

The prevalence, determinants, and some behavioral outcomes of peer bullying: A cross-sectional study in Turkish early adolescence



Akran zorbalığının yaygınlığı, belirleyicileri ve sonuçları: Türk erken ergenlerinde kesitsel bir çalışma

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Abstract

Türkiye ranks high on the global scale of violence. The purpose of this study is to assess the prevalence, determinants, and behavioral consequences of peer bullying, a form of violence in early adolescence, in Türkiye. This study collected data from 868 individuals aged 11-14 from six schools representing different socioeconomic regions, selected through multistage stratified cluster sampling. The prevalence of bullying, victimization, and bully-victim status was measured using the Peer Bullying Scale – Self-Report Form (PBS-SRF). Their impact on various social behaviors, including participation in sports, cultural, and scientific activities, was also assessed. The prevalence rates were 15.8% for bullying, 15.3% for victimization, and 10.3% for bully-victims. Being a bully was significantly more common among males (OR;95%CI;p:2.04;1.02-4.10;0.04). The frequency of bullying was higher in private schools compared to public schools (OR;95%CI;p:2.70;1.15-6.35;0.02). Determinants for bully-victims included recent engagement in bullying (OR;95%CI;p:2.47;1.10-5.51;0.02), and belonging to an extended family (OR;95%CI;p:3.67;1.02-13.85;0.04). Key predictors of victimization included having a mother with a low education level (OR;95%CI;p:2.50;1.01-6.14;0.046). Bully-victims had significantly higher risks of experiencing behavioral problems in sports participation (OR;95%CI;p:2.61;1.49-4.59;0.001), cultural (OR;95%CI;p:1.80;1.06-3.06;0.029), and engagement in scientific activities (OR;95%CI;p:1.90;1.10-3.28;0.022). These findings underscore the importance of targeted, community-based interventions focused on bullying prevention, particularly among the bully-victim group.

Keywords: Early adolescence, peer bullying, bullying/victimization, cluster sampling, community-based research

Özet

Türkiye, küresel ölçekte yüksek şiddet oranlarına sahip ülkeler arasında yer almaktadır. Bu çalışmanın amacı, Türkiye'deki erken ergenlik döneminde bir şiddet biçimi olan akran zorbalığının yaygınlığını, belirleyicilerini ve davranışsal sonuçlarını değerlendirmektir. Veriler, çok aşamalı tabakalı küme örneklemeyle seçilen farklı sosyoekonomik bölgeleri temsil eden altı okuldan 11-14 yaş arası 868 bireyden toplanmıştır. Zorba, kurban ve zorba-kurban yaygınlığı Akran Zorbalığı Ölçeği – Öz Bildirim Formu (AZÖ-ÖBF) ile ölçülmüş; spor, kültürel ve bilimsel aktivitelere katılım gibi sosyal davranışlar üzerindeki etkileri değerlendirilmiştir. Zorba, kurban ve zorba-kurban prevalansı sırasıyla %15,8, %15,3 ve %10,3 olarak bulunmuştur. Zorbalık erkeklerde anlamlı olarak fazladır (OO;%95GA;p:2,04;1,02-4,10;0,04). Zorbalık sıklığı özel okullarda devlet okullarına göre daha yüksektir (OO;%95GA;p:2,70;1,15-6,35;0,02). Zorba-kurban belirleyenleri arasında son zamanlarda zorbalık yapmış olma (OO;%95GA;p:2,47;1,10-5,51;0,02) ve geniş bir aileye mensup olma (OO;%95GA;p:3,67;1,02-13,85;0,04) yer almaktadır. Kurban olmanın belirleyicileri arasında annesinin eğitim düzeyinin düşük olması yer almaktadır (OO;%95GA;p:2,50;1,01-6,14;0,046). Zorba-kurbanlar, spor katılımında (OO;%95GA;p:2,61;1,49-4,59;0,001), kültürel (OO;%95GA;p:1,80;1,06-3,06;0,029) ve bilimsel etkinliklere katılımında (OO;%95GA;p:1,90;1,10-3,28;0,022) sorunlar yaşama açısından daha yüksek risk altındadır. Bu bulgular, özellikle zorba-kurban grubu arasında zorbalık önlemeye yönelik toplum temelli müdahalelerin önemini vurgulamaktadır.

Anahtar Kelimeler: Erken ergenlik, akran zorbalığı, zorba/kurban, küme örnekleme, toplum temelli araştırma

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Introduction

The World Health Organization (WHO) defines adolescence as the period from ages 10 to 19, marked by significant developmental changes as individuals transition to adulthood. This phase can extend to age 24, encompassing the completion of education and the assumption of parental roles (1). Globally, 1.3 billion individuals fall within this age range, representing 16% of the population (2). Health concerns during adolescence are considerable, with issues such as alcohol and substance use, unprotected sexual activity, accidents, injuries, and mental health problems like depression, anxiety, and suicide being prevalent (3, 4). A significant risk factor for these mental health issues is peer bullying, with studies showing a strong correlation between peer bullying and increased rates of depression, anxiety, and suicidal thoughts among adolescents (5).

