Evaluating the Relationship between Nurses’ Problem-Solving Skills and Automatic Thoughts

Hemşirelerin Problem Çözme Becerileri ve Otomatik Düşünceleri Arasındaki İlişkinin İncelenmesi

ABSTRACT

Aim: This study aimed to evaluate the relationship between nurses’ problem-solving skills and automatic thoughts.

Methods: This study was conducted as descriptive, cross-sectional, and correlation study between August and December 2016. The sample of the study comprised 112 nurses working at a training and research hospital. The Problem Solving Inventory, the Automatic Thoughts Questionnaire, and a sociodemographic form prepared by the researchers were used to gather the data. The data were analyzed using Statistical Package for Social Science (SPSS) 20.0.

Results: It was found that problem-solving, approach-avoidance, and personal control skills of nurse managers were higher than those of clinical nurses (p<.05). The nurses who thought that nursing was not an appropriate profession for themselves and said that they were not satisfied with their profession had higher levels of automatic thought (p<.01). There was a positive and significant low correlation between the scores obtained by the nurses from the Problem Solving Inventory and Automatic Thoughts Questionnaire (rs=0.259, p<.01).

Conclusion: This study showed that nurses’ problem-solving skills were affected by working in the position of manager and by automatic thoughts about their profession. It is thought that practices to increase nurses’ problem-solving skills and to reduce their automatic thoughts about their professions will be beneficial.

Keywords: Automatic thought, manager nurse, nurse, problem solving.

ÖZ

Amaç: Bu çalışmanın amacı, hemşirelerin problem çözme becerilerini ile otomatik düşünceler arasındaki ilişkisinin araştırılmasıdır.

Yöntem: Bu çalışma tanımlayıcı, kesitsel ve korelasyonel olarak Ağustos-Aralık 2016 tarihleri arasında gerçekleştirildi. Araştırma örneklemesi bir eğitim ve araştırma hastanesinde çalışan 112 hemşire oluşturdu. Veriler araştırmacılar tarafından hazırlanan sosyodemografik form, Problem Çözme Envanteri ve Otomatik Düşünceler Ölçeği kullanılarak elde edildi ve veriler istatistik paket programı (SPSS 20.0) ile değerlendirildi.

Bulgular: Servis yönetici hemşirelerinin servis hemşirelerine göre problem çözme, yaklaşma kaçınma ve kişisel kontrol becerilerinin daha yüksek olduğu bulundu (p<.05). Hemşirelik mesleğinin kendisi için uygun olmadığı düşünülen ve mesleğinden memnun olmadığını ifade eden hemşirelerin otomatik düşünce düzeylerinin daha fazla olduğu tespit edildi (p<.01). Hemşirelerin problem çözme envanteri ve otomatik düşünümcüler ölçekleri arasında düşük düzeyde pozitif yönlü ve anlamlı bir ilişki olduğu belirlendi (r=0.259, p<.01).

Sonuç: Bu çalışma, hemşirelerin problem çözme becerilerinin, yönetici konumunda olmaktan ve mesleğine ilişkin otomatik düşünümcülerinin etkilediğini göstermektedir. Hemşirelerin problem çözme becerilerini arttıracak ve mesleğine ait otomatik düşünümcülerini azaltacak uygulamaların faydaları olaçağı düşünülmektedir.

Anahtar kelimeler: Otomatik düşünce, yönetici hemşire, hemşire, problem çözme.
Problem solving is a complex process that includes a series of cognitive, emotional and behavioral activities and is used for solving the problems that may be encountered throughout life. Nurses face a large number of work-related problems during the day and need problem solving skills to make decisions about nursing interventions. It is necessary to improve nurses’ problem solving skills in order to provide an efficient nurse care and preserve nurses’ mental health, which is closely associated with problem solving skills. A previous study revealed that problem solving skills of clinical and nurse managers were at medium and high levels. Nurses are involved in every stage of patient care and they are expected to deal with various crises within the scope of problem solving process. Some other studies have revealed that problem solving skills are effective for nurses in coping with negative emotions and thoughts, finding healthy solutions and enhancing the quality of care.

