ile analiz edilmiştir. Araştırmanın bulgularına göre erkek öğretmenlerin afet farkındalığının kadın öğretmenlere göre daha yüksek olduğu, anket maddelerinin yaklaşık yarısı için farkındalığın 40 yaş ve üzeri öğretmenler lehine olduğu ve okul öncesi ve sınıf öğretmenleri lehine farkındalığın daha yüksek olduğu görülmektedir.

Anahtar Kelimeler: Afet, Deprem, Eğitim, Farkındalık, Öğretmen

1. INTRODUCTION

Disasters are among the most severe natural and human-induced events worldwide, causing significant loss of life and property (Alrehaili et al., 2022). The sudden occurrence and destructive effects of such events disrupt human life, the natural environment, and social order (Karakuş and Önger, 2017).

Throughout history, Türkiye has experienced various types of disasters, and due to its climatic characteristics and geological structure, such events continue to occur (Altun, 2018). In addition, Türkiye's geopolitical position, frequent forest fires, regional instability in neighboring countries, unplanned urbanization, rapid industrial growth, and the presence or planned construction of nuclear power plants both domestically and in neighboring countries increase the risk of human-induced disasters (Laçiner and Yavuz, 2013).

Disaster risk is primarily shaped by exposure to hazards and the characteristics of the affected society. A society's vulnerability depends on its sensitivity, adaptive capacity, and ability to cope with hazards. Within the framework of disaster risk management, international roadmaps have been developed to reduce disaster losses and strengthen societal resilience. The most comprehensive of these was the Hyogo Framework for Action (2005–2015), followed by the Sendai Framework for Disaster Risk Reduction (2015–2030), which emphasizes building resilience at national and societal levels (Şahan and Karatutlu, 2025; UNISDR, 2015).

Among natural disasters, earthquakes—and potential secondary events such as tsunamis—stand out due to their high destructive potential and profound social impacts (Gökçe et al., 2008). Earthquakes may also trigger additional disasters, further increasing their harmful effects. In this context, individual disaster awareness plays a critical role in reducing disaster risk (Ntim et al., 2023). For individuals to adopt risk-reducing behaviors, they must first be aware of the hazards present in their environment (National Research Council [NRC], 1991). Disaster awareness education is therefore considered a fundamental component of disaster preparedness (Rogayan and Dollete, 2020; Rogayan et al., 2022). Previous research indicates that educated individuals are generally more prepared for disasters and respond more effectively during emergencies (İnal et al., 2012; Özgüven, 2006; Şahan and Dinç, 2021; Toyosawa et al., 2010). Moreover, disaster awareness developed in childhood contributes to long-term resilience, highlighting the importance of lifelong disaster education (Özgüven, 2006; Shaw et al., 2009).

School safety is a multi-dimensional phenomenon encompassing not only the physical security of the school building but also the safety of the school environment, the school itself, teachers, students, and parents (Yivli and Kuzucuoğlu, 2020). In this context, teachers' high level of disaster awareness is crucial for guiding students correctly in pre-disaster preparedness, appropriate behavior during a disaster, and post-disaster adaptation processes. Teachers can contribute to improving the school's disaster preparedness capacity and the overall disaster resilience of the community by sharing their knowledge and experience with their students. Therefore, increasing teachers' disaster awareness is a vital part of school-based disaster risk reduction efforts. (UNESCO and UNICEF, 2012). Several studies have explored disaster awareness among teachers and prospective teachers. Alkhalaf and Tanriseven (2025) found higher disaster awareness among female prospective teachers and those with prior disaster experience, with limited differences across departments, except for higher post-disaster awareness in preschool teacher candidates. Arda and Erbaş (2025) reported that disaster literacy among classroom teachers varied by professional seniority but not by gender or education level. Similarly, Gezer and Aksu (2022) identified moderate disaster awareness among social studies teacher candidates, while Tağrikulu (2025) highlighted limitations in evaluating disaster management processes comprehensively.

Other studies have shown that disaster awareness differs according to department (Değirmenci and Altunay, 2024), disaster experience (Yıldız and Öztürk, 2024; Şeran et al., 2024), gender, and age (Karasakal and Kelebek, 2020). These findings collectively indicate that disaster awareness among teachers is influenced by multiple demographic and professional factors.

Based on this background, the present study aimed to examine the disaster awareness levels of teachers working in public schools in Kocaeli according to variables including gender, marital status, education level,

disaster experience, school level, age, seniority, and branch. Accordingly, the following research questions were addressed:

- 1) Is there a significant difference based on gender?
- 2) Is there a significant difference based on marital status?
- 3) Does disaster awareness differ according to education level?
- 4) Does disaster experience create a significant difference?
- 5) Does school level make a significant difference?
- 6) Is there a significant difference based on age?
- 7) Is there a significant difference based on seniority?
- 8) Does disaster awareness differ according to branch?

2. RESEARCH METHODOLOGY

2.1. Research Method

This research was conducted using the relational screening model, a general screening model, which is a quantitative research method. This model will describe a past or present situation as it exists, encompassing all the processes implemented, in order to identify effective factors and foster the development of desired behavior (Karasar, 2011).

The universe for the present study consisted of all teachers actively teaching in public schools in the province of Kocaeli during the 2024-2025 academic year. The study sample consisted of 885 teachers working in all branches in randomly selected schools in this province.

Data were collected using the disaster awareness scale developed by Buluş Kırıkkaya and Gerdan (2019), whose validity and reliability had been established. The scale consists of 23 items (I1–I23) in a five-point Likert format (1 = Strongly disagree, 5 = Strongly agree) and demonstrated good reliability (Cronbach's $\alpha = .86$). Item statements are presented in Table 2. Data analysis was conducted using SPSS 20 (IBM, Armonk, NY, USA). Since the data were normally distributed, t-tests and ANOVA were applied. Ethical approval was obtained from the Kocaeli University Social and Human Sciences Ethics Committee (26 December 2024, approval no. 2024/14).

Table 1 presents the demographic information of the teachers in the sample. One of the striking findings was that 61.4% of the teachers had been exposed to a disaster in their lifetime of whom 56.6% had experienced an earthquake.

