




# Investigating the Effect of Perceived Social Support on the Promotion of Earthquake-Related Awareness in Iranian High School Students

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## Abstract

**Introduction and Objective:** Students are one of the groups in society that are always exposed to earthquake-related hazards. Perceived social support plays a major role in students' self-efficacy to respond appropriately to earthquakes. Social support affects students' beliefs about their abilities and enhances their performance during earthquakes. Thus, the present study aimed to investigate the effect of perceived social support on the promotion of earthquake-related awareness amongst high school students.

**Methods:** The present educational intervention with a randomized control group was conducted on 64 high school students in Lordegan, Iran. The participants were randomly divided into an intervention and a control group. Earthquake-related awareness index and perceived social support were completed by the two groups before, immediately after, and two months after the intervention. The intervention group received 120-minute educational intervention sessions once a week for four weeks. The data were entered into the SPSS 20 software and were analyzed using descriptive and inferential statistical methods.

**Results:** According to the results, educational intervention was effective in improving the perceived social support. The results also showed that increasing the perceived social support significantly improved the earthquake-related awareness among the high school students in the intervention group compared to the control group after the intervention ( $P < .001$ ).

**Conclusion:** The findings revealed that perceived social support played a major role in promoting earthquake-related awareness in the high school students. Due to the accuracy of the study, these results can be considered in future investigations.

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## Introduction

Earthquakes are one of the most unpredictable and destructive natural disasters that affect people's lives and cause much human and financial losses.<sup>1</sup> Therefore, it is considered a serious danger to people's lives.<sup>2</sup> Earthquakes have been one of the most important natural disasters due to their destructive effects throughout human history.<sup>3</sup> The main effects of this phenomenon include the destruction of man-made buildings and structures, which causes death, severe injuries, homelessness, and other social problems.<sup>4</sup> Earthquake refers to the movement of the earth that occurs in a short time due to the release of energy as a result of rapid rupture in faults in the earth's crust.<sup>5</sup> More than one million earthquakes occur around the world annually.<sup>6</sup> Based on a global scale, earthquakes and tsunamis have killed more than 400,000 people and affected 46 million over the past 20 years.<sup>7</sup> Iran is located in an earthquake-prone region of the world and numerous catastrophic earthquakes have been recorded in its history.<sup>8</sup> Over the past 90 years, more than 180,000 people have died in numerous earthquakes.<sup>9</sup> The Bam earthquake (2003) killed more than 30,000 people, injured more than 10,000 individuals, left more than 100,000 people homeless, and led to the loss of more than \$800 million.<sup>10</sup>

Earthquakes, per se, do not have any adverse consequences, but what makes this phenomenon a disaster is the unpreparedness to cope with its consequences.<sup>11</sup> As long as the safety of human beings, their society, and habitats against earthquakes are not guaranteed sufficiently, they will cause harmful and critical consequences.<sup>12</sup> The experience of

Time		Before the Intervention	Immediately After the Intervention	Two Months After the Intervention
Number of Students	Intervention Group	32	32	32
	Control Group	32	32	32
	Total	64	64	64

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**Table 1.** Number of Students Participating in Different Stages of the Study

developed countries confirms that the effects of this natural phenomenon can be greatly reduced with careful planning.<sup>13</sup> Disaster elimination is impossible, but the risk of events and disasters can be reduced with preparedness to cope with such events.<sup>14</sup> Education is another way to increase preparedness and reduce the destructive effects of earthquakes.<sup>15</sup> Education can also help reduce the negative psychological effects of natural disasters.<sup>16</sup> Students are one of the groups in society that are always exposed to earthquake-related hazards.<sup>17</sup> In this regard, continuous and on-going education is essential for students to prepare themselves for earthquakes, a missing link in the earthquake crisis management cycle.<sup>18</sup> On the other hand, government in disaster management has limited resources in terms of human resources and facilities.<sup>19</sup> Hence, it is possible to prepare students to cope with earthquakes at school and at home via education and training.<sup>20</sup> Thus, the most important step in managing the earthquake crisis in schools is education to enhance students' knowledge and public awareness.<sup>21</sup>

