

Exploring the Association Between Disaster Preparedness Literacy and Psychological First Aid Practice Self-Efficacy in Nursing Students: A Descriptive Cross-Sectional Study

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ABSTRACT

Objective: This study aimed to examine the relationship between disaster preparedness literacy and psychological first aid practice self-efficacy among nursing students.

Methods: The study, applied in a descriptive and correlational design, was conducted between October and December 2024 with 279 nursing students at a public university in Türkiye. Data were collected through face-to-face interviews using the "Personal Information Form," "Disaster Literacy Scale-Preparedness Subscale (DLS-P)," and "Psychological First Aid Application Self-Efficacy Scale (PFASES)." Data were analyzed using SPSS 26.0. Descriptive statistics, correlation, and linear regression analyses were performed.

Results: There was a statistically significant and weak positive correlation between DLS-P and PFASES scores ($r=.229$, $p<.001$). Linear regression analysis showed that disaster preparedness literacy explained 15.0% of the variance in psychological first aid practice self-efficacy ($R^2=.149$, $p<.001$). According to the established model, a one-unit increase in the level of disaster preparedness literacy led to a 0.38-unit increase in psychological first aid practice self-efficacy.

Conclusion: The results suggest that nursing students with higher disaster preparedness literacy tend to have greater confidence in applying psychological first aid. Therefore, incorporating disaster preparedness and psychological first aid training into nursing education may enhance students' self-efficacy in disaster response situations.

Keywords: Disaster planning, emergency preparedness, self efficacy, psychological first aid

1. INTRODUCTION

For centuries, the world has been facing natural and technological disasters that have been catastrophic for humanity. In recent years, climate change has triggered major meteorological events resulting in disasters and disrupting social order by affecting the infrastructure of society, the environment, and local economies (1). In terms of health, disasters can exceed the operational capacity of a health service to maintain normal care standards (2,3).

Due to its geological, meteorological, and topographical structure, Türkiye is frequently exposed to natural disasters. This geography leads Türkiye to face various disasters such as earthquakes, landslides, floods, rock falls, and avalanches. Türkiye is among the countries with a high earthquake risk. According to the Disaster and Emergency Management Presidency (AFAD), approximately 60% of deaths due to

disasters in Türkiye are due to earthquakes, and almost every five years an earthquake occurs causing massive loss of life and property (4).

Such recurrent events highlight the need for a competent health workforce capable of responding effectively to both the physical and psychological consequences of disasters. In this context, nursing students who will play a critical role in disaster response must be equipped with adequate disaster preparedness literacy and psychological first aid (PFA) competencies.

According to Bandura's Social Cognitive Theory, human behavior is shaped by the reciprocal interaction of personal factors, environmental conditions, and cognitive processes, with self-efficacy serving as a central determinant of

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behavioral performance. An individual's belief in their ability to successfully perform a task directly influences their motivation, effort, and persistence when faced with challenges (5). Within this framework, disaster preparedness literacy not only reflects knowledge but also enhances cognitive awareness, situational appraisal skills, and decision-making capacity, all of which contribute to the development of stronger self-efficacy. Therefore, nursing students with a more comprehensive understanding of disaster processes are expected to demonstrate higher levels of self-efficacy in applying psychological first aid.

Unfortunately, many large-scale earthquakes have occurred in different parts of Türkiye throughout history. In Türkiye, the disaster of the century occurred in Pazarcık and Elbistan in Kahramanmaraş on February 6, 2023, and affected eleven provinces. This earthquake affected 13.5 million people, causing 50,748 deaths and injuring 115,353 people (6). In 2021, 13,135 people were affected by the flood in the Western Black Sea region (7).

As a result of these devastating disasters, all health disciplines have recognized that disaster preparedness is no longer an option but a critical phenomenon (8). Therefore, nurses, who constitute the largest group of health professionals, are expected to provide rapid care to injured people in disasters, reduce the devastating effects of disasters on individuals living in the community, and enhance the resilience of victims by increasing psychosocial support in emergency cases (9,10).

