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RESEARCH ARTICLE

# DETERMINING FACTORS AFFECTING SCHOOLCHILDREN'S ATTITUDES TOWARDS INJURY: A CROSS-SECTIONAL STUDY

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## ABSTRACT

**Purpose:** Accidents and injuries in childhood are a common public health problem worldwide. The preventable and unintentional injury rates are high, especially in children who spend most of their time at school. The purpose of this study is to determine schoolchildren's attitudes towards injury and factors affecting these attitudes.

**Methods:** This was a cross-sectional study that enrolled students from Turkish elementary schools. Data were collected using the sociodemographic characteristics data form and the Injury Attitudes Questionnaire for School Children (IAQ).

**Results:** The mean fate subscale scores of the children whose mothers were primary school graduates were significantly higher than those whose mothers were university graduates, and the mean preventability subscale scores of the children whose fathers were university or high school graduates were significantly higher than those whose fathers were primary school graduates ($p < 0.05$). The mean fate subscale scores of the children who were injured three or more times and injured once or twice in the last month were significantly higher than those not injured at all ($p < 0.05$). The preventability subscale scores of children who had a nuclear family type were significantly higher than those who had an extended family ($p < 0.05$).

**Conclusion:** It was determined that the rates of children's injuries at school were high. Children's attitudes towards injury were associated with the level of parents' education, family type, and frequency of injuries. Parents and school management should be better informed by school health nurses to prevent injuries of children.

**Keywords:** Children, school injury, injury attitudes, school nursing

## INTRODUCTION

Injury is reported to be among the leading causes of death for children, adolescents and youth aged 5-24 years (1). Unintentional injuries account for approximately 90% of injuries or violence that cause child deaths each year; they generally occur in low-income and middle-income countries and mostly with children aged less than 18 years (2). Motor vehicle accidents, drowning, poisoning, fire/burns, falls, sports, and recreation are some unintentional causes or mechanisms of the most common injury types found among children in the United States. Unintentional injuries are the leading cause of death in children aged 1 to 19, and more than 9,000 children

die of such injuries in the United States each year. They account for nearly 37 percent of all deaths in children after infancy (3). According to a study conducted in European countries, unintentional injuries occurring at home, during leisure time, at school, and on sports fields in all age groups account for a large proportion of admissions to the emergency department; they are quite common among children aged 0–14 (4). According to 2017 statistics on causes of death in Turkey, child deaths in the 1–17 age group occurred mostly due to external injuries and poisoning, and 10.6% of those who lost their lives in traffic accidents were children (5). School-age children spend most of their time at school. In particular, during break times, they are most active inside and outside the school building (6). Children in primary school generally engage in physical activities, such as running fast, climbing, jumping, and hopping, depending on their development (7). School injuries have a significant impact on school-age children, as the risk of injury is affected by an individual's environment and the length of time spent in different environments that change throughout life (4). These include student accidents, accidents involving students, and spontaneous (non-violent) events (8). Students may have accidents not only in school buildings but also in playgrounds, sports fields, gardens, and school surroundings. Accidents such as falls and collisions are more common, especially in young children (9).

Family factors, such as socio-demographic factors, family and school status, single-parent family structure, number of children and family relationships, and socioeconomic status, affect children's unintentional injury risks (10). A study investigating school accidents in children reported that 9.5% of children had accidents at school in the last three years, boys were injured more, and that falling was the most common injury mechanism (11). Some studies show that these accidents are usually caused by children's behaviours rather than physical conditions (12-14). Studies examining the attitudes of children towards accidents with this respect have shown that the knowledge and attitude about the prevention of accidents among schoolchildren are insufficient (15) and that children with risky attitudes exhibit more risky behaviors (16). All these findings show that injuries are among the leading problems among children worldwide. Prevention of child injuries is very important for public health. In this respect, schools are the most important environments for health improvement interventions. School health services in Turkey are administered with many projects such as health promoting schools, the European network of health promoting schools, healthy nutrition and active life program of Turkey, and health protection and promotion program at school in line with studies on schools that improve health and the adoption of health behaviours in schools (17,18). School health services offered by school nurses include determining health-related risks at school, early diagnosis, health education, hygiene, immunisation and health screening, health monitoring, and determination of health problems. In addition, the roles of the school nurse involve creating school health records and mental health studies while offering health counseling, emergency response, prevention of accidents, and development of safety measures (19). In this respect, as a result of this study, which offers an understanding of the number, sites, causes, and types of injuries in schoolchildren, the areas where the injury occurred, and their attitudes towards injury, it is thought that the risks will be reduced. Besides, the results that will be obtained will contribute to raising awareness in the field to prevent school accidents and injuries in childhood, recognizing the factors that may cause accidents in school, and taking the necessary precautions. This study will contribute to the literature, and especially the importance of the educational and protective role of the nurse. Moreover, the knowledge and awareness of children about this issue will be increased by conducting nursing initiatives, education programs, and research about school accidents and injuries in school health services and school nursing practices.