Peer bullying involves the systematic mistreatment of individuals by their peers, often rooted in power imbalances (6). Peer bullying involves the systematic mistreatment of individuals by their peers, often rooted in power imbalances (7). The WHO's 2020 report indicates that the prevalence of peer bullying ranges from 10% to 50%, with boys exhibiting higher rates (8). Key determinants of peer bullying include exposure to violence at home, substance abuse, and belonging to disadvantaged groups, such as those with disabilities (9). Physical attributes, like being weaker or heavier, can also contribute to individuals becoming targets of bullying (10). Research indicates that familial educational background influences victimization and bullying behaviors (11). Moreover, individuals from low socioeconomic backgrounds are more likely to experience or perpetrate bullying (12). The consequences of peer bullying are significant and have been well documented, particularly regarding

psychosocial issues. Adolescents engaged in bullying often face negative behavioral outcomes, including deteriorating social relationships and difficulties forming friendships (13, 14). Current studies highlight that certain regions experience alarming rates of peer bullying, exacerbated by societal norms that may condone violence and the absence of familial support. Although some regions report bullying prevalence around 20%, emphasizing the importance of family and peer support (15) gaps remain in understanding how these issues impact behavioral outcomes specifically.

This study aims to focus on the prevalence and determinants of peer bullying among middle school students (grades 5 to 8), with a particular emphasis on the negative behavioral outcomes associated with being a bully, victim, or bully-victim. The research will address the following questions:

1. What is the prevalence of peer bullying among early adolescents?
2. Do the sociodemographic determinants of being a bully, victim, or bully-victim differ?
3. What are the negative behavioral outcomes of being a bully, victim, or bully-victim in early adolescents?

Material and Method

Place and design of the study

The research area is the central district of Edirne, a border city located in the northwest of Türkiye's Marmara Region (16). The research data was collected between November 28, 2023, and January 30, 2024.

Study type

This was a community-based cross-sectional study.

Population

In 2022, the total population of Edirne Province was 414,714, with the central district population being 186,426 (17).

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The research group consists of middle school students during the early adolescent period in the central district of Edirne. The sample was selected using a multistage stratified cluster sampling method from schools with different socioeconomic regions. Stratification was conducted based on class, and socioeconomic region. Schools were grouped by socioeconomic level based on their neighborhoods' housing and family characteristics. Low-level schools were from areas where most parents were laborers. High-level schools included private schools with parents in professional jobs.

Middle-level schools were those between these two groups. The research sample was calculated using Open-Epi with a population of 10,000 people, a frequency of 40% (18), a 95% confidence level, a design effect of 2, and a 10% non-response rate. The minimum sample size was determined to be 783. According to the data from the Ministry of National Education, a total of 7133 students from 25 schools were sampled using cluster sampling method from 6 schools, yielding 868 student data (Figure. 1).