Table 1. Demographic Information of Teachers Participating in the Research

Variables	Total (n)		f	%
Gender	885	Female	565	63.8
		Male	320	36.2
Marital status	885	Married	668	75.5
		Single	217	24.5
Educational Status	885	Licence	717	81.0
		Postgraduate	168	19.0
Type of School Worked at	885	Primary school	213	24.1
		Middle school	263	29.7
		High school	367	41.5
		Preschool	42	4.7
Years of teaching experience	885	0-5	88	9.9
		6-10	157	17.7
		11-15	203	22.9
		16-20	126	14.2
		More than 20	311	35.1
Age	885	20-30	85	9.6
		31-40	345	39.0
		Over 40	455	51.4
Personal Disaster Experience	885	Yes	543	61.4
		No	342	38.6

Type of Disaster Experienced	885	Earthquake	501	56.6
		Flood	8	.9
		Fire	3	.3
		Multiple	29	3.3
		Other	2	.2
Branch	885	Preschool + Primary School	228	25.7
		Science	246	27.8
		Social Sciences	411	46.4

2.2. Findings

The findings regarding teachers' disaster awareness are presented in Table 2.

Table 2. Average Disaster Awareness Levels of Teachers

Items	n	$\bar{X}$	SD
I1- I know the disaster risks of the region I live in.	885	4.5887	.62949
I2- It is possible to reduce the damage caused by a disaster.	885	4.6373	.56136
I3- The place we live in carries an earthquake risk.	885	4.7977	.50651
I4- Earthquake can also trigger other hazards.	885	4.7774	.45268
I5- We have a disaster plan that we prepared as a family.	885	3.3955	1.18893
I6- We determined our post-disaster meeting area within the family disaster plan.	885	3.4870	1.30050
I7- We conducted a drill regarding our family disaster plan.	885	2.8339	1.29940
I8- I know the meeting place in our neighborhood.	885	3.5367	1.40863
I9- We have determined a contact person/acquaintance outside the region to communicate with in case of a disaster in the region where I live.	885	3.1638	1.44556
I10- First aid kit is available at our home	885	3.1209	1.39653
I11- I know the correct behavior in disasters	885	4.1966	.91727
I12- I learned to turn off all the installations in the house.	885	4.2203	1.05077
I13- I know how to use a fire extinguisher.	885	3.4881	1.38149
I14- I received First Aid training.	885	3.8158	1.39771
I15- In case of any disaster. I immediately grab the phone.	885	2.9435	1.37659
I16- In an earthquake, I go to the window or doorway.	885	4.0520	1.28585
I17- I escape outside during floods and inundations.	885	3.5661	1.49183
I18- I know that after major events that affect a region. such as an earthquake. help may not arrive within the first 72 hours.	885	4.1492	1.10956
I19- I know the meaning of warning and alarm sounds.	885	3.6282	1.20646
I20- I fixed the items that were likely to fall during an earthquake.	885	3.4475	1.32706
I21- In our home, beds and seating areas are away from windows and objects that could fall on us.	885	3.7424	1.25091
I22- In our house, high furniture such as cabinets, libraries, kitchen cabinets and white goods are fixed to the wall behind them.	885	3.3062	1.43565
I23- We chose lightweight and unbreakable models as chandeliers on the ceiling.	885	3.9446	1.21281
Overall values	885	3.6398	.62570

In general, teachers' awareness levels were at a good level ($\bar{X}$ = 3.6398). Furthermore, when the scale items were evaluated individually, teachers' awareness of the high earthquake risk in their area of residence was high ($\bar{X}$ = 4.7977).

Whether the gender of teachers affects the level of awareness is shown in Table 3.

Table 3. T-Test Results of Disaster Awareness Scale Items According to Gender

Items	Gender	n	$\bar{X}$	SD	t	p
I1	Female	565	4.5575	.64051	-1.961	.050
	Male	320	4.6438	.60662		
I2	Female	565	4.5929	.56864	-3.140	.002
	Male	320	4.7156	.54029		
I3	Female	565	4.7717	.53849	-2.037	.042
	Male	320	4.8438	.44153		
I4	Female	565	4.7805	.43513	.273	.785
	Male	320	4.7719	.48277		
I5	Female	565	3.3805	1.19038	-.497	.619
	Male	320	3.4219	1.18777		
I6	Female	565	3.4230	1.30459	-1.948	.052
	Male	320	3.6000	1.28751		
I7	Female	565	2.8124	1.28281	-.654	.513
	Male	320	2.8719	1.32937		
I8	Female	565	3.4602	1.40689	-2.152	.032
	Male	320	3.6719	1.40370		
I9	Female	565	3.0796	1.42758	-2.308	.021
	Male	320	3.3125	1.46725		
I10	Female	565	3.0619	1.38433	-1.670	.095
	Male	320	3.2250	1.41399		
I11	Female	565	4.1646	.93370	-1.380	.168
	Male	320	4.2531	.88615		
I12	Female	565	4.0442	1.12664	-6.791	.001
	Male	320	4.5313	.81461		
I13	Female	565	3.1044	1.39454	-11.808	.001
	Male	320	4.1656	1.06265		
I14	Female	565	3.6761	1.45848	-3.984	.001
	Male	320	4.0625	1.24788		
I15	Female	565	2.8726	1.37791	-2.041	.042
	Male	320	3.0688	1.36743		
I16	Female	565	4.1805	1.21134	3.985	.001
	Male	320	3.8250	1.38079		
I17	Female	565	3.6212	1.47734	1.462	.144
	Male	320	3.4688	1.51449		
I18	Female	565	4.0637	1.16973	-3.058	.002
	Male	320	4.3000	.97813		
I19	Female	565	3.4690	1.23535	-5.296	.001
	Male	320	3.9094	1.10054		
I20	Female	565	3.3664	1.36520	-2.422	.016
	Male	320	3.5906	1.24615		
I21	Female	565	3.6549	1.29627	-2.776	.006
	Male	320	3.8969	1.15234		
I22	Female	565	3.2159	1.45479	-2.493	.013
	Male	320	3.4656	1.38919		
I23	Female	565	3.8761	1.24437	-2.239	.025
	Male	320	4.0656	1.14692		
Overall values	Female	565	3.5601	.62782	-5.111	.001
	Male	320	3.7807	.59738		

(**There is a significant difference at the $p < 0.01$ level. *There is a significant difference at the $p < 0.05$ level.)