This study aimed to determine schoolchildren's injury attitudes and factors affecting them. The questions of the research for this purpose are as follows:

RQ1. What are the injury attitude levels of schoolchildren?

RQ2. Is there a relationship between schoolchildren's sociodemographic characteristics and injury attitudes?

RQ3. Is there a relationship between schoolchildren's injury characteristics and injury attitudes?

## METHODS

### Study design, population, and sampling

This cross-sectional study was carried out between November and December 2019 in primary schools in a central district of a province located in the west of

Turkey. There were six primary schools and approximately 2503 students in all grades in this district. These schools were selected randomly to sample a wide range of local socio-demographic characteristics and events involving accidents and injuries. The study included 3rd and 4th-grade primary school students whose parents volunteered to participate in the study and gave consent for their children to participate. Students who did not attend classes or had communication coordination disorders were not included in the study. The elementary education institutions in Turkey involved the four-year compulsory primary school level (1st, 2nd, 3rd, and 4th grades) and the four-year compulsory middle school level (5th, 6th, 7th, and 8th grades) (20). In addition, the Turkish validity and reliability study of the Injury Attitudes Questionnaire for School Children (IAQ) used in the present study was conducted with children aged between 8 and 12 (21). For this reason, 3rd and 4th-grade students in primary school were included in this study so that the results would not differ in terms of the level of education. Regarding the inclusion criteria, there were approximately 1,174 students in 3rd and 4th grades in these schools. The study sample was calculated as 292 using the known population sampling formula (N = N.t2.p.q / d2 (N-1) + t2.p.q), assuming that the standard deviation would be 5% and the probability of occurrence would be 50% because the probability of occurrence of the case that was investigated in light of the relevant literature was between 2.8 and 55% (11,22-32). Considering that there may be data loss in the sample during the study process, we planned to include a total of 350 students—20% more than the number of subjects calculated (32). All students who met the inclusion criteria made up the sample of the study, and the study was completed with 453 students.

**Measures**

**The sociodemographic characteristics data form**

This form consists of 16 items questioning sociodemographic characteristics for children enrolled in the study, such as age, class, gender, education level of the mother and the father, family type, economic income level of the family, number of siblings, daily computer usage and television watching time, sports activity, number of injuries in the last month, and the area, cause, and type of the injury and where it occurred (22,26,28).

**The Injury Attitudes Questionnaire for School Children (IAQ)**

This scale was developed by Kane and Morrongiello (2012) to determine children's attitudes towards playground injuries (33), and its validity and reliability study for the Turkish context was carried out by Koca and Uysal Toraman (2019) (21). The scale has a six-point Likert-type rating structure with options ranging from 1 = strongly disagree to 6 = strongly agree and a total of 15 items and three subscales, namely, susceptibility/severity, fate, and preventability. The susceptibility/severity subscale consists of a total of six items that are inversely scored and aim to determine the level of beliefs about vulnerability to injuries depending on the behaviour and the potential severity of children's playground injuries. The fate subscale consists of a total of five items aiming to determine the level of beliefs by which children associate injuries with fate. The preventability subscale consists of a total of four items aiming to determine the belief levels about the preventability of injuries depending on the attitudes of the person. It was reported that the factor loads of the items on the scale ranged between .51 and .82, the $R^2$ values of the items were between .26 and .67, the Kaiser-Meyer-Olkin (KMO) value was .90, the Barlett test result was $X^2$ = 2199.918, and p = .001. In confirmatory factor analysis (CFA), fit indices were x2 / df = 1.98, RMSEA = .051, AGFI = .94, GFI = .94, CFI = .98, and SRMR = .050. Reliability coefficients were determined as .75 for the fate subscale, .90 for the susceptibility/severity subscale, and .66 for the preventability subscale. High scores obtained from each subscale showed that children had a positive attitude towards playground accidents (21). Cronbach's alpha value of the scale in this study is .63 for the fate subscale, .55 for the susceptibility/severity subscale, and .61 for the preventability subscale.