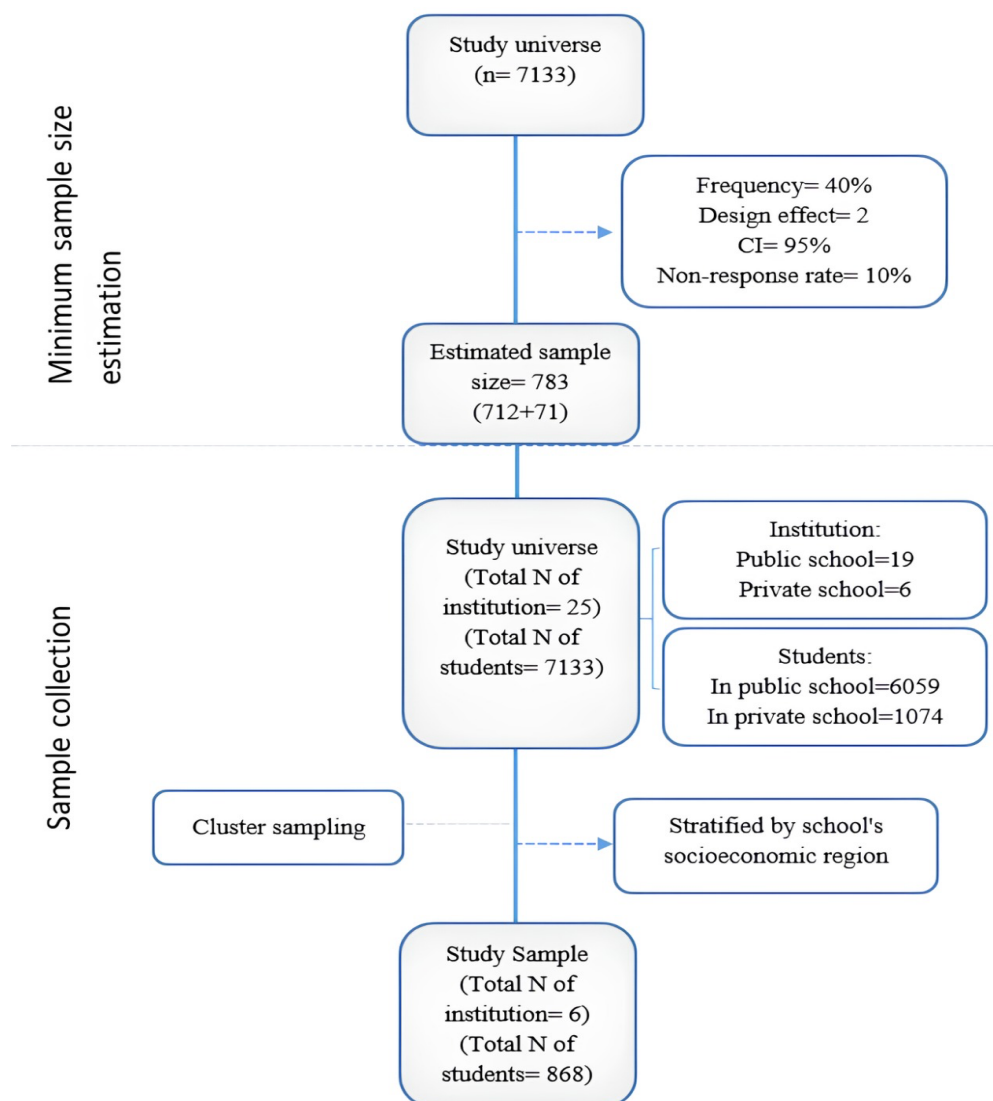


Figure 1: Research population and sampling method

Questionnaire

The data collection tools consist of survey questions developed by the researchers based on the literature, including questions from the bullying scale. The survey questions inquire about

participants' age, gender, grade, height, weight, presence of chronic illness, parents' education levels and occupations, perceived family income level, family type, number of siblings, and accessory usage (such as glasses or braces). The outcomes

of peer bullying were evaluated as problems in the areas of socialization, participation in sports, cultural, and scientific activities. Additionally, participants were asked about their involvement in or exposure to peer bullying.

Peer bullying scale- self-report form (pbs-srf):

The Peer Bullying Scale, developed by Kutlu F. and Aydın G. in 2010, is a 15-item scale that includes bully, victim, and neutral items, organized into three sub-dimensions. Students answered each item as completely disagree (1), disagree (2), undecided (3), agree (4) and completely agree (5). In the assessment of the scale, those whose scores on the bully dimension are equal to or higher than 1 standard deviation above the mean are coded as bullies, while those whose scores on the victim dimension are 1 standard deviation below the mean are coded as victims. In the victim classification, the opposite applies. Those scoring 1 standard deviation above the mean in both dimensions are classified as bully/victims. Others, who fall below the mean in both dimensions, are considered uninvolved in bullying (19). The inclusion criteria for participation were; being in 5th, 6th, 7th, or 8th grade, knowing how to read and write in Turkish, and agreeing to participate in the research.

Data collection

In the study, data were collected through a survey method after obtaining individual, institutional, and parental consent. After obtaining the necessary permissions and approvals, data were collected from the six middle schools in the central district of Edirne with the highest student population. The selected schools were chosen from neighborhoods with low, medium, and high socioeconomic levels. Meetings were conducted with the administrators and teachers at the selected schools to gather information. Parental consents were sent to families through their children. One week after receiving parental consents, surveys were collected from individuals who agreed to participate in the research using face-to-face methods at the schools. The average completion time for the surveys was 15 minutes.

Statistical analysis

SPSS software (Statistical Package for the Social Sciences Version 22.0; SPSS Inc. Chicago, IL, USA) was used for analyses. The Kolmogorov-

Smirnov test was used for the assumption of normality. Categorical variables were presented as counts (n) and percentages (%), normally distributed continuous variables were presented as mean \pm standard deviation (SD) and non-normally distributed continuous variables were presented as median (25.-75. Percentiles). The relationships between categorical variables were examined for Chi-Square test, Fisher's exact test and Fisher-Freeman-Halton test as appropriate. The relationships between categorical and continuous variables were examined using independent samples t-test and Mann-Whitney U test. Multivariate analyses were evaluated using multivariate logistic regression. First, two separate models were created by including and excluding the intersection set of the bullying variable obtained from the dependent variable PBS-SRF scale score. For each of these models, all independent variables mentioned in the literature were added and then multivariate logistic regression models were created using the enter method, first for both genders and then separately for each gender. The significance level of $\alpha < 0.05$ was considered for all analyses.

Ethics committee permission

Research Ethical Approval for Trakya University Faculty of Medicine Non-Interventional Studies has been obtained from the Scientific Research Ethics Board on 23.10.2023 with the reference number TUTF-GOBAEK 2023/397. Permissions from the Governorship and National Education Directorate were obtained on 22/11/2023 with the reference number 90177133. Additionally, parental consent for the students participating in the research have also been obtained.