The World Health Organization (WHO) and the International Council of Nurses (ICN) have recognized the importance of nurses' involvement in disaster preparedness and management and developed a standard for competencies in disaster nursing (11). This standard covers areas such as disaster prevention/mitigation, disaster preparedness, disaster response, and rescue/rehabilitation. As an important part of the healthcare team throughout all stages of disaster risk management, nurses may play a critical role in reducing the risks, complications, and deaths in disasters through education, management, leadership, counseling, support, guidance, and research (12). However, according to a report by the Red Cross and Red Crescent, nurses are not involved enough in disaster preparedness and response. In the report, it has been stated that strengthening efforts to save lives and recover from disasters are some of the strategic objectives identified and that nursing competence needs to be further emphasized as a tool contributing to improving global health (13).

In addition, it is known that the concepts of knowledge, skills, abilities, and literacy are different and cannot be equated. In context of disaster rescue operations, lifesaving is an important skill; however, this skill does not indicate a level of literacy in this field (14). According to the Organisation for Economic Co-operation and Development, literacy encompasses not only knowledge and skills but also the ability to mobilize psychosocial resources in complex and uncertain situations to support decision-making and resilience (15).

Disaster literacy is a multi-faceted concept that focuses on an individual's ability to access, read, and understand information necessary to make informed decisions and follow instructions in mitigation, preparedness, response, and recovery processes during a disaster and to solve problems during critical circumstances (16). The aim of disaster literacy is to develop competencies in disaster nursing by integrating and promoting the knowledge and skills of nurses, processes and methods, and emotional attitudes and values (17).

After disasters, nurses are an indispensable part of acute physical and psychological support, mental well-being of affected individuals, and an effective emergency response (18,19). Psychological first aid is an important tool for providing support to people in need of post-traumatic psychological assistance to help reduce stress-related symptoms, enhance self-efficacy and resilience, and restore behavioral and psychological functioning (10).

Recently, there has been a growing consensus on the importance of providing a minimum level of knowledge and skills to all nurses to empower them in coping with the complexities of disasters (9,20). In addition to qualified nurses, who are indispensable members of disaster responses, nursing students are also considered an important human source in supporting health services by providing effective emergency response, observing the physical and psychological health of disaster victims, improving hygiene, and providing health counseling during and after disasters (2,21). In the most recent earthquake that occurred in Türkiye on February 6, 2023, many nursing students provided significant assistance to the health team in disaster response (22). A recent qualitative study by Yıldırım et al. (23) examined the experiences of nursing students providing support during disaster responses, highlighting their diverse roles in psychosocial support, logistics, and health education during and after emergencies. Similarly, in the UK, more than 24,000 nursing students provided support in the response to COVID-19 (24).

According to previous studies, nursing students are not optimally prepared on disaster management, and they are unprepared and inadequate to provide disaster management and care (25,26). In a study conducted in Bangladesh, approximately 84% of the students were found to be inadequate in disaster preparedness practices, and it was emphasized that, although their level of knowledge was sufficient, it was mostly not translated into practice (27). Likewise, in another study, it was found that nursing students' ability of disaster response was not at the desired level and that their disaster preparedness was inadequate (26).

The level of disaster preparedness may affect nursing students' ability to cope with such events. In particular, effective implementation of psychological first aid practices in disasters is vital for the protection and improvement of affected individuals' mental health (28,29). In this context, the effects of nursing students' level of disaster preparedness literacy on psychological first aid practice self-efficacy should be evaluated (30).

This study aimed to examine how nursing students' levels of disaster preparedness literacy influence their psychological first aid practice self-efficacy. To the best of our knowledge, no previous study has directly investigated this relationship. The findings obtained from this research are expected to guide the development of more effective disaster preparedness strategies in nursing education and strengthen students' competencies in disaster response.

2. METHODS

2.1. Ethical Consideration

Ethics committee approval was obtained from the Noninvasive Clinical Research Ethics Committee of X University (dated 10/14/2024 and numbered E-050.99-152428). In addition, institutional permission was granted by the administration of the Faculty of Health Sciences where the study was conducted. Written permission to use the standardized scales was obtained from the original authors via e-mail. A written explanation about the purpose and scope of the research was provided in the introduction section of the data collection form. Students who voluntarily agreed to participate were included in the study in accordance with the principles of the Declaration of Helsinki

2.2. Research Model

This study was designed to investigate the relationship between nursing students' disaster preparedness literacy levels and their self-efficacy regarding psychological first aid practices. A descriptive and correlational design was used in the study.