**Data collection**

After the researchers obtained the ethics committee and institutional approvals, they visited each branch of the third and fourth grades included in the study and provided the students with detailed information about the research. An informed consent form was sent to the parents via the students who volunteered to participate in the study. The parents were asked to write down whether they and their children were volunteering to participate in the study after reading the forms. Those who volunteered to participate in the

**Table 1.** Sociodemographic, activity, and injury characteristics of children (n= 453)

| Characteristics | Frequency | % |
|---|---|---|
| Age (years) [Mean (SD)] | 453 | 9.12 (0.67) |
| Gender | | |
| Female | 242 | 53.4 |
| Male | 211 | 46.6 |
| Grade | | |
| 3rd grade | 208 | 45.9 |
| 4th grade | 245 | 54.1 |
| Number of siblings | | |
| None | 110 | 24.3 |
| Two | 255 | 56.3 |
| Three or more | 88 | 19.4 |
| Family type | | |
| Nuclear | 385 | 85.0 |
| Extended | 68 | 15.0 |
| Mother's education | | |
| Primary school | 138 | 30.5 |
| High school | 151 | 33.3 |
| University | 164 | 36.2 |
| Father's education | | |
| Primary school | 140 | 30.9 |
| High school | 151 | 33.3 |
| University | 162 | 35.8 |
| Family income level | | |
| Low | 5 | 1.1 |
| Middle | 179 | 39.5 |
| Good | 269 | 59.4 |
| Daily TV watching time | | |
| None | 34 | 7.5 |
| Less than 1 hour | 209 | 46.1 |
| More than 1 hour | 210 | 46.4 |
| Daily computer usage time | | |
| None | 180 | 39.7 |
| Less than 1 hour | 149 | 32.9 |
| More than 1 hour | 124 | 27.4 |
| Doing Sports | | |
| Yes | 319 | 70.4 |
| No | 134 | 29.6 |
| Number of injuries for the last month | | |
| None | 121 | 26.7 |
| 1-2 | 230 | 50.8 |
| 3 or more | 102 | 22.5 |
| Injured body part* | | |
| Hands/arms | 149 | 32.8 |
| Face/head | 53 | 11.7 |
| Foot/leg | 232 | 51.3 |
| Abdomen/back | 19 | 4.2 |
| Cause of injury* | | |
| Falling | 160 | 35.3 |
| Hitting | 103 | 22.7 |
| Running/Jumping/ Hopping | 115 | 25.3 |
| Type of injury* | | |
| Bruises | 134 | 29.6 |
| Scratches/scrapes | 167 | 36.9 |
| Fractures/cracks | 19 | 4.2 |
| Cut/wound | 54 | 11.9 |
| Place of injury* | | |
| School | 159 | 35.1 |
| Home | 79 | 17.4 |
| Street/park | 82 | 18.1 |
| Sports field | 56 | 12.4 |

*Participants with injuries chose more than one option for these categories.

study were asked to sign the form and return it with their children. Later, the researchers went back to the school and collected these forms from the students. An informed consent form was obtained from parents who volunteered to participate in the study and approved the participation of their children. The students whose signed consent was obtained from their parents were visited by the researchers in their classroom environment at the date and time deemed appropriate by the school administration and

classroom teachers without disturbing the course of the ongoing lessons. The Sociodemographic Characteristics Information Form and the Injury Attitude Questionnaire for School Children were then distributed to the students in the classroom environment. The researchers informed the students about these forms and their implementation and asked the students who volunteered to participate in the study to fill out the forms. Each student sat at their own desk in the classroom, where the classroom teachers were also present, and a quiet environment was provided so that they would not be distracted. The students filled out the forms within an average of 20 minutes, and then the researchers collected them. Students who did not volunteer to participate did not fill out the forms and were not included in the study.