Automatic thoughts stem from the beliefs of people about themselves, such as the ones that are of interest to rational-emotive behavior therapy and other cognitive-behavioral therapies. Automatic thoughts are almost always stated as negative automatic thoughts. It is indicated that automatic thoughts, which are shaped by a person’s negative perceptions towards themselves, future and the world, are the most significant factors that reveal despair and anxiety. Automatic thoughts do not follow a certain logical order in goal-oriented approach or problem solving. Every individual can experience automatic thoughts. It is stated that individuals with automatic thoughts experience difficulty in developing alternative solutions to problems. However, clinical settings need creative and professional nurses who are capable of effectively solving great patient problems. In this respect, it is thought that investigating the relationship between problem solving skills and automatic thoughts of nurses will provide helpful insights to nurse managers and educators on how to support nurses and nurse students.

In literature, there are a high number of studies that evaluate problem solving skills of nursing students; however, there are only a few ones evaluating clinical nurses in this regard. Besides, there is no study examining both the problem solving skills and automatic thoughts of clinical nurses. With regard to this information, determining problem solving skills and automatic thoughts of nurses and establishing the relationship between these variables would help nurses to provide a qualified patient care in clinics and to preserve their psychosocial health by presenting solutions.

Aim
The aim of this study is to examine problem solving skills and automatic thoughts of nurses.

For this purpose, we sought answers for the following research questions:

- What are the levels of problem solving skills and automatic thoughts in clinical nurses?
- Which personal and occupational factors affect problem solving skills and automatic thoughts in clinical nurses?
- Is there a relationship between problem solving skills and automatic thoughts in clinical nurses?

Methods
Design
A descriptive, cross-sectional, and correlational design was used in this study.

Sample and Setting
This study was conducted with nurses working at a training and research hospital serving as part of a university between August and December 2016. Population of the study included 311 nurses working at this hospital. In this study, sampling method was not used. The sample group consisted of nurses from every clinic who provided voluntary consent to participate in the study. Additional sample determination was not carried out. As a result, the sample of the study consisted of 112 nurses.

Data Collection
The data of the study was collected using three tools; the sociodemographic form prepared by the researchers upon the literature review, The Problem Solving Inventory (PSI), and The Automatic Thoughts Questionnaire (ATQ). The data collection forms were delivered collectively to the units where the nurses were working. The nurses filled out the forms at any time suitable for them independently of the researcher. The researchers daily followed up the forms completed by the nurses and then gathered them. The data collection process lasted for averagely 10 minutes for each participant.

Sociodemographic Form: This form includes 15 questions regarding demographic characteristics like “age, gender, educational level, marital status” and occupational characteristics like “clinic worked, working hours as a nurse, type of working, position at the clinic, working status (permanent or contracted), willingness on choosing the profession, thinking whether or not this profession is suitable for themselves, income status and existence of a chronic disease”.

Problem Solving Inventory (PSI): Developed by Heppner and Petersen (1982), the PSI was used for measuring problem solving skills. The PSI aims to evaluate people’s thoughts about problem solving behaviors and approaches and how they evaluate themselves about their problem solving skills. Adapted into Turkish by Sahin and Heppner in 1993, the PSI consists of 35 items describing the types of reactions to personal and daily life problems. Some items are scored as reversely because of their negative expressions.
25, 26, 30, and 34). The PSI has a total score and a higher total score signifies that the individual perceives herself as insufficient in problem solving. The lowest and highest scores of the scale are 32 and 192, respectively. The reliability study of the scale that was adapted into Turkish was conducted with 244 university students and Cronbach’s alpha reliability coefficient was found as .88. The PSI has three sub-scales as Confidence on Problem Solving Skills (CPSS), Approach-Avoidance (AA), and Personal Control (PC). CPSS determines the person’s faith in solving new problems (1, 2, 4, 6, 8, 13, 15, 16, 17, 18, 20, 21, 28, 30, and 31) and PC determines the ability to maintain personal control in problematic situations (13, 14, 25, 27, and 32). In this study, Cronbach’s alpha internal consistency coefficient for total scale score was .84.

**Automatic Thoughts Questionnaire (ATQ):** Automatic Thoughts Questionnaire aims to measure the frequency of a person’s negative evaluations about themselves. Being developed by Hollon and Kendall (1980), ATQ is a likert scale with 30 items which are scored between 1 and 5. Score interval of the scale is between 30-150. Total score obtained from the scale shows that automatic thinking occurs frequently in the individual. In the reliability studies conducted in Turkey, Cronbach’s alpha internal consistency coefficient was found as .93 in the study by Sahin and Sahin (1992) and 0.95 in the study by Aydin and Aydin (1990). In this study, Cronbach’s alpha internal consistency coefficient obtained from a sample including 112 nurses was found as .93.

