



30 **Declaration of Competing Interest:** The authors declare no conflicts of interest.

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## INTRODUCTION

35 Disasters are defined as catastrophic events that can damage homes, cause injury or death  
36 to people, displace people from their places of residence, and cause family members to  
37 be separated from each other. Disasters include events that exceed the ability of the  
38 affected community to respond <sup>1</sup>. Disasters can occur at any time and in any place <sup>2</sup>.

39 Although disaster education is very important for everyone, it is especially important and  
40 necessary for nurses<sup>3</sup>. Nurses should have information about disasters, make individual  
41 and family communication plans, and create the necessary materials for sheltering or  
42 evacuation for themselves and their families are among the basic preparation behaviors  
43 required. In addition, nurses need to understand their roles and responsibilities within  
44 emergency plans and incident command structure. The fact that nurses have self-efficacy  
45 in all these behaviors helps nurses to be ready and accessible to care for patients during  
46 disaster and emergency events <sup>4</sup>.

47 Self-efficacy in disaster response is extremely important for aspiring nurses <sup>5</sup>. The ability  
48 of nurses to respond to any disaster event is largely determined by disaster response self-  
49 efficacy, that is, their belief in their personal ability to perform certain behaviors related  
50 to disaster response <sup>6</sup>. As an important member of the healthcare team, nurses are  
51 expected to actively participate and fulfill their roles in all phases of disaster management  
52 and have various roles and responsibilities in the pre-disaster phase (e.g., implementation  
53 of hospital disaster plan and identification of risks), disaster phase (providing holistic care  
54 to victims, families and communities) and post-disaster phase (recovery and  
55 reconstruction activities) <sup>7</sup>. Thus, nurses must always be ready to respond to disasters and  
56 provide effective care to victims/affected populations. <sup>7,8</sup>.

57 The fact that nurses have key roles in disaster management, have knowledge about  
58 disasters, are prepared for disasters and have high capacity to intervene quickly play an

59 important role in the management of disasters <sup>3,9</sup>. Considering the fact that patients in  
60 disaster areas need the most critical care, it is of critical importance to ensure that nurses,  
61 especially nurses with self-efficacy in disaster, take an active role in the disaster process  
62 <sup>6,8,10</sup>. Veenema et al. reported that nurses trained in disaster management can assume  
63 important roles in the event of disasters and can be more successful in disaster  
64 management <sup>11</sup>. Initiating interventions to increase nurses' confidence to respond to  
65 disasters reveals the need to understand the different factors or variables that may  
66 contribute to the development of disaster response self-efficacy among nurses <sup>12</sup>.

67 When the studies in the literature are examined, although there are different measures  
68 developed and implemented locally and internationally to increase the disaster  
69 preparedness and competence of nurses, available evidence shows that there are  
70 deficiencies in disaster management self-efficacy among nurses globally <sup>13-16</sup>. Being  
71 prepared for disasters and having the capacity to respond increases the effectiveness of  
72 nurses and improves patient care outcomes. Nurses working in surgical units have to cope  
73 with situations that require surgical interventions as well as continuing patient care in  
74 emergency situations. Therefore, disaster preparedness and response self-efficacy are  
75 vital for them to be able to perform their duties effectively and efficiently. According to  
76 Bandura (1997), individuals form self-efficacy beliefs by interpreting information about  
77 their own abilities. This information comes from four sources: mastery experiences,  
78 vicarious experiences, verbal persuasion, and physiological-emotional states<sup>17</sup>. For such  
79 reasons, it is thought that self-efficacy can be affected by individual experiences, and this  
80 study was conducted to determine the disaster response self-efficacy status and related  
81 factors of nurses working in surgical clinics.

## 82 **METHODS**

83 This study was descriptive and cross-sectional. The universe of the study consisted of  
84 surgical nurses who had at least 6 months of hospital work experience and were currently  
85 actively working in surgical clinics at one university hospital in Turkey. A power analysis  
86 was performed using the G\*Power 3.1.9.2 package program to determine the number of  
87 nurses to be included in the study. As a result of the applied power analysis, the sample  
88 size was determined to be 122 nurses, according to type 1 error: 0.05, type 2 error: 0.05  
89 (95% power level) and effect size: 0.3. The sample consisted of 127 surgical nurses who

90 met the inclusion criteria. The inclusion criteria were having at least 6 months of hospital  
91 work experience, being currently actively working in surgical clinics (special unit in  
92 hospitals where diagnosis, treatment and follow-up of diseases requiring surgical  
93 intervention are performed), volunteering to participate in the study and answering the  
94 questions completely. Data were collected between June and August 2023 using an online  
95 survey system (google forms). "Sociodemographic Data Collection Form" and "Of The  
96 Disaster Response Self-Efficacy Scale (DRSES)" <sup>16</sup> were used for data collection. The  
97 purpose of the study was explained to the individuals who volunteered to participate in  
98 the study and their consent was obtained. The principles of the Declaration of Helsinki  
99 were followed in the conduct of the study.