A significant difference was found in favor of men for items, I2 ($t = -3.140$, $p < 0.01$), I3 ($t = -2.037$, $p < 0.05$), I8 ($t = -2.152$, $p < 0.05$), I9 ($t = -2.308$, $p < 0.05$), I12 ($t = -6.791$, $p < 0.01$), I13 ($t = -11.808$, $p < 0.01$), I14 ($t = -3.984$, $p < 0.01$), I15 ($t = -2.041$, $p < 0.05$) I18 ($t = -3.058$, $p < 0.01$), I20 ($t = -2.422$, $p < 0.05$), I21 ($t = -2.776$, $p < 0.01$), I22 ($t = -2.493$, $p < 0.05$) ve I23 ($t = -2.239$, $p < 0.05$), and in favor of women for items I16 ($t = 3.985$, $p < 0.01$)

T-test results of scale items according to marital status are given in Table 4.

Table 4. T-Test Results of Disaster Awareness Scale Items According to Marital Status

Items	Marital status	n	$\bar{X}$	SD	t	p
I1	Married	668	4.6153	.62449	2.208	.028
	Single	217	4.5069	.63915		
I2	Married	668	4.6572	.54000	1.853	.064
	Single	217	4.5760	.61987		
I3	Married	668	4.7949	.51790	-.291	.771
	Single	217	4.8065	.47077		
I4	Married	668	4.7710	.46133	-.743	.458
	Single	217	4.7972	.42534		
I5	Married	668	3.5120	1.14791	5.189	.001
	Single	217	3.0369	1.24295		
I6	Married	668	3.5928	1.27791	4.288	.001
	Single	217	3.1613	1.31824		
I7	Married	668	2.9102	1.29270	3.079	.002
	Single	217	2.5991	1.29479		
I8	Married	668	3.5973	1.38132	2.250	.025
	Single	217	3.3502	1.47727		
I9	Married	668	3.2290	1.42896	2.360	.018
	Single	217	2.9631	1.48090		
I10	Married	668	3.2006	1.36958	2.992	.003
	Single	217	2.8756	1.45239		
I11	Married	668	4.2365	.88179	2.277	.023
	Single	217	4.0737	1.01110		
I12	Married	668	4.2904	.99146	3.503	.001
	Single	217	4.0046	1.19217		
I13	Married	668	3.6033	1.35569	4.396	.001
	Single	217	3.1336	1.40291		
I14	Married	668	3.9147	1.34584	3.718	.001
	Single	217	3.5115	1.50957		
I15	Married	668	2.9356	1.36909	-.298	.765
	Single	217	2.9677	1.40234		
I16	Married	668	4.0299	1.29895	-.894	.371
	Single	217	4.1198	1.24515		
I17	Married	668	3.5509	1.50325	-.532	.595
	Single	217	3.6129	1.45851		
I18	Married	668	4.2201	1.04376	3.355	.001
	Single	217	3.9309	1.26923		
I19	Married	668	3.7021	1.17808	3.212	.001
	Single	217	3.4009	1.26586		
I20	Married	668	3.5674	1.27481	4.774	.001
	Single	217	3.0783	1.41694		
I21	Married	668	3.8204	1.22349	3.272	.001
	Single	217	3.5023	1.30570		
I22	Married	668	3.4072	1.42016	3.697	.001
	Single	217	2.9954	1.44176		
I23	Married	668	3.9596	1.19338	.643	.520
	Single	217	3.8986	1.27252		
Overall values	Married	668	3.6994	.60472	5.033	.001
	Single	217	3.4566	.65449		

(**There is a significant difference at the $p < 0.01$ level. *There is a significant difference at the $p < 0.05$ level.)

As presented in Table 4, significant differences in favor of married individuals were found for the following items of the scale: I1 ($t = 2.208$, $p < 0.05$), I5 ($t = 5.189$, $p < 0.01$), I6 ($t = 4.288$, $p < 0.01$), I7 ($t = 3.079$, $p < 0.01$), I8

($t= 2.250$, $p<0.05$), I9 ($t= 2.360$, $p<0.05$), I10 ($t= 2.992$, $p<0.01$), I11 ($t= 2.277$, $p<0.05$), I12 ($t= 3.503$, $p<0.01$), I13 ($t= 4.396$, $p<0.01$), I14 ($t= 3.718$, $p<0.01$), I18 ($t= 3.355$, $p<0.01$), I19 ($t= 3.212$, $p<0.01$), I20 ($t= 4.774$, $p<0.01$), I21 ($t= 3.272$, $p<0.01$) and I22 ($t= 3.697$, $p<0.01$). For the remaining items, no differences were identified with respect to marital status.

T-test results of scale items according to educational status are given in Table 5.

Table 5. T-Test Results of Disaster Awareness Scale Items According to Educational Status