**Ethical Considerations**

A written consent from Amasya University General Secretary of Public Hospital Union and an ethics committee approval from Amasya University Health Sciences Ethics Committee were obtained (Consent number: 30640013-044). The participants were informed about the content of the study and the nurses willing to participate were included in the study.

**Statistical Analysis**

The data of the study were evaluated using Statistical Package for the Social Sciences (SPSS) 20 (IBM Corporation, New York). Compatibility of the data to normal distribution was measured by using Shapiro Wilk and Kolmogorov Smirnov tests. The results revealed that the data were not normally distributed (p<.05). Descriptive statistical tests, median, minimum-maximum (min-max) points, Mann Whitney U test, Kruskal-Wallis analysis of variance, Spearman correlation analysis, and Cronbach’s alpha were used for the analysis of the data. Statistical significance was accepted as p<.05.

**Results**

Table 1 shows the nurses’ median and min-max scores of PSI, PSI subscale, and ATQ. It was found that total median and min-max score obtained by the nurses from the PSI was 86 (Min 47-Max 120) and their total median and min-max score of the ATQ was 47 (min 30- max 108). With reference to median and min-max score of the PSI subscale, it was detected that median and min-max score of CPSS was 24 (min 11- max 46), median and min-max score of AA was 44 (min 22- max 73). Median and min-max score of PC was 19 (min 11- max 31).

| Scale Scores                              | Min-Max | Median |
|-------------------------------------------|---------|--------|
| Overall PSI score                         | 47-120  | 86     |
| PSI subscale scores                       |         |        |
| Confidence on problem solving skills      | 11-46   | 24     |
| Approach-avoidance                        | 22-73   | 44     |
| Personal control                          | 11-31   | 19     |
| Overall ATQ score                         | 30-108  | 47     |

Table 2 shows median and min-max scores of PSI and ATQ in terms of descriptive characteristics of the nurses. Of the nurses participating in the study, 55.4% were aged between 36-44 years, 93.8% was female, 76.8% were married, and 43.8% were undergraduates. In this study, no significant difference was determined between age, gender, marital status and education levels of the nurses and their scores of PSI, PSI subscales and ATQ (p>0.05).

Table 3 shows median and min-max scores obtained by the nurses from ATQ and PSI. Of the nurses participating in the study, 30.4% were working in daytime clinic wards (blood samples, training units, hemodialysis-peritoneal dialysis, endoscopy etc.), 27.7% were working at internal medicine clinics, 15.2% were working at surgical clinics, 32.1% were working for 17-25 years, 64.3% were working at their current clinics for 1-4 years, 83.0% were clinical nurses and 56.3% were working in day-night shifts. There was no significant difference between PSI and ATQ median scores of the nurses in terms of the clinic worked, terms of employment as nurse, terms of employment at their current clinics, and their working shifts (p>0.05).

When the nurses were evaluated according to their duties in the service (clinical nurse or nurse manager), this evaluation revealed that there was a significant difference between their PSI, AA, and PC median scores (p<0.05). It was also determined that the nurse managers had higher problem solving skills than clinical nurses and they felt AA and PC against problems. Additionally, there was no significant difference in ATQ in terms of being a clinical nurse or nurse manager.

Table 4 shows median and min-max scores obtained by the nurses from PSI and ATQ in terms of their opinions on the

 KOÇ UNIVERSITY HEMŞİRELİK EĞİTİM VE ARAŞTIRMA DERGISI 2020;17(4):342-8
### Table 2. Evaluation of PSI and ATQ Median and Min-Max Scores in Terms of Descriptive Characteristics of the Nurses