Earthquake education refers to a set of appropriate strategies designed before the earthquake to raise awareness and teach practical skills by generalization to the whole society.<sup>22</sup> Continuous education can eliminate the fear of the suddenness of the earthquake and its consequences among students. By maintaining preparedness during earthquakes, students' relaxation and peace of mind to decide and implement the safety tips, which is the most important component to save individuals and the society, are maintained.<sup>23</sup> In earthquake education, students are exposed to an accident situation, which allows them to learn the ways of coping with earthquakes and to use these experiences throughout their lives and during earthquakes.<sup>24</sup> In other words, education can untie the knots created in an accident such as an earthquake and students can rely on these teachings and learnings to cope with the accident calmly and confidently to reduce casualties and psychological damages during and after events.<sup>25</sup> Taking earthquake education seriously, purposefulness, and as a continuation of this education for students and families by increasing their quality and quantity can always be an important issue in the plans made by the officials of educational centers.<sup>26</sup> It can lead to more solidarity between parents and schools, eventually reducing human casualties.<sup>27</sup> In fact, being prepared and knowing what to do in the event of an earthquake can save the lives of many people during an incident.<sup>28</sup>

Various factors including preparedness, awareness, and self-efficacy affect the self-efficacy of students to respond appropriately to sudden events, especially earthquakes. One of these factors is social support, which affects individuals' beliefs in their abilities and enhances their performance in the face of disasters.<sup>29</sup> Social support has been defined as the reception of affection, attention, and assistance of family members, friends, and other people.<sup>30</sup> In addition, perceived support refers to a personal perception of the availability of support, an adequate assessment of support, and the quality of support when needed.<sup>31</sup> The mental aspect of social support can provide effective psychological assistance to a

person to cope with the pressures and problems of life.<sup>32</sup> Since these people have a clear idea in their minds that there are people who help them in all moments of life, they resist the adversities more strongly.<sup>33</sup>

As mentioned earlier, it is crucial for students to behave properly during an earthquake. Therefore, implementing educational programs for students and their families can serve as a guide for macro-level planning. The present study aims to investigate the effects of an educational program on social support and earthquake-related awareness in high school students in Lordegan, Iran in 2021.

## Methods

### Participants

This quasi-experimental research was conducted on 64 high school students divided into an intervention and a control group in 2021. Thirty-two students were in the control group and 32 students were in the intervention group, all of whom remained in the study until the end of the study (Table 1).

The study population included all the high school students in Lordegan. The inclusion criteria of the study were living in Lordegan, being willing to participate in the study, and not taking part in other similar educational programs.

### Data Collection Tool

The measurement tools included a demographic information questionnaire, a perceived social support questionnaire, and an earthquake-related questionnaire.

The perceived social support questionnaire contained 12 questions scored on a seven-point Likert scale. The first question of this scale was "When I need, there is always a special person beside me." Scores of one through seven were assigned to: (1) "I completely disagree," (2) "I disagree," (3) "I relatively disagree," (4) "I have no idea," (5) "I relatively agree," (6) "I agree," and (7) "I completely agree," respectively. Thus, the total score of perceived social support could range from 12 to 84, with higher scores indicating a better perceived social support status. Zimmet, et al reported the alpha reliability coefficient of the scale as 0.85-0.91 and its test-re-test reliability as 0.72-0.85.<sup>34</sup> In Iran, this questionnaire was used by Davari, et al and its reliability was confirmed by using the test-re-test method (0.895) and the Cronbach's alpha coefficient method (87%).<sup>35</sup>

The earthquake-related awareness index consisted of 22 questions, the first 21 of which were yes/no items. Scores one and two were given to "no" and "yes" options, respectively. Therefore, the earthquake-related awareness scores could range from 21 to 42, with higher scores representing better awareness. In the study conducted by Huberman, et al, the correlation coefficient was reported as 0.94 using the test-re-test method and 89% using the Cronbach's alpha coefficient.<sup>36</sup> This instrument was also used by Mehraein, et al in Iran and its Cronbach's alpha coefficient

Time		Before the Intervention	Immediately After the Intervention	Two Months After the Intervention	P Value
Intervention Group	Mean (SD)	52.01 (SD = 22.1)	92.6 (SD = 4.1)	81.1 (SD = 3.8)	<.001
Control Group	Mean (SD)	49.3 (SD = 10.1)	–	50.6 (SD = 9.2)	0.41
Independent T-Test	P-value	0.48	–	<.001	

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Table 2. The Mean Scores of Perceived Social Support Before and After the Intervention

Time		Before the Intervention	Immediately After the Intervention	Two Months After the Intervention	P Value
Intervention Group	Q1	37.11	89.84	78.54	<.001
	Q3	66.92	95.36	83.66	<.001
Control Group	Q1	42.49	–	44.39	.42
	Q3	56.11	–	56.81	.39

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Table 3. The Q1 and Q3 Scores of Perceived Social Support Before and After the Intervention

and Pearson's correlation coefficient were obtained as 0.86 and 0.94, respectively.<sup>8</sup>

#### Data Collection Method

To carry out the study, ten high schools (five female high schools and five male high schools) were randomly selected from the 20 female high schools and 18 male high schools in the city. Then, eligible students were selected and the research objectives and procedures were explained to them. After obtaining their written informed consent, they were requested to complete a questionnaire on demographic information, earthquake-related awareness, and perceived social support. They were asked not to participate in similar counseling and training programs during this study and to continue their normal lives. Then, they were randomly divided into an intervention and a control group.