Results

Descriptive statistics and prevalence of peer bullying

The research group consists of 868 individuals from 5th, 6th, 7th, and 8th grades. 51.7% of the research group are female, 14% are students at private schools, and 31.7% attend schools in low socioeconomic areas. The average Body Mass Index (BMI) of individuals is 18.49 ± 3.18 for females (min.: 11.72, max.:30.82) and 19.45 ± 3.78 for males (min.: 12.61, max.:34.66) Among the

participants, 6.1% have any chronic disease. When the parental education levels of the research group were examined, it was found that 60.5% of mothers and 59.8% of fathers were mostly high school graduates. When the employment status of parents was examined, it was found that 43.5% of mothers were unemployed while only 3.7% of fathers were unemployed. When the perception of household income level was examined, 59.6% of the participants believed that their income was

equal to or less than their expenses. The median number of siblings for the participants was 2 (min:0, max:8). The majority of participants (56.6%) were firstborn, while 76.7% mostly lived in nuclear families and 30.6% of the participants wore glasses, braces or other accessories. While 23.1% of the research group reported recently experiencing peer bullying, 7.9% admitted to bullying others. Details are presented in Table 1.

Table 1: Some sociodemographic characteristics of the research group

Variables		Number (n)	Percentage (%)
Gender	Female	449	51.7
	Male	419	48.3
School socioeconomic region	Low	275	31.7
	Middle	329	37.9
	High	264	30.4
School type	Public	745	85.8
	Private	123	14.2
Grade level	5.	241	27.8
	6.	192	22.1
	7.	198	22.8
	8.	237	27.3
Average height of females (cm)*		155.34±10.172	
Average height of males (cm)*		155.61±11.83	
Average weight of females (kg)*		45.05±10.64	
Average weight of males (kg)*		47.68±12.98	
BMI percentiles	<25p	216	24.9
	25-50p	217	25.0
	50-75p	216	24.9
	75p>	219	25.2
The presence of chronic illness	Yes	53	6.1
	No	815	93.9
Mother's educational status	Illiterate	12	1.4
	Literate	13	1.5
	Primary school graduate	110	12.6
	Middle school graduate	93	10.7
	High school graduate	297	34.2
	University	187	33.1
	Master's & Doctorate	56	6.5
Father's educational status	Illiterate	9	1.0
	Literate	8	0.9
	Primary school graduate	73	8.4
	Middle school graduate	119	13.7
	High school graduate	310	35.7
	University	293	33.8
	Master's & Doctorate	56	6.5

Mother's employment status	Employed	488	56.5
	Unemployed	376	43.5
Father's employment status	Employed	834	96.3
	Unemployed	32	3.7
Household income status	Income < expenditure	45	5.2
	Income = expenditure	471	54.4
	Income > expenditure	350	40.4
Birth order	First	489	56.6
	One of the middle ones	100	11.6
	Last	275	31.8
Family type	Nuclear	663	76.7
	Extended	128	14.8
	Fragmented	73	8.5
Which accessories do you have?	Braces	29	3.3
	Glasses	220	25.3
	Other	17	2.0
	Non	602	69.4
Number of siblings**		2 (0-8)	
Recently experienced peer bullying		203	23.4
Recently bullied someone else		79	7.9

*Mean±SD, **Median (25.-75. Percentiles)

The Peer Bullying Scale-Self Report Form consists of three subscales: bully, victim, and bully-victim. Being a bully or victim was determined based on scores exceeding one standard deviation above the mean for the respective subscales. Individuals meeting the criteria for both being a bully and a victim were classified as bully-victims. Those who did not

meet the criteria for any group were categorized as uninvolved. According to the research results, the prevalence of bullies was 15.8% (n = 137), the prevalence of victims was 15.3% (n = 133), the prevalence of bully-victims was 10.3% (n = 89), and 687 participants (79.2%) were classified as uninvolved (Figure 2).

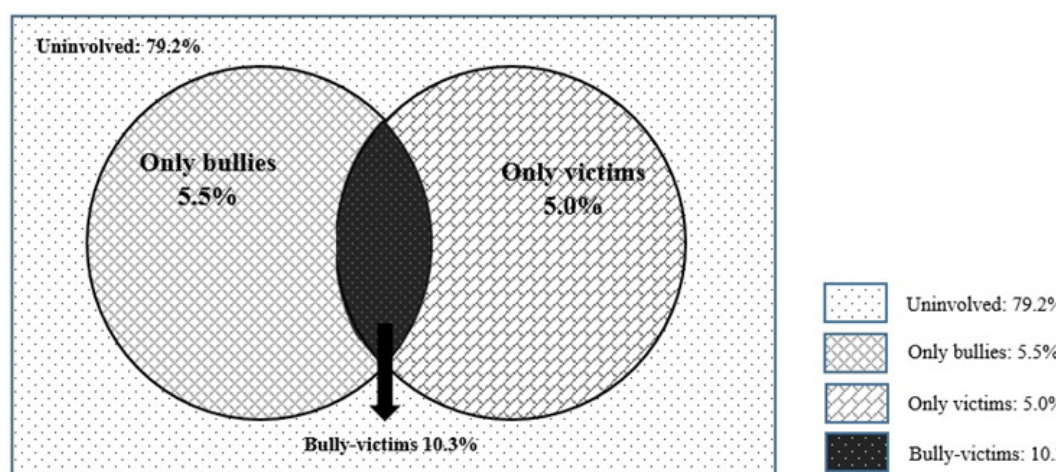


Figure 2: Schematic representation of categorical dependent variables obtained from pbs-srf scale