100 **Research questions:**

- 101 • What is the level of disaster response self-efficacy of nurses working in  
102 surgical clinics?
- 103 • What are the factors affecting the disaster response self-efficacy of nurses  
104 working in surgical clinics?

105 **Sociodemographic Data Collection Form:** It consists of a total of 11 questions about the  
106 sociodemographic and professional characteristics of the nurses such as age, gender,  
107 educational status, years of working in the profession and clinic, the clinic where they  
108 work, weekly working time and working style, and whether they have received disaster  
109 training and whether they have disaster experience.

110 **Of The Disaster Response Self-Efficacy Scale:** The Turkish validity and reliability of  
111 the scale developed by Li et al. in 2017 <sup>5</sup> was conducted by Koca et al. in 2020 <sup>18</sup>. The  
112 scale is 5-point Likert type and consists of a total of 19 items and 3 sub-dimensions (On-  
113 site rescue competence, psychological nursing competence in disaster, quality of the role  
114 undertaken in disaster and adaptation competence). The scale is answered as not confident  
115 at all (1 point), basically not confident (2 points), somewhat confident (3 points), basically  
116 confident (4 points) and fully confident (5 points). The scale score is calculated by  
117 summing the answers given to the questions. The mean scores of the scale are classified  
118 as high (3.68-5.00), medium (2.34-3.67) and low (1.00-2.33) <sup>5</sup>. A high score on the scale  
119 indicates a high level of disaster response self-efficacy. In the Turkish validity and

120 reliability study of the scale, Cronbach's alpha coefficient was found to be 0.96<sup>18</sup>. In this  
121 study, Cronbach's alpha coefficient was found to be 0.93.

## 122 **Statistical Analysis**

123 SPSS 26 package program was used to analyze the data obtained from the study.  
124 Descriptive data were given as number, percentage, frequency, mean and standard  
125 deviation. Due to the normal distribution of the data, independent samples t-test was used  
126 for two-group comparisons and one-way ANOVA test was used for comparisons with  
127 three or more groups. The relationship between variables was examined by correlation  
128 analysis. Cronbach's alpha value of the scale used was calculated.  $p < 0.05$  was accepted  
129 as significant.

## 130 **Ethics**

131 Approval permission was obtained from the ethics committee of a university to conduct  
132 the study. Permission to use the scale was obtained by e-mail from the authors of the  
133 Turkish validity and reliability study of the "Of The Disaster Intervention Self-Efficacy  
134 Scale". The purpose and nature of the study were explained to the nurses and their  
135 informed consent was obtained by informing them that their participation was voluntary  
136 and that they could leave the study at any time.

## 137 **RESULTS**

138 A total of 127 surgical nurses participated in the study. The mean age of these nurses was  
139  $38.62 \pm 6.693$  years and 93.7% (n=119) were female. When the educational status of the  
140 participants was examined, 59.8% (n=76) were undergraduate and 32.3% (n=41) were  
141 postgraduate. Of the nurses, 75.6% (n=96) had 10 years or more of professional  
142 experience and 33.9% (n=43) had 1-5 years of surgical clinic/intensive care experience.  
143 While 51.2% (n=65) of the nurses stated that they had not received disaster training  
144 before, 49.2% (n=32) of the nurses who stated that they had received disaster training  
145 before stated that they received disaster training in in-service trainings. 81.1% (n=103) of  
146 the nurses stated that they wanted to receive disaster training. Of the nurses, 72.4% (n=92)  
147 had not experienced a disaster on duty before, and 64.6% (n=82) stated that they felt  
148 partially competent about disasters (Table 1).

149 In our study, the mean total score of the DRSES was found to be  $3.78\pm 0.64$ . The mean  
150 total score of the sub-dimension of on-site rescue competence was  $3.72\pm 0.68$ , the mean  
151 total score of the sub-dimension of psychological nursing competence in disaster was  
152  $3.57\pm 0.82$ , and the mean total score of the sub-dimension of the quality of the role  
153 undertaken in disaster and adaptation competence was  $4.16\pm 0.68$  (Table 2).