Research question: Is there a significant relationship between disaster preparedness literacy levels and psychological first aid practice self-efficacy among nursing students?

2.3. Population and sample

This descriptive and correlational study was conducted between October and December 2024 at a public university in Türkiye. The target population consisted of undergraduate nursing students actively enrolled in the nursing department. Nursing students were selected as the study group due to their increasing involvement in disaster response efforts, as evidenced in recent large-scale emergencies such as the 2023 Kahramanmaraş earthquakes. Their potential role in providing psychosocial support during crises underscores the relevance of assessing their disaster preparedness literacy and psychological first aid self-efficacy.

The sample size was determined using the G*Power software (version 3.1.9.6), based on a medium effect size ($f^2=0.15$), a power of 0.95, and a significance level of $\alpha=0.05$ for linear regression analysis. Accordingly, the minimum required sample was calculated as 177 participants. However, due to a high response rate during the data collection period, 279 nursing students were included in the final sample.

Inclusion criteria of research are i) Being actively enrolled as an undergraduate student in the nursing department during the data collection period. ii) Volunteering to participate and providing informed consent.

Exclusion criteria of research is choosing to withdraw from the study at any point (Prior disaster-related training was not an exclusion criterion; instead, it was recorded as a socio-demographic variable to examine its potential association with the main study variables).

2.4. Data Collection

Data were collected through face-to-face interviews conducted by the researchers in classroom settings during scheduled lecture breaks. Prior to data collection, the students were informed about the study's objectives, ethical principles, and confidentiality of their responses. Participation was entirely voluntary, and written informed consent was obtained from each participant. No prior training or intervention was provided to the students regarding disaster preparedness or psychological first aid, as the study aimed to evaluate their existing knowledge and self-efficacy levels. The average time required to complete the forms was approximately 10 minutes. No pilot study was conducted prior to the main data collection, as the items in the data collection tools were descriptive and based on previously validated instruments.

2.4.1. Data Collection Tools

A "Personal Information Form", the "Disaster Literacy Scale (DLS)" and "Psychological First Aid Application Self-Efficacy Scale (PFASES)" were used for data collection.

Personal information form was developed by the researchers based on a review of the relevant literature to assess students' sociodemographic characteristics, disaster experiences, and disaster awareness levels (31,32). The form consists of three main sections: demographic information such as age, gender, grade level, and parental education and income level; disaster experiences such as exposure to earthquakes, floods, fires, loss of relatives or property, and injuries; and awareness-related items including participation in disaster training, having a disaster kit or insurance, and willingness to engage in drills.

2.4.2. Disaster Literacy Scale (DLS):

his self-report scale was developed by Çalışkan and Üner (33) to assess disaster preparedness literacy in people aged 18-60 years. The conceptual framework includes four disaster-related dimensions (mitigation, preparedness, response, and recovery) and information processes (access, understanding, decision-making, and implementation) related to disaster-related decision-making and practices. The conceptual framework of the 61-item scale consists of 16 domains. Each item is scored as 1 (very difficult), 2 (difficult), 3 (indecisive), 4 (easy), and 5 (very easy). There are no reverse items in the

scale. The total score obtainable from the scale is between 61-305. During the development process, exploratory and confirmatory factor analyses were performed separately for each dimension, allowing both the total scale and subdimensions to be used. In the present study, the Preparedness subdimension (DLS-P), which consists of 16 items, was used. The Cronbach's alpha of the DLS-P was reported as $\alpha = 0.874$ in the original study (33), while it was $\alpha = 0.91$ in the present study.

2.4.3. Psychological First Aid Application Self-Efficacy Scale (PFASES)

PFASES consists of 35 items and one subdimension. The score ranges from 1 to 5. The lowest score obtainable from the scale is 35 and the highest score is 175. There is no reverse item in the scale. The total scale score is calculated by summing the scores obtained from a single factor in the scale. A high score indicates that psychological first aid practice self-efficacy is high whereas a low score indicates that psychological first aid practice self-efficacy is low. In the original study, the Cronbach's alpha of the scale was $\alpha = 0.951$ and the test-retest reliability coefficient was $\alpha = 0.932$ (34). In the present study, the Cronbach's alpha was $\alpha = 0.96$.