Items	Educational Status	n	$\bar{X}$	SD	t	p
I1	Licence	717	4.6067	.60847	1.759	.079
	Postgraduate	168	4.5119	.70912		
I2	Licence	717	4.6430	.54491	.620	.535
	Postgraduate	168	4.6131	.62795		
I3	Licence	717	4.7894	.51945	-1.012	.312
	Postgraduate	168	4.8333	.44677		
I4	Licence	717	4.7768	.45816	-.075	.940
	Postgraduate	168	4.7798	.42981		
I5	Licence	717	3.3794	1.20567	-.833	.405
	Postgraduate	168	3.4643	1.11545		
I6	Licence	717	3.4756	1.31112	-.539	.590
	Postgraduate	168	3.5357	1.25680		
I7	Licence	717	2.8480	1.31304	.666	.506
	Postgraduate	168	2.7738	1.24151		
I8	Licence	717	3.5174	1.42652	-.841	.400
	Postgraduate	168	3.6190	1.33048		
I9	Licence	717	3.1590	1.45312	-.206	.837
	Postgraduate	168	3.1845	1.41692		
I10	Licence	717	3.1185	1.39178	-.104	.918
	Postgraduate	168	3.1310	1.42080		
I11	Licence	717	4.1980	.90920	0.096	.923
	Postgraduate	168	4.1905	.95373		
I12	Licence	717	4.1827	1.06825	-2.206	.028
	Postgraduate	168	4.3810	.95910		
I13	Licence	717	3.4616	1.38538	-1.179	.239
	Postgraduate	168	3.6012	1.36307		
I14	Licence	717	3.8020	1.39826	-.610	.542
	Postgraduate	168	3.8750	1.39798		
I15	Licence	717	2.9372	1.38839	-.280	.780
	Postgraduate	168	2.9702	1.32875		
I16	Licence	717	4.0349	1.30005	-.818	.414
	Postgraduate	168	4.1250	1.22444		
I17	Licence	717	3.5579	1.50643	-.339	.735
	Postgraduate	168	3.6012	1.43164		
I18	Licence	717	4.1297	1.12422	-1.077	.282
	Postgraduate	168	4.2321	1.04379		
I19	Licence	717	3.6444	1.22150	.820	.412
	Postgraduate	168	3.5595	1.14098		
I20	Licence	717	3.4616	1.34028	.657	.511
	Postgraduate	168	3.3869	1.27117		
I21	Licence	717	3.7448	1.26419	.118	.906
	Postgraduate	168	3.7321	1.19617		
I22	Licence	717	3.2971	1.44727	-.391	.696
	Postgraduate	168	3.3452	1.38852		
I23	Licence	717	3.9358	1.24120	-.445	.656

	Postgraduate	168	3.9821	1.08596		
Overall values	Licence	717	3.6366	.63797	-.319	.750
	Postgraduate	168	3.6537	.57199		

(**There is a significant difference at the $p < 0.01$ level. *There is a significant difference at the $p < 0.05$ level.)

According to Table 5 a significant difference was found in favor of those with postgraduate education only for item I12 ($t = -2.206$, $p < 0.05$).

The t-test results of the scale items according to disaster experience are given in Table 6.

Table 6. T-Test Results of Disaster Awareness Scale Items by Presence or Absence of Personal Disaster Experience

Items	Disaster Experience	n	$\bar{X}$	SD	t	p
I1	Yes	543	4.6280	.57123	2.346	.019
	No	342	4.5263	.70869		
I2	Yes	543	4.6390	.55881	.117	.907
	No	342	4.6345	.56619		
I3	Yes	543	4.7956	.51956	-.160	.873
	No	342	4.8012	.48581		
I4	Yes	543	4.7680	.45612	-.782	.434
	No	342	4.7924	.44741		
I5	Yes	543	3.4088	1.15516	.421	.674
	No	342	3.3743	1.24209		
I6	Yes	543	3.5249	1.25775	1.091	.275
	No	342	3.4269	1.36534		
I7	Yes	543	2.8435	1.27977	.276	.783
	No	342	2.8187	1.33172		
I8	Yes	543	3.5175	1.39423	-.511	.609
	No	342	3.5673	1.43271		
I9	Yes	543	3.1529	1.42352	-.285	.776
	No	342	3.1813	1.48182		
I10	Yes	543	3.1031	1.38935	-.477	.634
	No	342	3.1491	1.40943		
I11	Yes	543	4.2781	.81160	3.349	.001
	No	342	4.0673	1.05209		
I12	Yes	543	4.2799	.96569	2.130	.033
	No	342	4.1257	1.16849		
I13	Yes	543	3.5101	1.36488	.597	.551
	No	342	3.4532	1.40876		
I14	Yes	543	3.8711	1.38320	1.483	.138
	No	342	3.7281	1.41806		
I15	Yes	543	2.9411	1.37862	-.066	.947
	No	342	2.9474	1.37537		
I16	Yes	543	4.0829	1.27513	.901	.368
	No	342	4.0029	1.30305		
I17	Yes	543	2.4420	1.51251	-.203	.839
	No	342	2.4211	1.46049		
I18	Yes	543	4.2063	1.05643	1.932	.054
	No	342	4.0585	1.18499		
I19	Yes	543	3.6335	1.18421	.164	.870
	No	342	3.6199	1.24267		
I20	Yes	543	3.4807	1.30818	.938	.349
	No	342	3.3947	1.35676		
I21	Yes	543	3.7790	1.21300	1.098	.273
	No	342	3.6842	1.30855		
I22	Yes	543	3.3278	1.41137	.564	.573

	No	342	3.2719	1.47482		
I23	Yes	543	3.9853	1.14121	1.256	.209
	No	342	3.8801	1.31769		
Overall values	Yes	543	3.6587	.59471	1.132	.258
	No	342	3.6098	.67179		

(**There is a significant difference at the $p < 0.01$ level. *There is a significant difference at the $p < 0.05$ level.)

According to Table 6 a significant difference was found in favor of those with disaster experience for only three items I1 ($t=2.346$, $p < 0.05$), I11 ($t=3.349$, $p < 0.01$) and I12 ($t=2.130$, $p < 0.05$).

ANOVA results of scale items according to school type are given in Table 7.

Table 7. Comparison of findings for items on the Disaster Awareness Scale by School Type