To measure the effectiveness of the program, one of the closest family members entered the group sessions. In this group, emphasis was put on earthquake education, appropriate behaviors and actions before, during, and after the earthquake, and the role of family support in improving these behaviors. In this way, the researcher aimed to activate family support for the students through the presence of a family member in the education sessions. The intervention group was divided into three groups: two groups of 11 and one group of 10. Each group participated in training sessions once a week on different days. Four two-hour therapeutic sessions were also held for each group. Immediately after the completion of the four sessions, all the participants were invited to the study site and were required to complete the aforementioned questionnaires again. Two months later, they were invited to the study site again for follow-up and were asked to complete the mentioned questionnaires once again. During these two months, a text message was sent to the students' companions every week to strengthen the supportive behaviors. Finally, the obtained data were analyzed.

#### Data Analysis Method

The data were analyzed using chi-square, Mann-Whitney, independent t-test, repeated measures analysis of variance, and analysis of covariance. All statistical analyzes were performed at 95% confidence interval.

#### Ethical Considerations

This article was extracted from a research work approved by Shahrekord University of Medical Sciences (Shahrekord, Chaharmahal and Bakhtiari Province, Iran; code: IR.SKUMS.REC.1400.218). Sampling was started after the researcher submitted a letter of introduction to Shahrekord University of Medical Sciences. The objectives of the study were explained to the participants. The participants had the right to withdraw from the study at any stage. The participants were assured that their information would remain confidential. The obtained information was analyzed without bias. Each participant and parent provided consent to participate; a parent also consented to have their child participate.

#### Results

The mean age of the participants was 17.5 (SD = 6.7) years (17.4 [SD = 6.7] in the intervention group and 17.6 [SD = 7.2] in the control group). The results revealed no significant difference between the two groups in terms of demographic information such as age, gender, and education level ( $P = .802$ ).

Before the intervention, the results of independent t-test showed no significant difference between the two groups regarding the status of perceived social support ( $P = .48$ ). After the intervention, however, the mean Q1 and Q3 scores of perceived social support were higher in the intervention group than in the control group immediately and two months after the intervention ( $P < .001$ ; Table 2 and Table 3).

The results of paired t-test indicated no significant difference in the control group's mean Q1 and Q3 scores of perceived social support before and two months after the intervention ( $P = .41$ ). However, the results of repeated measures analysis of variance showed a significant difference in the intervention group's mean Q1 and Q3 scores of perceived social support before, immediately after, and two months after the intervention ( $P < .001$ ). The results of the least significant difference post hoc test demonstrated that the students' mean Q1 and Q3 scores of perceived social support increased significantly immediately after the intervention compared to before the intervention ( $P < .001$ ), but decreased two months after the intervention compared to immediately after the intervention ( $P = .001$ ). However, the mean Q1 and Q3 scores were significantly higher two months after the intervention

Time		Before the Intervention	Immediately After the Intervention	Two Months After the Intervention	P Value
Intervention Group	Mean (SD)	22.3 (SD = 11.3)	41.4 (SD = 2.2)	39.2 (SD = 2.4)	<.001
Control Group	Mean (SD)	22.6 (SD = 9.2)	–	22.4 (SD = 8.7)	0.36
Independent T-Test	P Value	0.51	–	<.001	

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**Table 4.** The Mean Score of Earthquake-Related Awareness Before and After the Intervention

Time		Before the Intervention	Immediately After the Intervention	Two Months After the Intervention	P Value
Intervention Group	Q1	14.68	39.92	37.58	<.001
	Q3	29.92	42.88	40.82	<.001
Control Group	Q1	16.39	–	16.53	.39
	Q3	28.81	–	28.27	.33

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**Table 5.** The Q1 and Q3 Scores of Earthquake-Related Awareness Before and After the Intervention

compared to before the intervention ( $P < .001$ ; Table 2 and Table 3).

The results of independent t-test showed no significant difference between the two groups in terms of the mean Q1 and Q3 scores of earthquake-related awareness before the intervention ( $P = .51$ ). After the educational intervention, however, the mean Q1 and Q3 scores of earthquake-related awareness were significantly higher in the intervention group compared to the control group immediately and two months after the intervention ( $P < .001$ ; Table 4 and Table 5).