2.5. Data analysis

The research data were analyzed in the SPSS (Statistical Package for the Social Sciences) 26.0 package program. Number (n), percentage (%), arithmetic mean ($\pm$), and standard deviation (SD) were used to present the data. The fitness of the data to normal distribution was tested using Shapiro-Wilk and Kolmogorov Smirnov tests, and Skewness and Kurtosis values. As a result, since the Shapiro-Wilk and Kolmogorov Smirnov tests were significant and the kurtosis and skewness values were between $-1.5/+1.5$ (35), it was assumed that the scales used in the study showed a normal distribution. The categorical data were expressed as numbers and percentages, and the data on age, grade point average, and measurement tools were expressed as mean and standard deviation. Correlation analysis was performed to examine the relationship between age, grade point average, DLS-P, and PFASES. A linear regression analysis was performed to determine the relationship between PFASES and DLS. In the study, a value of $p < .05$ was considered statistically significant.

3. RESULTS

The mean age of the nursing students participating in the study was 21.2 ± 1.6 years. Of the students, 62% were female, 31.5% were first-grade students, 39.8% lived in the Southeastern Anatolia region, and 52% lived in the provincial center (Table 1). The mothers (94.3%) and fathers (86.4%) of

the students mostly had 8-year education or less. Among the students, 61.6% had a grade point average of less than 3.00.

Table 1. Some characteristics of participants

Demographic Characteristics		
	X	SD
Age	21.2	1.6
	n	%
Gender		
Female	173	62.0
Male	106	38.0
Grade		
1st grade	88	31.5
2nd grade	75	26.9
3rd grade	55	19.7
4th grade	61	21.9
Family socioeconomic status		
Low	31	11.1
Moderate	233	83.5
High	15	5.4
Mother's education level		
≤ 8 years	263	94.3
≥ 9 years	16	5.7
Father's education level		
≤ 8 years	241	86.4
≥ 9 years	38	13.6
Academic grade point average		
< 3.00	172	61.6
3.00-3.50	84	30.1
> 3.50	23	8.2
Place of residence before university		
Province	145	52.0
District Center	100	35.8
Town-Village	34	12.2
Region of residence		
Black Sea Region	31	11.1
Mediterranean Region	27	9.7
Eastern Anatolia Region	70	25.1
Aegean Region	6	2.2
Southeastern Anatolia Region	111	39.8
Central Anatolia Region	22	7.9
Marmara Region	12	4.3

Among the nursing students participating in the study, 62.4% stated that they had not received disaster awareness training; 80.6% stated that they wanted to take courses or training on disasters; 65.2% had experienced a natural disaster. Among those who experienced natural disasters ($n=182$), 106 (58.4%) experienced an earthquake, 10 (5.4%) experienced a flood, and 3 (1.4%) experienced a fire. Of all students, 38 (13.6%) stated that they lost a relative in a disaster, 49 (17.6%) stated that they lost property, and 31 (11.1%) stated that they experienced an injury-causing disaster (Table 2).

Table 2. Participants' characteristics regarding disaster experience and thoughts

Disaster Experience	n	%
None	97	34.8
Earthquake	163	58.4
Flood	15	5.4
Fire	4	1.4
Loss of a relative		
Yes	38	13.6
No	241	86.4
Loss of property		
Yes	49	17.6
No	30	82.4
Injury		
Yes	31	11.1
No	233	83.5
Disaster awareness training		
Yes	105	37.6
No	174	62.4
Status of voluntary work in disasters		
Yes	36	12.9
No	243	87.1
Status of following disaster news		
Yes	238	85.3
No	41	14.7
Status of having a disaster kit		
Yes	44	15.8
No	235	84.2
Status of having earthquake insurance		
Yes	70	25.1
No	100	35.8
Unkonown	109	39.1
Willingness to take courses or training on disasters		
Yes	225	80.6
No	54	19.4
Willingness to take part in disaster drills		
Yes	189	67.7
No	36	12.9
Indecisive	54	19.4

Of the students, 85.3% stated that they followed the news about disasters, 12.9% stated that they volunteered in a recent disaster, and 67.7% stated that they wanted to be involved in a disaster drill. Furthermore, 39.1% of the nursing students did not know whether the place where they lived was insured against earthquakes and 84.2% stated that they did not have an earthquake emergency kit at home.