Items	School Type	n	$\bar{X}$	SD	F	p	Significant Difference
I1	Primary school	213	4.6103	.62441	.336	.799	
	Middle school	263	4.5627	.68994			
	High school	367	4.5886	.59339			
	Preschool	42	4.6429	.57685			
	Total	885	4.5887	.62949			
I2	Primary school	213	4.7089	.53179	2.956	.032	Significant 1-3
	Middle school	263	4.6692	.51028			
	High school	367	4.5831	.61229			
	Preschool	42	4.5476	.50376			
	Total	885	4.6373	.56136			
I3	Primary school	213	4.7746	.54592	1.511	.210	
	Middle school	263	4.8327	.47309			
	High school	367	4.8011	.48609			
	Preschool	42	4.6667	.65020			
	Total	885	4.7977	.50651			
I4	Primary school	213	4.7700	.47448	.664	.574	
	Middle school	263	4.7947	.44082			
	High school	367	4.7793	.44698			
	Preschool	42	4.6905	.46790			
	Total	885	4.7774	.45268			
S5	Primary school	213	3.5211	1.23081	1.487	.217	
	Middle school	263	3.3080	1.21701			
	High school	367	3.3706	1.15186			
	Preschool	42	3.5238	1.08736			
	Total	885	3.3955	1.18893			
I6	Primary school	213	3.5352	1.30851	.268	.848	
	Middle school	263	3.4715	1.28339			
	High school	367	3.4578	1.30896			
	Preschool	42	3.5952	1.32627			
	Total	885	3.4870	1.30050			
I7	Primary school	213	2.9859	1.36837	1.840	.138	
	Middle school	263	2.7452	1.27203			
	High school	367	2.7875	1.27333			
	Preschool	42	3.0238	1.29705			
	Total	885	2.8339	1.29940			
I8	Primary school	213	3.6244	1.40073	.485	.693	
	Middle school	263	3.5399	1.45063			
	High school	367	3.4796	1.40995			
	Preschool	42	3.5714	1.17167			
	Total	885	3.5367	1.40863			
I9	Primary school	213	3.3099	1.46266	.965	.409	
	Middle school	263	3.1255	1.50680			
	High school	367	3.1090	1.40806			
	Preschool	42	3.1429	1.27970			
	Total	885	3.1638	1.44556			
I10	Primary school	213	3.3099	1.40005	2.553	.054	
	Middle school	263	3.1217	1.42779			
	High school	367	2.9918	1.37202			
	Preschool	42	3.2857	1.31197			
	Total	885	3.1209	1.39653			

I11	Primary school	213	4.2676	.90529	.590	.622	
	Middle school	263	4.1749	.94496			
	High school	367	4.1689	.92849			
	Preschool	42	4.2143	.68202			
	Total	885	4.1966	.91727			
I12	Primary school	213	4.2394	1.09628	.280	.840	
	Middle school	263	4.2015	1.05628			
	High school	367	4.2371	1.02480			
	Preschool	42	4.0952	1.03145			
	Total	885	4.2203	1.05077			
I13	Primary school	213	3.4366	1.41153	1.322	.266	
	Middle school	263	3.4525	1.41847			
	High school	367	3.5777	1.33627			
	Preschool	42	3.1905	1.36575			
	Total	885	3.4881	1.38149			
I14	Primary school	213	3.7512	1.44361	.462	.709	
	Middle school	263	3.8099	1.37104			
	High school	367	3.8719	1.38984			
	Preschool	42	3.6905	1.42261			
	Total	885	3.8158	1.39771			
I15	Primary school	213	2.9812	1.46970	1.016	.385	
	Middle school	263	3.0180	1.37538			
	High school	367	2.8747	1.31223			
	Preschool	42	2.7619	1.44508			
	Total	885	2.9435	1.37659			
I16	Primary school	213	4.1502	1.25742	1.231	.297	
	Middle school	263	4.1027	1.26646			
	High school	367	3.9564	1.30500			
	Preschool	42	4.0714	1.36851			
	Total	885	4.0520	1.28585			
I17	Primary school	213	3.5399	1.53099	.455	.714	
	Middle school	263	3.6312	1.46097			
	High school	367	3.5177	1.48732			
	Preschool	42	3.7143	1.55054			
	Total	885	3.5661	1.49183			
I18	Primary school	213	4.1690	1.08575	.657	.579	
	Middle school	263	4.1331	1.13639			
	High school	367	4.1744	1.08748			
	Preschool	42	3.9286	1.25704			
	Total	885	4.1492	1.10956			
I19	Primary school	213	3.7700	1.13214	1.508	.211	
	Middle school	263	3.5551	1.28846			
	High school	367	3.5886	1.18145			
	Preschool	42	3.7143	1.23537			
	Total	885	3.6282	1.20646			
I20	Primary school	213	3.6948	1.29797	5.106	.002	Significant 1-3
	Middle school	263	3.5057	1.36441			
	High school	367	3.2616	1.29616			
	Preschool	42	3.4524	1.31042			
	Total	885	3.4475	1.32706			
I21	Primary school	213	3.8263	1.22199	.547	.651	
	Middle school	263	3.7529	1.33785			
	High school	367	3.6921	1.19449			
	Preschool	42	3.6905	1.33413			
	Total	885	3.7424	1.25091			
I22	Primary school	213	3.4366	1.43802	.983	.400	
	Middle school	263	3.2966	1.49409			
	High school	367	3.2289	1.38569			
	Preschool	42	3.3810	1.48081			
	Total	885	3.3062	1.43565			
I23	Primary school	213	3.9859	1.21887	1.588	.191	
	Middle school	263	3.8213	1.27603			
	High school	367	3.9837	1.18264			
	Preschool	42	4.1667	.98567			
	Total	885	3.9446	1.21281			
	Primary school	213	3.6981	.64132	.840	.472	

Overall values	Middle school	263	3.6132	.64062
	High school	367	3.6254	.60803
	Preschool	42	3.6377	.60639
	Total	885	3.6398	.62570

Table 7 presents the results of a one-way ANOVA examining whether teachers' mean item scores on the disaster awareness scale differed significantly by the school where they work. It was found that there was a significant difference in favor of primary school teachers for items; I2 ($F=2.56$, $p<0.05$) and I20 ($F=5.106$, $p<0.01$).

No previous studies have examined teacher disaster awareness according to school level (pre-school, primary, middle, and high school). This variable was included in the present study to identify potential differences related to curricular emphasis on disaster awareness, as such objectives are included at some school levels but not others. Overall, no significant difference was found in disaster awareness across school levels ($F = 0.840$; $p > 0.05$). However, the inclusion of disaster preparedness and safe living objectives in the primary school curriculum may explain why classroom teachers demonstrated higher awareness than high school teachers on items I2 and I20.

ANOVA results of scale items according to teacher age variable are given in Table 8.