**Ethics committee approval**

At the outset, the approval of the Non-Invasive Research Ethics Committee of Dokuz Eylul University (approval no: 2019/13-06, date: 2019, May 22) and provincial directorate of education permission (approval date and no:4 November 2019 / 12018877-604.01.02-E.21705088) was obtained. Written informed consent of the students' parents included in the study and the permissions of the authors for the use of their scale were obtained.

**Statistical analysis**

The IBM Statistical Package for the Social Sciences 22.0 software package was used for the statistical analysis. Socio-demographic characteristics were analyzed with descriptive statistics (numbers, percentages, mean and standard deviation (SD) values). The fit of the variables to normal distribution was evaluated using skewness and kurtosis values and the Shapiro-Wilk test. The Mann-Whitney U test was employed for the comparison between the descriptive characteristics of the children and the mean scores that they obtained from the IAQ subscales. Kruskal Wallis-H was used for variance analysis. Multiple comparisons of these variables used Bonferroni correction when the variances were equal. The significance level was accepted as $p < 0.05$.

## RESULTS

**Sociodemographic, activity, and injury characteristics of children**

The mean age of the children was 9.12 (SD= 0.67), 242 (53.4%) were female, 245 (54.1%) were 4$^{th}$ graders, 385 (85%) had a nuclear family, 343 (75.7%) had at least one sibling, 164 (36.2%) of the mothers and 162 (35.8%) of the fathers had an undergraduate degree, and 269 (59.4%) had a good level of family economic income. Regarding daily social activities, 210 (46.4%) were found to watch TV for more than an hour a day, 124 (27.4%) used computers for more than an hour a day, and 319 (70.4%) did sports (Table 1).

The examination of the characteristics of the children's injuries indicated that 332 (73.3%) had multiple injuries in the last month, 160 (35.3%) were injured due to falling, 232 (51.3%) mostly had foot/leg injuries, 167 (36.9%) had scratches/scrapes, and 159 (35.1%) were injured at school (Table 1).

**Associated factors and injury attitudes of children**

The mean scores of the children were 13.05 (SD= 5.48), 27.31 (SD= 5.42), and 17.62 (SD= 4.46) for the fate, susceptibility/severity, and preventability subscales, respectively. No statistically significant difference was found between the children's scores from the IAQ subscales and their characteristics, such as gender, grade level, number of siblings, family income, daily TV watching and computer usage time, and doing sports ($p > 0.05$). The preventability subscale scores of children who had a nuclear family type were significantly higher than those who had an extended family ($p < 0.05$). While the fate subscale scores of those whose mothers were primary education graduates were significantly higher than children with mothers with an undergraduate degree ($p < 0.05$), there were no statistically significant differences in terms of susceptibility/severity and preventability subscale scores ($p > 0.05$).

While the preventability subscale scores of those whose fathers were university or high school graduates were significantly higher compared to those whose fathers were primary education graduates ($p < 0.05$), no statistically significant differences were found between their fate and susceptibility/severity subscale scores ($p > 0.05$). It was determined that the mean fate subscale scores of those who had three or more injuries in the last month were significantly higher compared to those with no injuries at all ($p < 0.05$), while the mean susceptibility/severity subscale scores of those individuals were significantly lower ($p < 0.05$). The mean fate subscale scores of children who had one