The sociodemographic determinants of peer bullying

Table 2 evaluates being a bully, victim, or bully-victim in terms of various variables. Being a victim was nearly more common among males (OR;95%CI;p:1.98;0.99–3.94;0.05),

while being a bully was significantly more common (OR;95%CI;p:2.04;1.02–4.10;0.04). The frequency of bullying was higher in private schools compared to public schools (OR;95%CI;p:2.70;1.15–6.35;0.02). Determinants for being a bully-victim included recent engagement

in bullying (OR;95%CI;p:2.47;1.10-5.51;0.02), and belonging to an extended family (OR;95%CI;p:3.67;1.02-13.85;0.04). Key predictors

of victimization included having a mother with a low education level (OR;95%CI;p:2.50;1.01-6.14;0.046) (Table 2).

Table 2: The sociodemographic determinants of victims, bullies, bully-victims, and uninvolved individuals using multinomial regression

Variables		Only Victims	p	Only Bullies	p	Bully/victims	p
		OR (95% CI)		OR (95% CI)		OR (95% CI)	
Gender	Female	ref		ref		ref	
	Male	1.98 (0.99;3.94)	.05	2.04 (1.02;4.10)	.04	1.26 (0.79;2.00)	.33
School type	Public	ref		ref		ref	
	Private	1.10 (0.40;3.02)	.84	2.70 (1.15;6.35)	.02	1.49 (0.76;2.91)	.25
Grade	5 th	1.53 (0.58;4.03)	.39	0.57 (0.23;1.37)	.21	0.75 (0.41;1.39)	.36
	6 th	2.96 (1.15;7.58)	.02	0.45 (0.16;1.23)	.12	0.60 (0.60;1.21)	.15
	7 th	0.82 (0.25;2.65)	.73	0.64 (0.27;1.53)	.32	0.96 (0.52;1.77)	.90
	8 th	ref		ref		ref	
Body mass index	<25p	1.08 (0.42;2.82)	.87	2.87 (1.11;7.39)	.03	0.77 (0.38;1.57)	.47
	25-50p	1.16 (0.44;3.05)	.77	1.99 (0.71;5.63)	.19	1.90 (1.03;3.47)	.03
	50-75 p	1.40 (0.55;3.56)	.48	1.57 (0.55;4.53)	.40	0.81 (0.41;1.63)	.56
	75p>	ref		ref		ref	
The presence of chronic illness	Yes	0.45 (0.09;2.29)	.34	0.73 (0.16;3.40)	.69	0.79 (0.27;2.30)	.66
	No	ref		ref		ref	
Mother's educational status	High school and below	2.58 (1.08;6.15)	.03	1.31 (0.58;2.95)	.51	1.06 (0.60;1.89)	.84
	University and above	ref		ref		ref	
Father's educational status	High school	1.03 (0.47;2.29)	.93	1.07 (0.50;2.31)	.87	1.41 (0.81;2.48)	.23
	University ≥	ref		ref		ref	
Mother's employment status	Employed	0.50 (0.23;1.06)	.07	1.41 (0.71;2.82)	.33	1.13 (0.69;1.84)	.63
	Unemployed	ref		ref		ref	
Father's employment status	Employed	0.04 (0.05;4.12)	.48	1.62 (0.34;7.82)	.55	0.56 (0.13;2.49)	.45
	Unemployed	ref		ref		ref	
Birth order	First	1.55 (0.72;3.32)	.26	2.05 (0.93;4.52)	.07	1.22 (0.72;2.06)	.46
	Middle	0.24 (0.03;1.96)	.18	0.61 (0.15;2.47)	.49	0.99 (0.46;2.18)	.99
	Last	ref		ref		ref	
Family type	Nuclear	0.74 (0.27;2.04)	.56	1.04 (0.31;3.45)	.95	2.70 (0.81;9.00)	.11
	Extended	1.10 (0.33;3.68)	.87	2.00 (0.52;7.70)	.31	3.67 (1.00;3.35)	.04
	Divorced	ref		ref		ref	
To bully someone soon	Yes	3.42 (1.69;6.89)	<.01	1.89 (0.89;4.02)	.10	1.05 (0.59;1.89)	.86
	No	ref		ref		ref	
To become a victim soon	Yes	1.90 (0.62;5.90)	.26	8.32 (3.61;9.18)	<.01	2.47 (1.10;5.51)	.02
	No	ref		ref		ref	

*Nagelkerke R²: 0.19

Table 3 presents the predictors of being a bully, categorized into three subgroups by gender: all genders, males only, and females only, as well as two models. In Model 1, predictors are identified by stratifying all bullies, including bully-victims, by gender. In Model 2, predictors are identified by stratifying only those who are bullies, excluding bully-victims, by gender. According to Model 1, when evaluating all bullies (including bully-victims) by gender, bullying is more prevalent among males (OR;95%CI;p:1.58;1.07–2.33;0.021). In schools with middle socioeconomic status (SES), bullying is higher compared to schools with low