Table 8. Results of The Disaster Awareness Scale According To Teacher Age

Items	Age	n	$\bar{X}$	SD	F	p	Significant Difference
I1	20-30	85	4.4941	.71753	1.926	.146	
	31-40	345	4.5652	.60228			
	40 and over	455	4.6242	.63095			
	Total	885	4.5887	.62949			
I2	20-30	85	4.5529	.60761	1.349	.260	
	31-40	345	4.6290	.56164			
	40 and above	455	4.6593	.55172			
	Total	885	4.6373	.56136			
I3	20-30	85	4.7882	.49024	.020	.980	
	31-40	345	4.7971	.52771			
	40 and above	455	4.8000	.49402			
	Total	885	4.7977	.50651			
I4	20-30	85	4.7765	.47249	1.442	.237	
	31-40	345	4.8087	.39390			
	40 and above	455	4.7538	.48871			
	Total	885	4.7774	.45268			
I5	20-30	85	2.9647	1.19967	12.607	.001	Significant 1-3
	31-40	345	3.2725	1.21568			
	40 and over	455	3.5692	1.13569			
	Total	885	3.3955	1.18893			
I6	20-30	85	2.9765	1.34498	14.165	.001	Significant 1-3 2-3
	31-40	345	3.3507	1.31909			
	40 and over	455	3.6857	1.23999			
	Total	885	3.4870	1.30050			
I7	20-30	85	2.3176	1.11496	11.091	.001	Significant 1-2 1-3 2-3
	31-40	345	2.7507	1.29911			
	40 and over	455	2.9934	1.30315			
	Total	885	2.8339	1.29940			
I8	20-30	85	3.2471	1.48729	6.053	.002	Significant 1-3 2-3
	31-40	345	3.4058	1.44792			
	40 and over	455	3.6901	1.34664			
	Total	885	3.5367	1.40863			
I9	20-30	85	2.7176	1.48494	10.311	.001	Significant 1-3 2-3
	31-40	345	3.0145	1.44565			
	40 and over	455	3.3604	1.40866			
	Total	885	3.1638	1.44556			
I10	20-30	85	2.7176	1.38540	7.221	.001	Significant 1-3 2-3
	31-40	345	3.0203	1.39231			
	40 and above	455	3.2725	1.38288			
	Total	885	3.1209	1.39653			

I11	20-30	85	4.0941	.93380	.604	.547	
	31-40	345	4.2145	.93094			
	40 and above	455	4.2022	.90446			
	Total	885	4.1966	.91727			
I12	20-30	85	3.8353	1.24257	10.436	.001	Significant 1-3 2-3
	31-40	345	4.1420	1.10501			
	40 and over	455	4.3516	.94302			
	Total	885	4.2203	1.05077			
I13	20-30	85	3.1059	1.47215	10.051	.001	Significant 1-3 2-3
	31-40	345	3.3304	1.41455			
	40 and above	455	3.6791	1.31004			
	Total	885	3.4881	1.38149			
I14	20-30	85	3.1294	1.56440	12.443	.001	Significant 1-3 2-3
	31-40	345	3.8174	1.39507			
	40 and over	455	3.9429	1.33119			
	Total	885	3.8158	1.39771			
I15	20-30	85	2.9176	1.35587	.584	.558	
	31-40	345	3.0058	1.41626			
	40 and over	455	2.9011	1.35093			
	Total	885	2.9435	1.37659			
I16	20-30	85	4.0471	1.30845	1.473	.230	
	31-40	345	4.1420	1.26450			
	40 and over	455	3.9846	1.29629			
	Total	885	4.0520	1.28585			
I17	20-30	85	3.6353	1.35266	6.46	.002	Significant 2-3
	31-40	345	3.7881	1.42389			
	40 and over	455	3.4000	1.54891			
	Total	885	3.5661	1.49183			
I18	20-30	85	3.8941	1.31858	2.589	.076	
	31-40	345	4.1565	1.14570			
	40 and over	455	4.1912	1.03290			
	Total	885	4.1492	1.10956			
I19	20-30	85	3.3176	1.33819	7.812	.001	Significant 1-3 2-3
	31-40	345	3.5130	1.24615			
	40 and over	455	3.7736	1.12997			
	Total	885	3.6282	1.20646			
I20	20-30	85	3.1882	1.38439	1.969	.140	
	31-40	345	3.4435	1.32633			
	40 and above	455	3.4989	1.31390			
	Total	885	3.4475	1.32706			
I21	20-30	85	3.6706	1.33976	3.737	.024	Significant 2-3
	31-40	345	3.6145	1.31817			
	40 and over	455	3.8527	1.17156			
	Total	885	3.7424	1.25091			
I22	20-30	85	3.0353	1.45117	3.733	.024	Significant 1-2 1-3
	31-40	345	3.2174	1.46341			
	40 and above	455	3.4242	1.40259			
	Total	885	3.3062	1.43565			
I23	20-30	85	3.8941	1.25379	.246	.782	
	31-40	345	3.9217	1.25856			
	40 and above	455	3.9714	1.17108			
	Total	885	3.9446	1.21281			
Overall values	20-30	85	3.3964	.63467	14.931	.001	Significant 1-3 2-3
	31-40	345	3.5682	.59915			
	40 and over	455	3.7396	.62515			
	Total	885	3.6398	.62570			

(**There is a significant difference at the p<0.01 level. *There is a significant difference at the p<0.05 level.)

Significant differences in favor of teachers aged 40 years and above were found for in the following items: I5 (F=12.607, p<0.01), I6 (F=14.165, p<0.01), I8 (F=6.053, p<0.01), I9 (F=10.311, p<0.01), I12 (F=10.436, p<0.01), I13 (F=10.051, p<0.01), I14 (F=12.443, p<0.01), I17 (F=6.146, p<0.01), I19 (F=7.812, p<0.01), I21 (F=3.737, p<0.05) and I22 (F=3.799, p<0.05).

ANOVA results of scale items according to branch variable are given in Table 9.