The scores of the sample on DLS-P ranged between 22 and 74 and the mean score was 54.1 ± 9.6 . The scores of the sample on PFASES ranged between 70 and 175 and the mean score was 126.6 ± 20.7 points. The kurtosis and skewness values were analyzed for the normal distribution of the data regarding the measurement tools. As a practical rule for normal distribution, skewness and kurtosis values should be in the range of $\pm 1.5/\pm 1.5$. When the relevant values were examined, it was seen that the skewness and kurtosis values of the variables exhibited a normal or almost normal distribution. The DLS-P and PFASES variables were found to be correlated in the study. There was a weak positive correlation between DLS-P and PFASES ($r: .229$; $p < .001$). According to the Cronbach α reliability coefficients of the measurement tools, both measurement tools had appropriate levels of reliability (DLS-P: .91 and PFASES: .96) (Table 3).

Table 3. Normal distribution and correlation values of variables and reliability

	X	SD	Kurtosis	Skewness	1	2	3	Cronbach's α
1.Age	21.28	1.67			1			
2.Grade point average	2.80	0.48			0.158*	1		
3.DLS-P	54.13	9.61	-0.655	0.319	0.034	0.143*	1	0.913
4.PFASES	126.62	20.77	0.042	-0.263	0.229*	0.028	0.385*	0.961

x: Mean; * $p < .001$; DLS-P: Disaster Literacy Scale-Preparedness; PFASES: Psychological First Aid Application Self-Efficacy Scale

According to Table 4, the regression model established between the independent (DLS-P) and dependent (PFASES) variables was appropriate ($F=48.332$; $p < .001$). DLS-P explained approximately 15% of the change in PFASES ($R^2=.149$). According to the results of t-test for the significance of the regression coefficients, there was a significant positive effect between DLS-P and PFASES ($\beta=0.833$; $t=6.952$; $p < .001$) (Table 4). These findings indicate that higher disaster literacy levels are associated with higher psychological first aid self-efficacy among nursing students.

Table 4. Regression analysis of the scales

Model	B	Standard Erros	t-Statistic	p
(Constant)	81.532	6.587	12.378	.000
DLS-P	0.833	0.120	6.952	.000
R^2	0.149	Corrected R^2	1.919.977	
Change in F	48.332	p	.000	

According to Plot 1, the overall model approximately followed a straight line, indicating that the data followed the assumed probability distribution. In other words, the standardized data had a normal distribution.

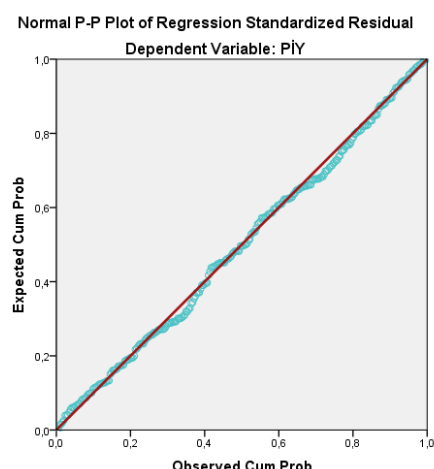


Figure 1. PP plot of the standardized data

4. DISCUSSION

This study examined the relationship between nursing students' disaster preparedness literacy and their psychological first aid practice self-efficacy. The findings revealed that students with higher levels of disaster preparedness literacy reported greater confidence in their ability to provide psychological first aid. This suggests that enhancing disaster-related knowledge and awareness may contribute positively to the development of practical competencies in psychosocial support during crises.

The findings of this study are consistent with Bandura's self-efficacy theory, which posits that mastery of knowledge and skills enhances individuals' confidence to act effectively under challenging conditions (36). In this study, disaster literacy was identified as a factor that strengthens students' competence in applying psychological first aid during crisis situations. Previous literature has reported that an increase in knowledge levels has positive effects on overall self-efficacy and resilience (37,38). This indicates that disaster literacy is not merely a theoretical concept but directly influences students' psychological preparedness to take action during disasters.