SES (OR;95%CI;p:1.85;1.13–3.04;0.015). Bullying is also more common in 8th grade compared to 5th grade (OR;95%CI;p:1.71;1.03–2.84;0.039). Among females, those with a BMI below the 25th percentile or above the 75th percentile are more likely to engage in bullying compared to others (OR;95%CI;p:5.62;1.36–23.17;0.017). Additionally, as the number of siblings increases, the likelihood of bullying also increases (OR;95%CI;p:2.43;1.02–5.76;0.044). Furthermore, males from extended families are more likely to bully compared to those from nuclear families (OR;95%CI;p:2.80;1.12–6.99;0.028).

Table 3: Odds ratio of the independent predictors of peer bullying*

Variables		Bullies OR(95%CI)					
		Model 1**			Model 2***		
		All	Female	Male	All	Female	Male
Gender	Female	Reference			Reference		
	Male	1.58 (1.0;2.33) p=0.021	-	-	2.19 (1.14;4.23) P=0.019	-	-
School socioeconomic region	Low	Reference			Reference		
	Middle	1.85 (1.13;3.04) p=0.015	1.81 (0.84;3.93) p=0.132	2.04 (1.03;4.04) p=0.040	2.19 (0.97;4.97) p=0.060	1.57 (0.36;6.85) p=0.547	2.99 (1.01;8.88) p=0.047
	High	1.17 (0.67;2.05) p=0.589	1.15 (0.49;2.73) p=0.750	1.36 (0.63;2.95) p=0.438	1.33 (0.51;3.45) p=0.562	0.15 (0.01;1.61) p=0.118	3.01 (0.91;10.01) p=0.072
Grade	5 th	Reference			Reference		
	6 th	0.85 (0.46;1.57) p=0.605	0.69 (0.29;1.60) p=0.383	1.04 (0.42;2.55) p=0.932	0.84 (0.29;2.41) p=0.742	0.47 (0.72;3.11) p=0.435	0.86 (0.22;3.34) p=0.831
	7 th	1.51 (0.89;2.58) p=0.128	0.75 (0.32;1.75) p=0.498	2.59 (1.24;5.42) p=0.011	1.52 (0.62;3.70) p=0.357	1.32 (0.27;6.43) p=0.731	1.54 (0.50;4.74) p=0.452
	8 th	1.71 (1.03;2.84) p=0.039	1.09 (0.53;2.26) p=0.813	2.84 (1.35;5.94) p=0.006	2.04 (0.90;4.66) p=0.090	0.93 (0.20;4.31) p=0.930	2.75 (0.97;7.84) P=0.058
BMI	25-75 p	Reference			Reference		
	<25p or 75p>	0.95 (0.65;1.40) p=0.801	1.05 (0.59;1.88) p=0.861	0.92 (0.54;1.55) p=0.743	1.58 (0.84;2.96) p=0.157	5.62 (1.36;23.17) p=0.017	1.12 (0.52;2.43) p=0.774
The presence of chronic illness	No	Reference			Reference		
	Yes	1.48 (0.61;3.59) p=0.390	1.21 (0.33;4.43) p=0.776	1.87 (0.53;6.62) p=0.334	1.71 (0.37;7.86) p=0.491	254.2 (0.0; -) p=0.998	1.04 (0.22;5.00) p=0.960