Table 9. Anova Results According to the Branch Variable of the Scale

Items	Branch	N	$\bar{X}_{mean}$	SD	F	p	Significant Difference
I1	Preschool+Classroom Teaching	228	4.6184	.62193	3.098	.046	
	Social Sciences	411	4.6229	.61395			
	Science+Mathematics	246	4.5041	.65620			
	Total	885	4.5887	.62949			
I2	Preschool+Classroom Teaching	228	4.6798	.53769	1.155	.316	
	Social Sciences	411	4.6350	.53932			
	Science+Mathematics	246	4.6016	.61598			
	Total	885	4.6373	.56136			
I3	Preschool+Classroom Teaching	228	4.7544	.57955	1.173	.310	
	Social Sciences	411	4.8175	.46673			
	Science+Mathematics	246	4.8049	.49748			
	Total	885	4.7977	.50651			
I4	Preschool+Classroom Teaching	228	4.7719	.46051	0.069	.934	
	Social Sciences	411	4.7835	.45190			
	Science+Mathematics	246	4.7724	.44836			
	Total	885	4.7774	.45268			
I5	Preschool+Classroom Teaching	228	3.5307	1.20349	2.310	.100	
	Social Sciences	411	3.3771	1.21027			
	Science+Mathematics	246	3.3008	1.13162			
	Total	885	3.3955	1.18893			
I6	Preschool+Classroom Teaching	228	3.5614	1.31434	0.800	.450	
	Social Sciences	411	3.4915	1.30918			
	Science+Mathematics	246	3.4106	1.27381			
	Total	885	3.4870	1.30050			
I7	Preschool+Classroom Teaching	228	2.9956	1.35535	4.553	.011	Significant 1-3
	Social Sciences	411	2.8589	1.29334			
	Science+Mathematics	246	2.6423	1.23639			
	Total	885	2.8339	1.29940			
I8	Preschool+Classroom Teaching	228	3.6623	1.35860	1.606	.210	
	Social Sciences	411	3.5304	1.43847			
	Science+Mathematics	246	3.4309	1.40018			
	Total	885	3.5367	1.40863			
I9	Preschool+Classroom Teaching	228	3.3684	1.41896	3.912	.020	Significant 1-3
	Social Sciences	411	3.1484	1.45329			
	Science+Mathematics	246	3.0000	1.43995			
	Total	885	3.1638	1.44556			
I10	Preschool+Classroom Teaching	228	3.3465	1.36286	6.056	.020	Significant 1-3
	Social Sciences	411	3.1265	1.42060			
	Science+Mathematics	246	2.9024	1.35776			
	Total	885	3.1209	1.39653			
I11	Preschool+Classroom Teaching	228	4.3114	.82069	2.769	.063	
	Social Sciences	411	4.1800	.95595			
	Science+Mathematics	246	4.1179	.92930			
	Total	885	4.1966	.91727			
I12	Preschool+Classroom Teaching	228	4.2675	1.05922	0.794	.453	
	Social Sciences	411	4.1727	1.08733			
	Science+Mathematics	246	4.2561	.97910			
	Total	885	4.2203	1.05077			
I13	Preschool+Classroom Teaching	228	3.4605	1.40585	1.006	.366	
	Social Sciences	411	3.4404	1.41533			
	Science+Mathematics	246	3.5935	1.29890			
	Total	885	3.4881	1.38149			
I14	Preschool+Classroom Teaching	228	3.7588	1.43851	.821	.440	
	Social Sciences	411	3.7908	1.41422			
	Science+Mathematics	246	3.9106	1.33100			
	Total	885	3.8158	1.39771			
I15	Preschool+Classroom Teaching	228	2.9123	1.47258	.157	.855	
	Social Sciences	411	2.9708	1.37366			
	Science+Mathematics	246	2.9268	1.29155			
	Total	885	2.9435	1.37659			
I16	Preschool+Classroom Teaching	228	4.1535	1.25165	1.394	.249	
	Social Sciences	411	3.9805	1.30276			
	Science+Mathematics	246	4.0772	1.28656			
	Total	885	4.0520	1.28585			
I17	Preschool+Classroom Teaching	228	3.5307	1.57456	.173	.841	
	Social Sciences	411	3.5596	1.47771			
	Science+Mathematics	246	3.6098	1.44071			

	Total	885	3.5661	1.49183			
I18	Preschool+Classroom Teaching	228	4.1711	1.11523	0.098	.907	
	Social Sciences	411	4.1509	1.09617			
	Science+Mathematics	246	4.1260	1.13046			
	Total	885	4.1492	1.10956			
I19	Preschool+Classroom Teaching	228	3.8026	1.13828	5.800	.003	Significant 1-3
	Social Sciences	411	3.6496	1.19913			
	Science+Mathematics	246	3.4309	1.25572			
	Total	885	3.6282	1.20646			
I20	Preschool+Classroom Teaching	228	3.6535	1.28637	4.591	.010	Significant 1-3
	Social Sciences	411	3.4282	1.36385			
	Science+Mathematics	246	3.2886	1.28175			
	Total	885	3.4475	1.32706			
I21	Preschool+Classroom Teaching	228	3.8246	1.24345	1.106	.331	
	Social Sciences	411	3.7494	1.29274			
	Science+Mathematics	246	3.6545	1.18430			
	Total	885	3.7424	1.25091			
I22	Preschool+Classroom Teaching	228	3.4211	1.45351	1.586	.205	
	Social Sciences	411	3.3139	1.47045			
	Science+Mathematics	246	3.1870	1.35436			
	Total	885	3.3062	1.43565			
I23	Preschool+Classroom Teaching	228	4.0263	1.16831	0.936	.393	
	Social Sciences	411	3.9416	1.24802			
	Science+Mathematics	246	3.8740	1.19368			
	Total	885	3.9446	1.21281			
Overall values	Preschool+Classroom Teaching	228	3.7126	.62755	2.930	.54	
	Social Sciences	411	3.6391	.63486			
	Science+Mathematics	246	3.5737	.60326			
	Total	885	3.6398	.62570			

Table 9 shows the results of one-way analysis of variance (ANOVA) conducted to determine whether the mean scores for each item in the disaster awareness scale differ significantly according to. When the teachers' branches were compared there was a significant difference in favor of Preschool + Classroom Teaching for items I7 ($F=4.553$, $p<0.05$), I9 ($F=3.912$, $p<0.05$), I10 ($F=6.056$, $p<0.05$), I19 ($F=5.800$, $p<0.01$) and I20 ($F=4.591$, $p<0.05$).