**Table 2.** Associated factors with injury attitudes of children (n= 453)

| Variables | n | Fate subscale Mean (SD) | U / KW p | Susceptibility/severity subscale Mean (SD) | U /KW p | Preventability subscale Mean (SD) | U /KW p |
|---|---|---|---|---|---|---|---|
| Gender | | | | | | | |
| Female | 242 | 13.11 (5.42) | 0.340 | 27.51 (5.08) | 0.256 | 17.77 (4.43) | 0.738 |
| Male | 211 | 12.97 (5.55) | 0.734 | 27.09 (5.80) | 0.798 | 17.45 (4.50) | 0.461 |
| Grade | | | | | | | |
| 3rd grade | 208 | 13.19 (5.37) | 0.640 | 27.07 (5.76) | 0.833 | 17.35 (4.65) | 1.141 |
| 4th grade | 245 | 12.92 (5.58) | 0.522 | 27.51 (5.13) | 0.405 | 17.86 (4.29) | 0.254 |
| Number of siblings | | | | | | | |
| None | 110 | 12.74 (5.51) | 1.016 | 27.75 (5.58) | 5.922 | 17.81 (4.71) | 4.932 |
| Two | 255 | 12.98 (5.24) | 0.602 | 26.83 (5.27) | 0.052 | 17.88 (4.16) | 0.085 |
| Three or more | 88 | 13.61 (6.09) | | 28.14 (5.56) | | 16.64 (4.87) | |
| Family type | | | | | | | |
| Nuclear | 385 | 13.04 (5.41) | 0.121 | 27.22 (5.32) | 0.647 | 17.87 (4.24) | 2.133 |
| Extended | 68 | 13.08 (5.87) | 0.904 | 27.83 (5.99) | 0.518 | 16.23 (5.34) | 0.033 |
| Mother's education | | | | | | | |
| Primary school [a] | 138 | 14.12 (5.90) | 6.284 | 26.68 (5.69) | 4.754 | 16.94 (5.21) | 2.004 |
| High school [b] | 151 | 12.81 (5.31) | 0.043*† | 28.02 (5.18) | 0.093 | 17.86 (3.95) | 0.367 |
| University [c] | 164 | 12.36 (5.15) | c<a | 27.19 (5.37) | | 17.98 (4.18) | |
| Father's education | | | | | | | |
| Primary school [a] | 140 | 13.96 (5.79) | 5.424 | 26.92 (6.03) | 0.638 | 16.66 (5.07) | 6.613 |
| High school [b] | 151 | 12.84 (5.24) | 0.066 | 27.47 (5.29) | 0.727 | 18.03 (4.17) | 0.037*† |
| University [c] | 162 | 12.45 (5.36) | | 27.50 (4.99) | | 18.07 (4.04) | a<b, a<c |
| Family income | | | | | | | |
| Low | 5 | 10.40 (2.40) | 3.455 | 25.00 (6.81) | 5.691 | 15.00 (7.44) | 1.042 |
| Middle | 179 | 12.54 (5.05) | 0.178 | 26.83 (4.92) | 0.058 | 17.55 (4.38) | 0.594 |
| Good | 269 | 13.43 (5.76) | | 27.68 (5.70) | | 17.72 (4.45) | |
| Daily TV watching time | | | | | | | |
| None | 34 | 15.05 (5.77) | 5.768 | 27.17 (4.99) | 0.134 | 17.35 (4.57) | 1.333 |
| Less than 1 hour | 209 | 12.56 (5.32) | 0.056 | 27.37 (5.52) | 0.935 | 17.70 (4.84) | 0.513 |
| More than 1 hour | 210 | 13.20 (5.53) | | 27.27 (5.42) | | 17.59 (4.04) | |
| Daily computer usage time | | | | | | | |
| None a | 180 | 13.47 (5.74) | 1.607 | 27.39 (5.48) | 0.091 | 17.17 (5.05) | 1.389 |
| Less than 1hour [b] | 149 | 12.71 (5.48) | 0.448 | 27.34 (5.37) | 0.956 | 17.84 (3.98) | 0.499 |
| More than 1hour [c] | 124 | 12.83 (5.08) | | 27.16 (5.44) | | 18.01 (4.05) | |
| Doing Sports | | | | | | | |
| Yes | 319 | 13.22 (5.44) | 1.360 | 27.15 (5.51) | 0.561 | 17.83 (4.41) | 1.508 |
| No | 134 | 12.62 (5.57) | 0.174 | 27.68 (5.20) | 0.575 | 17.14 (4.55) | 0.132 |
| Number of injuries for the last month | | | | | | | |
| None [a] | 121 | 11.36 (5.16) | 17.405 | 28.13 (5.35) | 8.206 | 17.36 (4.46) | 0.606 |
| 1-2 [b] | 230 | 13.43 (5.39) | <0.001*† | 27.52 (5.10) | 0.017*† | 17.78 (4.44) | 0.739 |
| 3 or more [c] | 102 | 14.19 (5.63) | a<b, a<c | 25.88 (5.97) | c<a | 17.57 (4.53) | |

Abbreviations: *SD*, standard deviation; *U*: Mann-Whitney U; *KW*: Kruskal-Wallis* (when an overall significance was observed, pair wise post-hoc tests were performed using Bonferroni correction†); *p* value of less than .05 was considered to show a statistically significant result.

or two injuries were significantly higher than those who had never been injured before ($p < 0.05$). No statistically significant difference was found between this variable and the preventability subscale scores ($p > 0.05$) (Table 2).