| Variables               | n   | %    | PSI Min-Max Median | CPSS Min-Max Median | AA Min-Max Median | PS Min-Max Median | ATQ Min-Max Median |
|-------------------------|-----|------|--------------------|--------------------|------------------|------------------|--------------------|
| Age                     |     |      |                    |                    |                  |                  |                    |
| 18-26 years             | 22  | 19.6 | 63-120 94          | 14-45 26           | 30-73 47         | 16-31 21         | 30-75 46           |
| 27-35 years             | 15  | 13.4 | 66-114 82          | 21-42 25           | 29-56 47         | 14-24 19         | 30-82 43           |
| 36-44 years             | 62  | 55.4 | 49-117 86          | 11-46 24           | 22-61 45         | 11-29 11         | 30-108 47          |
| 45 years and over       | 13  | 11.6 | 47-105 75          | 11-30 21           | 25-53 40         | 11-27 18         | 33-75 47           |
| Test and p value        | 112 | 100  | z=7.133 p=.068     | z=5.667 p=.129     | z=1.568 p=.153   | z=4.101 p=.251   | z=1.067 p=.785     |
| Gender                  |     |      |                    |                    |                  |                  |                    |
| Female                  | 105 | 93.8 | 47-120 85          | 11-46 24           | 22-73 44         | 11-29 20         | 30-108 47          |
| Male                    | 7   | 6.3  | 67-104 90          | 15-39 23           | 36-57 51         | 17-31 18         | 41-64 46           |
| Test and p value        | 112 | 100  | Z=908 p=.364       | Z=0.349 p=.727     | Z=1.221 p=.222   | Z=0.694 p=.488   | Z=0.421 p=.674     |
| Marital status          |     |      |                    |                    |                  |                  |                    |
| Single                  | 26  | 23.2 | 49-120 86          | 14-46 24           | 22-73 44         | 11-31 19         | 30-81 53           |
| Married                 | 86  | 76.8 | 47-114 86          | 11-45 24           | 25-61 45         | 11-29 19         | 30-108 45          |
| Test and p value        | 112 | 100  | Z=0.069 p=.945     | Z=0.307 p=.759     | Z=0.017 p=.986   | Z=0.388 p=.698   | Z=0.396 p=.692     |
| Educational status      |     |      |                    |                    |                  |                  |                    |
| Health college          | 13  | 11.6 | 49-104 87          | 14-39 23           | 22-60 49         | 14-31 19         | 30-64 45           |
| Associate degree        | 43  | 38.4 | 50-117 90          | 11-46 25           | 25-60 46         | 11-29 21         | 31-108 46          |
| Undergraduate           | 47  | 43.8 | 47-120 82          | 11-45 24           | 26-73 45         | 11-25 19         | 30-76 48           |
| Postgraduate            | 7   | 6.3  | 55-102 77          | 12-32 24           | 32-52 39         | 15-24 18         | 30-72 51           |
| Test and p value        | 112 | 100  | Z=2.321 p=.470     | Z=3.334 p=.343     | Z=2.405 p=.493   | p=.546 z=2.127   | Z=0.717 p=.869     |