154 Table 3 shows the relationship between socio-demographic characteristics, disaster  
155 management, and exposure to disaster and DRSES. It was found to be statistically  
156 significant that nurses working in surgical clinics who had previous on-duty disaster  
157 experience had higher total scores on the DRSES than those who had no previous on-duty  
158 disaster experience ( $F=3.381$ ;  $p=0.001$ ). It was found that the mean total scores of the  
159 nurses who felt adequate about disaster were statistically significantly higher than those  
160 who felt partially adequate and those who did not feel adequate ( $F=19.258$ ;  $p=0.000$ )  
161 (Table 3).

162 The correlation between the mean total score of the Of The Disaster Response Self-  
163 Efficacy Scale and age was not statistically significant ( $r=0.080$ ;  $p=0.369$ ) (Table 4).

## 164 DISCUSSION

165 Nurses have an important position in disaster response and nurses should be prepared to  
166 respond to disasters<sup>2,3,11</sup>. In this study, we determined the disaster response self-efficacy  
167 levels of nurses working in surgical clinics and the effect of sociodemographic  
168 characteristics of nurses on their disaster response self-efficacy. As a result of the analysis  
169 of the collected data, important results were obtained that may have a direct impact on  
170 the education and practice of nurses.

171 The increasing frequency of disasters and emergencies experienced worldwide and in our  
172 country in recent years reveals the need to equip nurses with comprehensive knowledge  
173 and skills in disaster management<sup>19</sup>. Nurses, who constitute an important part of the  
174 healthcare team, can take responsibility in different positions such as planner, policy  
175 maker, leader, commander, educator and researcher in disaster management in addition  
176 to their interventionist roles in disasters and emergencies<sup>11</sup>. In this context, training  
177 programs on disaster management can increase the disaster preparedness awareness of  
178 individuals and improve their knowledge, skills and behaviors about disaster<sup>20,21</sup>. In our

179 study, it was found that a little more than half of the nurses (51.2%) had not received  
180 disaster training before and this result was consistent with the results of existing studies  
181 <sup>12,14</sup>. The majority of the nurses who received disaster training stated that they received  
182 disaster training in in-service trainings. Disaster management should be an indispensable  
183 component of undergraduate education of nursing students and in-service education of  
184 nurses, and evidence-based, competency-oriented and high-quality disaster education  
185 content should be created <sup>22,23</sup>.

186 In our study, it was found that the majority of nurses (72.4%) had no previous on-duty  
187 disaster experience, and this finding was consistent with the results of previous studies.  
188 Similarly, studies in the literature reported that the majority of nurses did not experience  
189 a disaster <sup>8,12</sup>.

190 In our study, more than half of the nurses (64.6%) stated that they felt partially confident  
191 (a person has a certain amount of confidence in some matters or situations, but not  
192 complete conviction or certainty) about disaster. Similarly, although the importance of  
193 nurses' high self-efficacy in disaster response has always been emphasized, nurses report  
194 that their belief in their capacity to manage disaster situations is at a moderate level <sup>24,25</sup>.  
195 This result reveals the necessity of providing the theoretical infrastructure for nurses to  
196 improve their self-efficacy in educational programs planned to be developed for nurses.

197 In our study, it was observed that the majority of nurses (81.1%) wanted to receive  
198 training on disasters. Similarly, it has been reported in studies in the literature that the  
199 majority of nurses want to receive disaster education to improve their disaster skills and  
200 preparations <sup>26</sup>. The fact that the majority of nurses have not participated in any training  
201 or course so far despite the fact that the majority of nurses want to receive training on  
202 disaster is consistent with the results of previous studies <sup>16,27</sup>. In this context, considering  
203 the importance of receiving disaster training as well as the desire of nurses to receive  
204 disaster training, it is recommended that trainings should be created especially for the  
205 responsibilities of nurses in disasters, nurses should be supported to participate in these  
206 trainings and these trainings should be accessible.