## DISCUSSION

School injuries account for a significant portion of total child injuries (34). In this study, it was found that 73.3% of the children were injured more than once in the last month and that 35.1% of these injuries had occurred at school. The school injury rates of children reported in studies conducted in Turkey range from 2.8 to 38.6% (11,22,24,27,28). In other countries, the rates of school injury among children have been reported to vary between 14.15 and 55.70% (23-26, 29-31).

In one study, it was reported that almost half of school injuries were caused by physical environmental factors, such as a slippery ground, school garden arrangements, falling on asphalt, and slipping in icy school areas (14). In this study, it was determined that the most common injury mechanism experienced by children was falling, but injuries due to running, jumping, hopping, and hitting were also common. Similar results have been reported in other studies, and it has been stated that the most common mechanism of injury in school-age children is falling (11,23,24,29,31,34-38). Other common injury mechanisms seen in children following falling include hitting a person or an object/bumping (28,34), burns (23), traffic accidents (36), and being hit by falling objects (39). The physical and mental development processes of school children are fast and fall incidents can be seen more because of the decrease in their ability to control the changes in this in the growth and development process (24). In general, primary school children are unsupervised most of the time, or they are supervised only remotely or indirectly (40). In their study including the observation of children aged 6–12 to investigate risky outdoor games in the schoolyard, Gyllencreutz et al. (2020) determined that children were engaged in risky types of games, such as playing in high places, playing at a fast pace, and playing harsh games that involve rolling. Moreover, children were reported to play with little supervision in playgrounds (7). It is clear that the activity areas of children in school are not safe, children play risky games, and that there is little adult supervision, all of which increase the risk of injury.

The unintentional injuries that occurred in half of the children participating in this study were mostly in the foot/leg area, and more than one third included scratches/scrapes (Table 1). Other studies examining the epidemiology of injury in children have reported that injuries in the upper/lower extremities and facial areas are more common than injuries in other parts of the body. Bruises (41), scrapes (7,28,34), cuts (11), sprains (42), and fractures (37) are common in joints, muscles, and connective tissues due to injury mechanisms such as falling or hitting.

In this study, according to the scores obtained from the IAQ subscales, it was determined that children had positive attitudes towards susceptibility to injuries depending on the potential severity of playground injuries and the person's behaviour pattern. In addition, it was determined that positive attitudes needed developing by increasing the perception of the preventability of injuries depending on the behaviour of the person and decreasing the perception of associating injuries with fate. Some developmental characteristics of primary school children indicate that play and sports activities are at the centre of their interest and that they want to spend most of their time playing outside with their friends. In addition, during this period, children have a great interest in learning and obtaining information about what is happening around them (43). From this point of view, it is important to identify and eliminate dangers that may cause injuries to school children, especially in playgrounds, and to take protective measures.

In this study, it was determined that children living in nuclear families had positive attitudes towards the preventability of injuries. However, there is no consensus in the literature regarding the effect of family type on children's injury status. Studies have reported that extended family structure is the main risk factor leading to injury in children (36) and that parents' adaptation to the prevention of injuries decreases as family size increases (44). On the contrary, a study reported that the decrease in the number of people living in the household increased the rate of accidents or injuries in children (24). However, in another study, it was reported that family type was not a factor associated with children's injuries (23).

There was a statistically significant relationship between the education level of the children's parents and injury attitudes. As the education level of the children's mothers decreased, the level of associating