**z**: Kruskal-Wallis, **Z**: Mann Whitney U  
*p<.05*

### Table 3. PSI and ATQ Median and Min-Max Scores in Terms of Professional Characteristics of the Nurses

| Variables                  | n   | %    | PSI Min-Max Median | CPSS Min-Max Median | AA Min-Max Median | PC Min-Max Median | ATQ Min-Max Median |
|----------------------------|-----|------|--------------------|--------------------|------------------|------------------|--------------------|
| Duration Of Employment As A Nurse |     |      |                    |                    |                  |                  |                    |
| 1-8 years                  | 34  | 30.4 | 63-120 88          | 14-45 25           | 29-73 46         | 14-31 20         | 30-75 45           |
| 9-16 years                 | 28  | 25.0 | 50-117 87          | 12-46 24           | 27-57 44         | 13-26 19         | 31-82 42           |
| 17-25 years                | 36  | 32.1 | 49-114 87          | 11-45 25           | 22-61 46         | 11-29 20         | 30-108 56          |
| 26-33 years                | 14  | 12.5 | 47-112 77          | 11-45 22           | 25-53 41         | 11-27 18         | 33-75 47           |
| Test and p value           | 112 | 100  | Z=2.966 p=.397     | Z=2.683 p=.515     | Z=2.683 p=.344   | Z=2.683 p=.749   | Z=1.686 p=.067     |
| Duration Of Employment At The Current Clinics |     |      |                    |                    |                  |                  |                    |
| 1-4 years                  | 72  | 64.3 | 47-117 86          | 11-46 24           | 22-61 43         | 11-31 20         | 30-108 46          |
| 5-8 years                  | 27  | 24.1 | 50-120 85          | 11-39 24           | 27-73 46         | 11-29 19         | 30-82 46           |
| 9-12 years                 | 9   | 8.0  | 66-112 85          | 19-45 24           | 31-55 45         | 17-24 18         | 38-71 40           |
| 13 years and above         | 4   | 3.6  | 68-95 82           | 15-30 26           | 32-51 40         | 17-27 21         | 38-72 50           |
| Test and p value           | 112 | 100  | Z=0.610 p=.894     | Z=1.602 p=.659     | Z=2.693 p=.441   | Z=0.491 p=.921   | Z=3.129 p=.372     |
| Position                   |     |      |                    |                    |                  |                  |                    |
| Clinical nurse             | 93  | 83.0 | 49-120 89          | 11-46 24           | 22-73 46         | 11-31 20         | 30-108 47          |
| Nurse managers             | 19  | 17.0 | 47-114 75          | 11-38 21           | 26-61 38         | 11-24 18         | 31-76 43           |
| Test and p value           | 112 | 100  | Z=2.466 p=.014*    | Z=1.966 p=.110     | Z=2.394 p=.017*  | Z=2.001 p=.045*  | Z=0.617 p=.538     |
| Working Shift              |     |      |                    |                    |                  |                  |                    |
| Daytime only               | 49  | 43.8 | 47-114 82          | 11-45 43           | 22-60 44         | 11-27 19         | 30-82 48           |
| Day+Night                  | 63  | 56.2 | 50-120 89          | 11-46 26           | 25-73 45         | 11-31 20         | 30-108 46          |
| Test and p value           | 112 | 100  | Z=1.012 p=.311     | Z=1.299 p=.194     | Z=0.857 p=.391   | Z=0.934 p=.350   | Z=0.103 p=.918     |

**z**: Kruskal-Wallis, **Z**: Mann Whitney U  
*p<.05*
profession. It was found that 54.5% of the nurses were partially satisfied with their working conditions, 70.5% had chosen the profession voluntarily, and 50.0% regarded the nursing profession as a suitable profession for themselves. No significant difference was found between the status of expressing satisfaction with the nursing profession and PSI and its subscales (p>.05).

A significant difference was found between the ATQ median scores of nurses and the status of saying that they were satisfied with their professions (p<.05). The ATQ scores of the nurses saying that they were satisfied with their professions were higher. Additionally, it was also determined that nurses thinking that nursing profession is not suitable for themselves had significantly higher ATQ median scores than those who thought the profession is suitable or partially suitable for themselves (p<.01). No significant difference was found between PSI median scores of the nurses thinking that nursing profession is suitable for themselves (p>.05).

The relationship between PSI, ATQ, and their subscale scores of the nurses were analyzed by using Pearson Correlation Coefficient as shown in Table 5. A low-level positive correlation was found between PSI and ATQ scores of the nurses (rs=0.259, p<.01).

### Discussion

PSI and ATQ levels of the nurses and the relationship between them were investigated in this study. Problem solving ability is a very important factor in professional nursing practice. In this study, it was determined, that problem solving skills and automatic thoughts were not affected by the nurses’ age, gender, marital status, educational levels, and opinions about the profession. Similar to the results of this study, the study by Basar et al. (30) revealed no correlation between marital status, gender, educational status, working unit and problem solving ability. These results suggested that personality traits of individuals, upbringing, and life experiences may be more determinative for problem solving skills.

Professional nursing role is based on communication and decision making for both nurse managers and clinical nurses. Problem situations are an important part of the practice of administrative nurse managers and clinical nurses. (31) Being more skilled on problem solving is attributed to nurse managers. However, as clinical nurses and nurse managers may replace each other according to functioning of the clinic, problem solving skills are among the skills clinical nurses should also