Although the correlation between disaster preparedness literacy and psychological first aid self-efficacy was weak ($r = 0.229$, $p < .001$), the regression analysis indicated that disaster preparedness literacy accounted for approximately 15% of the variance in PFA self-efficacy ($R^2 = 0.149$, $p < .001$). In behavioural and educational research, such levels of explained variance are considered meaningful, as self-efficacy is shaped by multiple interacting factors including prior experience, observational learning, training exposure, coping skills, and contextual influences (5,39,40). Thus, although the bivariate association is modest, the regression findings indicate that disaster literacy is a notable predictor of PFA self-efficacy and underscore the potential impact

of targeted disaster preparedness education on students' confidence to apply psychological first aid.

Recent research indicates that nursing students' disaster preparedness levels are generally moderate, with notable deficiencies in practical skills (28,41). Kaviani et al. (42) reported that students' competencies in disaster situations were low, while Sarikahya and Yorulmaz identified shortcomings in triage practices and emergency management (26). The International Council of Nurses in its updated Disaster Nursing Competencies framework recommends integrating knowledge, ethics, communication, coordination, and emergency response dimensions into disaster preparedness training (11). The high willingness of students to receive disaster education and participate in drills presents a significant opportunity for advancement in this field. To ensure that healthcare professionals can play an effective role during and after disasters, timely and appropriate educational strategies must be widely implemented (32).

The findings of this study also highlight the need to improve nursing students' self-efficacy in performing psychological first aid. The literature consistently supports the positive effects of PFA training on perceived competence and self-efficacy. Such training enhances the ability to support individuals experiencing acute stress, facilitates coping with psychosocial challenges, and strengthens psychological resilience among healthcare professionals (43-45). Recent evidence, confirmed by Mtiraoui et al. (38) and Said et al. (46), demonstrates that psychological first aid training significantly improves nurses' preparedness, self-esteem, and self-efficacy. Furthermore, research conducted by Bayageldi and Kaloğlu Binici (37) in Türkiye emphasized that enhancing psychological first aid self-efficacy remains an urgent need.

This study revealed that the level of disaster preparedness literacy among nursing students has a significant effect on their self-efficacy in performing psychological first aid (PFA). Students with higher disaster literacy demonstrated greater effectiveness in PFA practices during disasters and reported higher levels of self-efficacy in this regard. Similarly, the study by Kılıç and Şimşek (19) reported that psychological first aid training positively influenced perceptions of disaster preparedness and overall self-efficacy. These findings underscore the critical role of disaster preparedness education in strengthening nursing students' capacity to provide healthcare services during crises. Therefore, the integration of disaster management and PFA training programs into undergraduate curricula is expected to enhance students' ability to cope with disasters, thereby contributing to public health more rapidly and effectively.

4.1. Research Limitations

This study is important as it aimed to explore disaster literacy and psychological first aid practice self-efficacy for nursing students, the future nursing workforce. In addition, this study has some limitations. The study was conducted with nursing students of a university in a province of Türkiye. Nursing

students in other universities may have different levels of disaster literacy. Since a cross-sectional design was used in the study, a cause-and-effect relationship cannot be extracted from the findings. However, the study provided information about the main issues in disaster literacy that should be addressed by health managers and nursing faculties. Further studies in other nursing schools in Türkiye are recommended to increase the generalizability of the findings.

In addition, the study did not include comparisons across different academic years. Disaster literacy and self-efficacy levels may differ between first-year and senior students due to curricular and clinical exposure; therefore, future research should consider class-level comparisons.

Another limitation is that only the relationship between disaster literacy and psychological first aid practice self-efficacy in nursing students was evaluated in this study. Repetitive studies in which other factors affecting nursing students' psychological first aid practice self-efficacy will also be examined are needed.

5. CONCLUSION

This study revealed a statistically significant and positive, although weak, relationship between disaster preparedness literacy and psychological first aid practice self-efficacy among nursing students. The findings suggest that even modest increases in disaster literacy may contribute to students' perceived competence and confidence in providing psychological support during crises. These results highlight the importance of integrating disaster preparedness and psychological first aid training into undergraduate nursing curricula. Strengthening disaster literacy has the potential to enhance individual competence and reinforce the overall disaster response capacity of future healthcare professionals. In this context, it is recommended that structured training programs addressing both the cognitive and practical components of disaster nursing be incorporated into nursing education to promote readiness, resilience, and professional self-efficacy.

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Interpretation of data for the study: EG, İÇ

Drafting the manuscript: EG, SDS, SÇÖ, İÇ

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