Mother's educational level	High school and below	Reference			Reference		
	University and above	0.94 (0.58;1.53) p=0.801	0.92 (0.45;1.91) p=0.827	0.97 (0.50;1.89) p=0.928	0.84 (0.38;1.86) p=0.673	1.76 (0.40;7.69) p=0.452	0.58 (0.22;1.58) p=0.288
Father's education level	High school and below	Reference			Reference		
	University and above	0.74 (0.46;1.17) p=0.197	0.89 (0.45;1.77) p=0.733	0.62 (0.32;1.20) p=0.155	0.96 (0.46;2.04) p=0.920	0.99 (0.24;4.16) p=0.999	1.02 (0.39;2.64) p=0.976
Mother's employment status	Unemployed	Reference			Reference		
	Employed	0.79 (0.52;1.20) p=0.267	1.03 (0.55;1.92) p=0.931	0.61 (0.34;1.09) p=0.094	0.69 (0.35;1.36) p=0.284	1.19 (0.34;4.14) p=0.786	0.60 (0.25;1.42) p=0.244
Father's employment status	Unemployed	Reference			Reference		
	Employed	1.32 (0.44;3.99) p=0.625	0.82 (0.17;4.07) p=0.809	1.90 (0.40;9.01) p=0.418	1.05 (0.21;5.13) p=0.947	0.30 (0.03;3.47) p=0.337	1.35 (0.16;11.56) p=0.785
Household income status	Income < Expenditure	Reference			Reference		
	Income = Expenditure	0.88 (0.36;2.15) p=0.771	0.24 (0.06;0.94) p=0.040	1.76 (0.48;6.54) p=0.396	0.36 (0.11;1.12) p=0.079	0.05 (0.01;0.33) p=0.002	0.72 (0.14;3.78) p=0.695
	Income > Expenditure	1.14 (0.46;2.84) p=0.784	0.34 (0.08;1.43) p=0.142	2.15 (0.57;8.10) p=0.256	0.58 (0.18;1.86) p=0.361	0.06 (0.01;0.50) p=0.010	1.26 (0.24;6.66) p=0.787
Number of siblings		1.13 (0.90;1.43) p=0.286	1.37 (0.91;2.07) p=0.132	1.01 (0.74;1.37) p=0.972	1.30 (0.94;1.82) p=0.118	2.43 (1.02;5.76) p=0.044	1.13 (0.75;1.70) p=0.573
Birth order	First	Reference			Reference		
	Middle	0.62 (0.29;1.32) p=0.215	0.56 (0.19;1.69) p=0.305	0.68 (0.23;1.99) p=0.479	0.27 (0.07;1.07) p=0.062	0.0 (0.0; -) p=0.997	0.62 (0.13;2.97) p=0.548
	Last	0.70 (0.44;1.13) p=0.146	0.62 (0.30;1.30) p=0.208	0.77 (0.41;1.45) p=0.417	0.47 (0.21;1.03) p=0.060	0.19 (0.04;0.91) p=0.037	0.68 (0.27;1.75) p=0.428
Family type	Nuclear	Reference			Reference		
	Extended	1.51 (0.92;2.48) p=0.107	1.38 (0.63;3.03) p=0.427	1.49 (0.76;2.90) p=0.243	1.72 (0.78;3.78) p=0.177	0.16 (0.2;1.78) p=0.137	2.80 (1.12;7.00) p=0.028
	Divorced	0.60 (0.26;1.39) p=0.232	0.79 (0.22;2.83) p=0.714	0.50 (0.16;1.53) p=0.223	1.09 (0.35;3.42) p=0.885	0.52 (0.05;5.15) p=0.578	1.19 (0.30;4.66) p=0.800

*Nagelkerke R^2 : 0.069; 0.056; 0.117; 0.104; 0.291; 0.344 respectively.

all bullies (including bully-victim), * only bullies (excluding bully-victims).

Outcomes of peer bullying

The outcomes of peer bullying, in terms of socialization, and participation in sports, cultural, and scientific activities, are evaluated in Table 4. Being only a victim does not significantly increase the likelihood of issues in socialization, sports activities, or participation in cultural and scientific activities compared to others. However, among those classified as only bullies, problems with participating in ball games within sports activities were found to be significantly higher (OR;95%CI;p:2.04;0.10–4.17;0.051) (Table 4). In

the group classified as bully-victims, the likelihood of having problems participating in joyful games within the area of socialization was significantly lower (OR;95%CI;p:0.38;0.21–0.68;0.001), while issues with participation in sports activities were significantly higher (OR;95%CI;p:2.61;1.49–4.59;0.001). Additionally, this group faced significant challenges in reading books culturally (OR;95%CI;p:1.80;1.06–3.06;0.029), and participation in scientific research activities was significantly problematic (OR;95%CI;p:1.90;1.10–3.28;0.022) (Table 4).

Table 4: Examining the outcomes of peer bullying based on the classification of bully, victim, and bully-victim using multinomial regression*

Classification of peer bullying	Outcomes		Exp [B]	95%CI** Lower Bound	95%CI Upper Bound	p
Victim	Socialization	Problems making new friends	0.70	0.33	1.48	0.351
		Difficulty joining cheerful games	1.81	0.90	3.62	0.094
	Sports Activities	Disliking sports	1.51	0.69	3.31	0.302
		Not participating in ball games	1.09	0.49	2.45	0.831
	Cultural	Disliking reading adventure books	0.57	0.27	1.21	0.140
	Scientific	Disliking participating in scientific research with friends -S31	1.14	0.55	2.34	0.717
Bully	Socialization	Problems making new friends	0.95	0.48	1.91	0.894
		Difficulty joining cheerful games	1.13	0.59	2.19	0.709
	Sports activities	Disliking sports	0.88	0.42	1.86	0.744
		Not participating in ball games	2.04	0.99	4.17	0.051
	Cultural	Disliking reading adventure books	0.57	0.27	1.21	0.140
	Scientific	Disliking participating in scientific research with friends	1.57	0.79	3.10	0.195
Bully/victim	Socialization	Problems making new friends	0.90	0.50	1.62	0.734
		Difficulty joining cheerful games	0.38	0.21	0.68	0.001
	Sports activities	Disliking sports	2.61	1.49	4.59	0.001
		Not participating in ball games	1.39	0.79	2.42	0.251
	Cultural	Disliking reading adventure books	1.80	1.06	3.06	0.029
	Scientific	Disliking participating in scientific research with friends	1.90	1.10	3.28	0.022