### Table 4. PSI and ATQ Median and Min-Max Scores According to the Nurses’ Opinions on Profession

| Variables | n  | %   | PSI Min-Max Median | CPSS Min-Max Median | AA Min-Max Median | PC Min-Max Median | ATQ Min-Max Median |
|-----------|----|-----|--------------------|---------------------|-------------------|------------------|--------------------|
| Said that they were satisfied with profession |  |     |                    |                     |                   |                  |                    |
| Satisfied | 32 | 28.6| 54-114 85          | 11-42 23            | 32-61 44          | 13-26 19         | 30-76 40          |
| Partially satisfied | 61 | 54.5| 47-120 84          | 11-46 24            | 22-73 44          | 11-31 20         | 30-82 50          |
| Dissatisfied | 19 | 17.0| 65-111 89          | 15-44 27            | 29-56 45          | 14-24 18         | 30-108 57         |
| Test and p values | 112 | 100 | χ²=0.564 p=.754 | χ²=3.033 p=2.19 | χ²=0.195 p=.907 | χ²=1.601 p=.449 | χ²=8.576 p=.014* |

Choosing The Profession Willingly

| No | 79 | 70.5 | 47-120 85 | 11-46 25 | 22-73 43 | 11-31 19 | 30-82 45 |
|----|----|------|-----------|---------|---------|---------|---------|
| Test and p values | 112 | 100 | Z=-0.077 p=.939 | Z=0.051 p=.959 | Z=1.012 p=.311 | Z=-.872 p=0.383 | Z=0.120 |

Suitability Of The Profession

| No | 33 | 29.5 | 54-114 88 | 11-44 24 | 29-61 46 | 14-27 20 | 31-108 56 |
|----|----|------|-----------|---------|---------|---------|---------|
| Test and p values | 112 | 100 | χ²=2.613 p=.271 | χ²=3.575 p=.167 | χ²=1.299 p=.522 | χ²=1.062 p=.922 | χ²=10.725 p=.005** |

### Table 5. The Relationship Between PSI and ATQ Scores of The Nurses

| PSI | CPSS | AA | PC | ATQ |
|-----|------|----|----|-----|
| s   | 1.000| 0.773| 0.894| 0.679| 0.259|
| p   | .    | <.001| <.001| <.001| 0.006*|
| n   | 112  | 112| 112| 112| 112|
| ATQ | s   | 0.259| 0.338| 0.115| 0.172| 1.000|
| p   | .   | <.001| <.001| 0.227| 0.070| .|
| n   | 112 | 112| 112| 112| 112|

rs: spearman correlation coefficient
AA: Approach-Avoidance, ATQ: Automatic Thoughts Questionnaire, CPSS: Confidence on Problem Solving Skills, Min-Max: Minimum-Maximum, PC: Personal Control, PSI: Problem Solving Inventory
χ²: Kruskal-Wallis, Z: Mann Whitney U
*p<.05
In another related study, it was found that automatic thoughts in terms of professional development of nursing is thought to have a positive effect on problem solving skills of nurses. There was a low positive significant correlation between PSI and ATQ mean scores. This result might be interpreted as PSI decreasing with increased automatic thoughts. This correlation was also detected in other similar studies with different samples. In another related study, it was found that automatic thoughts were hindering the development of problem solving skills. Reduction of automatic thoughts in terms of professional development of nurses is thought to have a positive effect on problem solving skills of nurses.

Conclusion

Nurses' problem solving skills and automatic thoughts were examined and the relationship between them was determined in this study. According to the study results, nurse managers are more likely to have problem solving skills, to provide alternative solutions to a problem encountered, and to maintain personal control in problematic situations. Automatic thoughts were lower in nurses who said that they were satisfied with their profession and that the nursing profession is appropriate for themselves. In addition, problem solving skills of the nurses were adversely affected by automatic thoughts.

This study was a single-center study. In order to increase the power of the results to represent the study population, larger sampled and multicentered studies should be conducted. Studies for understanding and specifying the factors that cause nurses to be not satisfied with their professions and to feel not suitable for their profession can provide valuable information. In addition, it is recommended to make meetings that provide nurse managers to share their experiences and knowledge on effective problem solving skills with clinical nurses.

The Limitations of the Study

This study has several limitations. In this study, the rate of the nurses in target group was 36%, which was low. The power of the data to represent all the nurses in the hospital seems limited. Also, the total number of patients in the busy hospital where data were collected may affect the result of the present study and may be different from other hospitals which is less busy or has less number of patients. So, the results of the present study may not reflect the PSI and ATQ levels of nurses working in other hospitals accepting fewer patients.
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Informed Consent: Written informed approval was obtained from the nurses who participated in this study.

Conflict of Interest: There is no conflict of interest between the authors in this study.

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