The results of paired t-test revealed no significant difference in the control group's mean Q1 and Q3 scores of earthquake-related awareness before and two months after the intervention ( $P = .36$ ). However, repeated measures analysis of variance indicated a significant difference in the intervention group's mean Q1 and Q3 scores of earthquake-related awareness at three-times ( $P < .001$ ). The results of the least significant difference post hoc test showed that the mean Q1 and Q3 scores of earthquake-related awareness increased significantly immediately after the intervention compared to before the intervention ( $P < .001$ ), but decreased two months after the intervention compared to immediately after the intervention ( $P = .01$ ). However, its mean Q1 and Q3 scores were significantly higher two months after the intervention compared to before the intervention ( $P < .001$ ; Table 4 and Table 5).

## Discussion

The results of this study demonstrated that improving perceived social support could improve earthquake-related awareness among the high school students in the intervention group. Perceived social support can provide effective psychological assistance to a person to cope with the pressures and problems of life.<sup>32</sup> These results were in line with those of several other studies in this area. For example, Daniel and Barat evaluated the impact of social support on physical and mental health amongst 180 high school students in Chicago (Illinois USA) and disclosed that an increase in social support was accompanied by an increase in the levels of physical and mental health.<sup>30</sup>

In another study, Chen, et al assessed the impact of social support on emotional awareness amongst 632 Taiwanese students. The results revealed that educational programs for strengthening social support had a positive effect on emotional awareness.<sup>5</sup>

Pourseyed, et al also investigated the relationship between personality traits and perceived social support and appreciation mediated by academic stress and academic self-efficacy among 474 high school students. The results showed that among the dimensions of social support perceived as the second exogenous variable, appreciation was predicted directly by others' support and family support and indirectly by family support through academic stress and academic self-efficacy. In other words, perceived personality traits and social support reduced individuals' academic stress and low-stress individuals had higher self-efficacy in coping with academic problems. That study was in line with the present one in terms of evaluating social support among students, but it investigated the effect of social support on academic stress.<sup>9</sup>

In another study, Ramezani, et al explored the role of academic self-regulatory mediators in the relationship between perceived social support by teachers and academic engagement among 258 high school students in Birjand, Iran. The results showed that the perceived social support by teachers had a significant positive effect on students' academic engagement through the mediating role of academic self-regulation. Thus, students' perception of teacher's support had a crucial role in strengthening their self-regulatory skills and increasing their academic engagement. In that study, the relationship between teacher's support and academic engagement was determined, but the present study assessed the impact of perceived social support on earthquake-related awareness in high school students.<sup>11</sup>

Yarmohammad Zadeh and Feyzollahi investigated the relationship between social support and academic motivation and academic self-efficacy amongst 37,347 high school students in Tabriz, Iran and Azarshahr, Iran. The findings revealed a significant relationship between social support and academic motivation and self-efficacy. Accordingly, social support and academic motivation could significantly predict academic self-efficacy, with social support playing a more critical role. These results were in agreement with those of the present research concerning the positive impact of social support. However, the two studies were different in terms of the relationship between social support and academic motivation.<sup>15</sup>

Scott, et al evaluated the relationship between academic stress and perceived resilience among students and identified social support as a protective factor for resilience among 314 students



from three schools in the southern United States. The results showed moderate levels of academic stress and social support and relatively high levels of resilience. Academic stress was negatively associated with social support and resilience. In addition, social support had a positive effect on resilience. Moreover, friends' support significantly moderated the negative relationship between academic stress and resilience. That study was consistent with the present one regarding the assessment of the role of social support, but they were different with respect to methods and objectives.<sup>17</sup>

According to the results, it is recommended to:

1. Hold training sessions and perform maneuvers to prepare students for earthquakes continuously;
2. Hold training sessions for students to prepare them for other disasters (ie, floods and fires) continuously and purposefully;
3. Incorporate disaster preparedness in students' curricula; and
4. Design a scientific application to promote social support in students and to increase the interaction between families and schools.

### Limitations

Limitations of this study include: (1) small sample size; (2) collecting data through self-report tools; and (3) the sessions were conducted by the researcher, thus there might be an unwanted

bias on the part of the researcher to confirm the research hypotheses.

### Conclusion

The results of this study indicated that improving perceived social support could improve earthquake-related awareness among the high school students in the intervention group.

### Author Contributions

Hassan Khaledi and Milad Ahmadi Marzaleh were responsible for the study conception and design. Milad Ahmadi Marzaleh supervised the whole thesis. All authors prepared the first draft of the manuscript. All authors did the data analysis, made critical revisions to the paper for important intellectual content, and supervised the study. All the authors have read and approved the final manuscript.

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