* Nagelkerke R²: 0.130, **Confidence Interval

Discussion

This study aimed to explore the prevalence, determinants and some behavioral outcomes of peer bullying in different socioeconomic contexts. In literature peer bullying prevalence ranging from 15% to 41% (18, 20, 21). This study found lower prevalence of bullying, with 15.8% of participants identified as bullies, 15.3% as victims, and 10.3% as bully-victims. The higher percentage of uninvolved individuals (79.2%) in this study compared to national figures may be attributed to the region's high level of development (22). Literature indicates that bullying frequency often increases with lower socioeconomic status (12, 23, 24). In private schools, which are indicative of high socioeconomic status, there is reported to be a higher incidence of perpetrating bullying, while in low status, there is reported to be a higher incidence of being bullied (25). Low or high socioeconomic contexts may trigger bullying through different internal dynamics. In this study, it was observed that bullying is particularly prevalent in private schools. In Türkiye, education has started to be offered by the private sector in addition to the state's social system, and despite parents opting for environments they perceive as more secure for their children, bullying rates are still high in schools reflecting a higher socioeconomic status. Additional research that explores these contextual factors could shed light on the issue further. Gender differences in peer bullying are well-documented, with males typically showing higher frequencies of bullying (26). Physical bullying is more common among males, while females tend to experience verbal and relational bullying (27). This study confirms a higher frequency of bullying among males but does not reveal significant differences in bullying subtypes based on gender. Notably, for males, bullying was associated with living in extended families and advancing grade levels, challenging the literature's suggestion that bullying decreases with age (28, 29). Although our research findings contradict this, it highlights the need to reassess the effectiveness of current bullying prevention programs in Türkiye (30). For females, specific determinants of bullying include being the last-born child, having a higher number of siblings, and variations in BMI.

Previous studies support these findings, noting a link between family characteristics, sibling number, and peer bullying (31), as well as between obesity and physical bullying (32). Furthermore, there are cases in the literature where individuals report being subjected to bullying due to their individual differences or overweight (33).

Bully-victims, a less frequently observed group, represent a unique subset of the bullying population, with prevalence rates ranging from 0.4% to 29% (34). In this study, the frequency of bully-victims was determined to be around 10%, and it can be said that bully-victims are more commonly observed among males and those from larger families. According to data from the Turkish Statistical Institute (Turk Stat), the frequency of extended families in Türkiye was reported to be 12.8% in 2022 (35). Research in the eastern region noted a correlation between extended families and domestic violence, contributing to increased aggression in children (36). This context suggests that the prevalence of bullying may be higher among those living in extended families due to the potential transfer of domestic violence to the school environment.

Those who were uninvolved in bullying were often girls and had mothers with higher education levels. Literature indicates that uninvolved individuals tend to have close relationships with their parents, while victims and bullies have more problematic parental relationships (37). In peer bullying, parental support should be provided by fostering a close relationship rather than employing an overly controlling or rejecting approach. This highlights the importance of fostering supportive and non-rejecting parental relationships as part of effective bullying prevention. While the effects of peer bullying on mental health are frequently assessed in the literature, this study also evaluates some social and behavioral outcomes. This evaluation includes socialization, participation in sports, cultural activities, and scientific endeavors. Nearly all of the social and behavioral issues examined in the study were observed in the bully/victim category. Bully victims are reported in the literature as a distinctive group that exhibits significantly more behavioral problems than those not involved in bullying, including 2.41

times more communication problems (38). In this regard, the study's findings are consistent with the literature.

Limitations of this study include the fact that data on behavioral outcomes were collected at a single point in time, which may not capture potential changes in these determinants over time. Another limitation is the potential issue with the accuracy of survey responses, as the data collected may not fully reflect the reality. However, the study's robust sampling methodology and reliable scales, combined with advanced statistical methods, strengthen its findings.

Conclusions

This study highlights the significant prevalence and behavioral consequences of peer bullying among early adolescents in Türkiye. One in every five children in the research group was classified as either a bully or a victim. The prevalence of the group classified as both a bully and a victim is approximately 10%. Key predictors for bullying and victimization include gender, family structure, and socioeconomic factors, with males and those from extended families being at greater risk. Notably, the study found bully-victims to experience the most severe behavioral challenges, such as reduced participation in sports, cultural, and scientific activities. These findings underline the urgent need for targeted community-based interventions to address bullying and its impacts, with a specific focus on the bully-victim group. Policymakers and educators should prioritize the development of preventive strategies and support systems to mitigate the psychosocial and behavioral effects of peer bullying in schools.

Declarations

Funding: The authors declared that this study received no financial support.

Ethical approval: This study was performed in line with the principles of the Declaration of Helsinki. Research Ethical Approval for Trakya University Faculty of Medicine Non-Interventional Studies has been obtained from the Scientific Research Ethics Board on 23.10.2023 with the reference number TUTF-GOBAEK 2023/397. Permissions from the Governorship and National Education Directorate

were obtained on 22/11/2023 with the reference number 90177133. Parental consents for the students participating in the research and individual consents have also been obtained.

Conflict of interest: No conflict of interest was declared by the authors.

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