3. DISCUSSION AND CONCLUSION

This study examined teachers' disaster awareness based on a range of personal and professional variables. The findings showed that male teachers had higher levels of disaster awareness than female teachers. Similarly, Genç and Sözen (2023) reported that male students had greater knowledge of earthquake effects than female students. In contrast, Doğru and Coşkun (2023), in a study conducted with students from the Faculty of Health Sciences, found a significant difference in disaster preparedness beliefs in favor of women, while men demonstrated higher disaster risk perception. Likewise, Şeran et al. (2024) found that gender did not significantly affect earthquake knowledge levels; however, female teachers had greater knowledge of earthquake effects than male teachers. Using the General Disaster Preparedness Scale, Çelik and Gündoğdu (2022) identified significant gender-based differences, favoring women in the Perceived Severity dimension and men in the Self-Efficacy dimension. Doğan et al. (2023) also reported significant gender differences in the affective and behavioral dimensions of prospective teachers' attitudes toward disasters. Similarly, Sözcü and Aydınöz (2019) found that female prospective teachers tended to have higher disaster literacy levels, although this difference was not statistically significant.

Regarding marital status, significant differences were observed in favor of married individuals in 16 of the 23 scale items. This finding may be explained by the increased responsibility of married individuals, particularly toward their children and other household members. However, Cvetković (2016) reported contrasting results, indicating that individuals living alone exhibited the highest levels of household and individual disaster preparedness, especially in response to floods. These differing findings may reflect cultural variations across study populations.

In the present study, disaster awareness differed by education level in only one scale item (I12). As all teachers held at least a bachelor's degree, this may have limited the emergence of meaningful differences between bachelor's and master's degree holders. Consistent with this result, Şeran et al. (2024) found no

significant differences in earthquake knowledge by education level, and Mızrak (2017) reported no relationship between education level and disaster interest.

Analysis of age revealed that teachers aged over 40 demonstrated higher disaster awareness across many scale items. This finding aligns with previous research indicating that disaster preparedness and awareness increase with age (Bulat and Özbaşı, 2021; Doğru and Coşkun, 2023; Doğan et al., 2023). In contrast, other studies have reported no significant association between age and disaster preparedness or awareness (Bulu, 2023; Çelik, 2020).

With respect to teaching branch, significant differences were observed in only five items (I7, I9, I10, I19, I20) favoring preschool and classroom teachers. This may be attributed to the increased emphasis on disaster awareness training for these groups and their responsibility for educating young children. While Çelik and Gündoğdu (2022) reported no relationship between branch and disaster preparedness, Şeran et al. (2024) found higher earthquake knowledge among geography teachers. Additionally, Dikmenli and Yaşar (2019) identified significant post-disaster awareness differences among prospective teachers from different disciplines.

Disaster experience was associated with higher awareness in only three items. Nonetheless, several studies have reported a positive relationship between disaster experience and disaster preparedness or awareness (Espina and Teng-Calleja, 2015; Mishra and Suar, 2007; Astuti et al., 2021; Dikmenli and Yakar, 2019; Gezer and Aksu, 2022). In contrast, Tekin (2020) found that disaster experience did not affect general disaster awareness among classroom teacher candidates.

In conclusion, teaching is a profession that involves significant responsibility and direct interaction with individuals. For societies to become more resilient to disasters, disaster awareness must be developed from an early age and supported by appropriate behaviors. Teachers play a critical role in this process; therefore, disaster education grounded in scientific principles should be integrated into undergraduate teacher education programs.

One limitation of this study is the geographically restricted sample, drawn from a region severely affected by a major earthquake in 1999. Future studies could compare teachers working in earthquake-prone and non-earthquake regions to better understand regional differences in disaster awareness and to support the development of comprehensive disaster preparedness education across the country.

Etik Beyan / Ethical Statement

Yazarlar, bu çalışmanın tüm aşamalarında akademik ve etik kurallara bağlı kaldığını ve kullanılan tüm kaynaklara usulüne uygun atıf yapıldığını beyan ederler. / The authors declare that academic and ethical standards were strictly followed throughout all stages of this study, and all utilized sources have been appropriately cited.

Etik Kurul Onayı / Ethical Approval

Bu çalışma için etik kurul onayı, Kocaeli Üniversitesi Sosyal ve Beşerî Bilimler Etik Kurulu'ndan 26 Aralık 2024 tarihinde, 2024/14 sayılı karar ile alınmıştır. / Ethical approval for this study was obtained from the Kocaeli University Social and Human Sciences Ethics Committee on 26 December 2024 (Approval No. 2024/14).

Çıkar Çatışması / Conflict of Interest

Yazarlar, bu makalede sunulan çalışmayı etkileyebilecek bilinen herhangi bir finansal çıkar çatışması veya kişisel ilişki bulunmadığını beyan ederler. / The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Yazar Katkıları / Author Contributions

- 1.Yazar: Kavramsallaştırma, Araştırma/Saha Çalışması, Analiz, Veri Hazırlama, Metin Yazımı - İlk Taslak, Görselleştirme.
- 2.Yazar: Kavramsallaştırma, Araştırma/Saha Çalışması, Kaynak Sağlama, Metin Yazımı - İnceleme ve Düzenleme
- 3.Yazar: Danışmanlık, Metodoloji, Analiz, Kaynak Sağlama, Metin Yazımı - İnceleme ve Düzenleme
1. Author: Conceptualization, Research/Fieldwork, Analysis, Data Curatin, Writing - Original Draft, Visualization.
2. Author: Conceptualization, Research/Fieldwork, Resources, Writing - Review and Editing.
3. Author: Consulting, Methodology, Analysis, Resources, Writing - Review and Editing.

Yapay Zeka Beyanı / AI Declaration

Yazarlar, bu çalışmanın hazırlanma sürecinde herhangi bir üretken yapay zeka veya yapay zeka destekli araç kullanılmadığını ve tüm içeriğin akademik etik ilkeler doğrultusunda yazarlar tarafından üretildiğini beyan ederler. / The authors declare that no generative AI or AI-assisted tools were used in the preparation of this manuscript and all content was produced by the authors in accordance with academic integrity.

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