207 In studies conducted in different years, it has been reported that nurses are not sufficiently  
208 prepared to intervene in emergency or disaster situations, that they do not fully trust  
209 themselves, that their level of competence related to disaster management is insufficient,

210 and that their readiness for disaster interventions, especially outside the hospital  
211 environment, is weak <sup>8,15,16</sup>. In our study, the mean total score of the AMRDS was found  
212 to be at a high level. The mean total score of the sub-dimension of on-site rescue  
213 competence was found to be high, the mean total score of the sub-dimension of  
214 psychological nursing competence in disaster was found to be moderate, and the mean  
215 total score of the sub-dimension of the quality of the role undertaken in disaster and  
216 adaptation competence was found to be high. Although it was found that nurses' disaster  
217 response self-efficacy levels were at medium and high levels in our study, it has been  
218 reported in many studies in the literature that nurses do not have the relevant  
219 competencies needed in response to recent disasters <sup>28,29</sup>. In addition, it has been reported  
220 that nurses have moderate (neither too little nor too much; average) level of knowledge,  
221 skills and preparedness in disaster management and that they lack knowledge, skills and  
222 training in disaster management <sup>12,26,29</sup>. In the literature, it has also been reported that  
223 emergency and intensive care nurses have higher levels of disaster intervention self-  
224 efficacy compared to nurses in other units <sup>8,12,30</sup>. In this context, it is thought that the result  
225 we obtained in our study was due to the fact that the study was conducted with nurses  
226 working in surgical clinics.

227 When we look at the studies in the literature, it is reported that nurses who have  
228 participated in disaster-related training or courses have higher levels of competence and  
229 preparedness for disaster situations <sup>15,28,31,32</sup>. Existing evidence shows that effective  
230 disaster preparedness and disaster education can significantly contribute to the  
231 development of nurses' disaster response skills as well as disaster recovery skills <sup>28,33,34</sup>.  
232 In our study, although approximately half of the nurses stated that they received disaster-  
233 related training, it was observed that there was no statistically significant difference in  
234 disaster-response self-efficacy levels between nurses who received training and those  
235 who did not. In contrast to our findings, studies in the literature reported that disaster  
236 awareness and knowledge levels of nurses who received training on disaster were high,  
237 and disaster response experience and participation in disaster management training  
238 positively affected the disaster knowledge, skills and preparation scores of nurses  
239 <sup>12,18,26,35,36</sup>. In studies conducted with clinical nurses, it was reported that trainings on  
240 disaster had positive effects on nurses' preparedness for disasters and their ability to  
241 intervene <sup>2,37</sup>.

242 Disaster intervention self-efficacy levels of nurses are closely related to their disaster  
243 preparedness and competencies. Disaster preparedness of nurses is also closely related to  
244 their disaster response experience<sup>8</sup>. In our study, it was found that nurses working in  
245 surgical clinics who had previous on-duty disaster experience had higher total scores on  
246 the DRSES than those who had no previous on-duty disaster experience ( $F=3.381$ ;  $p=$   
247  $0.001$ ). In addition, it was found that the mean total scores of the nurses who felt adequate  
248 about disaster were statistically significantly higher than those who felt partially adequate  
249 and those who did not feel adequate ( $F= 19,258$ ;  $p=0,000$ ). Lack of experience during a  
250 disaster intervention may cause stress and fear in individuals, but individuals' belief in the  
251 adequacy of their preparation for disaster may increase their confidence in disaster  
252 intervention<sup>38,39</sup>. In this context, the result obtained in our study is consistent with the  
253 results of previous studies.

#### 254 **LIMITATIONS**

255 The research is limited to 127 nurses working in surgical clinics between June and August  
256 2023. The scale used is only intended to measure the disaster response self-efficacy of  
257 volunteer nurses.

#### 258 **Implications for Emergency Nursing:**

259 All nurses, not just nurses working in surgical units, need to be prepared for disasters.  
260 Education is undoubtedly essential for this readiness. It is very important that trainings  
261 are given first in schools in order to raise awareness, and then repeated at regular and  
262 frequent intervals in professional life, in line with current evidence.

#### 263 **CONCLUSION**

264 The readiness of nurses working in surgical clinics for emergencies and disasters is  
265 affected by the clinic they work in, their disaster training status and their disaster  
266 experience. Considering the disasters experienced in our country in recent years, it can  
267 be recommended that evidence-based, high-quality and up-to-date training programs be  
268 delivered to nurses at periodic intervals in order to increase and maintain their emergency  
269 response competencies.

270 **Statement:** During the preparation of this study, the author used DeepL Translate for  
271 translation purposes. After using this tool/service, the author reviewed and edited the  
272 content as required and took full responsibility for the content of the publication.

273 **Declaration of Competing Interest:** The authors declare no conflicts of interest

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