injuries with fate increased. On the contrary, as the education level of fathers increased, the level of children's belief about the preventability of injuries also increased. It is seen that these findings are similar to findings of other studies in the literature. For example, Hu et al. (2018) reported that the probability of unexpected injuries and the rates of unintentional injuries were lower in children whose mothers had a higher level of education (10). In another study, it was stated that the level of parental education was directly related to parents' knowledge of injury prevention and that parents with at least university education were more aware of safety precautions. It was also reported that parents who did not believe it was possible to prevent unintentional injuries were more likely to have a child with an injury (45). In the study of Tian et al., it was shown that the knowledge level of children whose mothers had a high level of education was higher (46). In another study, it was reported that there was a relationship between parents' high level of education and their adherence with injury prevention measures (44). Mothers with low education can generally obtain information about child injury from their life experiences and may have less access to the information needed in this subject. This may indicate that they have no idea how to protect their children from injuries (46). All these findings show that as the level of parents' education, especially that of mothers, gets higher, they are aware that they can protect their children from accidents, rather than linking accidents to chance or fate. In this study, it was found that as the education level of fathers increased, they exhibited positive attitudes towards the preventability of children's injuries in playgrounds. In an interventional study, it was reported that multimedia and SMS-based intervention and education programs increased the knowledge of mothers with children aged one to five years old about preventing home accidents (47). In this respect, it is thought that it may be effective to carry out intervention studies that will increase the awareness and knowledge level of parents to protect their children from playground injuries.

The children who had one or more injuries in this study had higher IAQ fate subscale scores than those who had no injury at all. According to this result, children who associate injuries with fate or attribute it to chance are injured more. In this study, it was found that the susceptibility/severity subscale scores of children who had no injuries before were higher than those who had three or more injuries. In a study, it was reported that children with a history of injury were generally at high risk of injury (36). The thought that accidents cannot be predicted or prevented constitutes the main barrier to protection from accidents (48). These results clearly show that when children do not know how serious accidents can be and that they are preventable, they can suffer frequent injuries. However, in a study by Gyllencreutz et al. (2020), children who had previously suffered major injuries, such as fractures, stated that they avoided risky activities to avoid their occurrence again (7). In line with these findings, further studies are needed to examine the relationship between children's injury experiences, and their injury attitudes towards the playground.

**Strengths and limitations**

One of the limitations of this study was that some of the informed consent forms sent to parents via students were not delivered to the parents or not returned to the researchers. Since the pandemic emerged after the research began, data were not collected from two primary schools in the research population, as education was suspended in schools. Therefore, as sufficient sample size was reached in December 2019, the research was terminated on this date. These conditions led to losses in the sample and caused difficulties in reaching the target sample size. Other limitations are that the data were gathered from a convenience sample and the findings are limited in terms of their generalization.

**Implications for Practice**

School health nurses should record accidents and injuries in schools, identify environmental risks that may cause accidents, and provide training or counseling to students, parents, and school staff on accidents, injuries, and prevention.

At the same time, to minimise environmental risks, it is necessary to improve the infrastructure of school buildings, provide adequate, safe, and appropriate playgrounds, and make children aware of safe behaviours during activity times with the assistance of supervisors. We recommend that topics about protection from accidents and injuries should be added to the curriculum and that intervention studies on the causes of injuries in schoolchildren should be carried out. To reduce the rate of accidents and injuries in schools, to increase the level of knowledge and perception of dangers, and to raise awareness about the topic, it is recommended to conduct

education programs and school parent meetings that support the transformation of knowledge into behavior with students, families, teachers, school administrators, and especially parents and nursing-led intervention studies including active participation programs in which the child and family participate together. In addition, it is recommended that intervention studies to be carried out against injuries in playgrounds should be designed to include children's attitudes towards safety. Moreover, it is thought that it will be beneficial to carry out active educational activities by targeting peer education and friend groups so that children can share their injury experiences in playgrounds.

## CONCLUSION

In conclusion, it was found that injuries were common among children, and most injuries occurred at school. The most common mechanism of injury experienced by children was falling, and injuries due to running, jumping, hopping, and hitting were also widespread. The unintentional injuries that occurred in half of the children were mostly in the foot/leg area, and more than one third included scratches/scrapes. It was determined that children had positive attitudes towards the susceptibility to injuries depending on the potential severity of the playground injuries and the behaviour of the person, but their attitudes towards the preventability of injuries were not sufficient, and that they had attitudes towards associating injuries with fate depending on the behaviour of the person. Children's attitudes towards injury were associated with the level of parents' education, family type, and the frequency of injuries. It was found that children whose fathers had a high education level and lived in nuclear families had more positive attitudes towards the preventability of injuries, children whose mothers had low education associated injuries with fate or chance, the rate of injuries in children who attributed injuries to fate or chance was higher, and that children who had never been injured had higher preventability attitudes.

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