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Metaphors of diabetes nurse educators regarding "diabetes education": a qualitative study

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ABSTRACT

Aims: Nurses play a vital role in diabetes education, and their involvement has a positive impact on patient outcomes. To date, no research has specifically investigated the metaphors used by diabetes nurse educators in diabetes education. This study aimed to explore the perceptions of nurses who provide care for diabetic patients by analysing the metaphors they use to describe diabetes education.

Methods: A qualitative research design and purposive sampling were used. Data were collected using a data collection form developed by the researchers based on the literature, which included descriptive characteristics of diabetes nurse educators and their metaphorical expressions. The nurses' responses were analysed using content analysis.

Results: The study included 52 diabetes nurse educators. The mean age of nurse educators was 41.51±7.31 years, and the mean duration of working as diabetes nurse educators was 8.96±7.98 years. Analysis of their responses to the metaphorical expression identified 38 metaphors, which were grouped into four themes based on shared characteristics: a tool to empower the patient, an indispensable process, a thorny path that requires patience and effort, and a tool to touch the lives of others. These themes reflect both positive and negative perceptions of diabetes education.

Conclusions: Diabetes nurse educators were found to have both positive and negative perceptions of diabetes education. They described it as an indispensable tool – it strengthens patients, helps them navigate a new path in life, and enables effective disease management – and as a long, challenging, and labour-intensive process.

Introduction

Diabetes, which is increasingly prevalent worldwide and in Türkiye, is a significant public health issue associated with a risk of microvascular and macrovascular complications (1). Optimum glycaemic control and effective self-management are essential to prevent or delay these complications (2). For this reason, diabetes management includes medical nutrition therapy, physical activity, blood glucose monitoring, medication, and diabetes education (3). Evidence-based guidelines emphasise diabetes education as a core component of diabetes management, and the literature consistently highlights the active role nurses play in this process (4-6). Nurse-led education has been shown to positively influence hemoglobin A1c levels, blood pressure, body weight, and self-management behaviours

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(2,7-9). In addition, structured and individualised education provided by primary care nurses enhances patients' knowledge, emotional regulation, and quality of life (9). However, while many studies focus on diabetes-related treatment adherence (10,11), self-management (12), and self-care (13), few studies have investigated nurses' perceptions of diabetes (14-17).

Metaphors are powerful cognitive and communicative tools that allow individuals to define an experience or concept by likening its characteristics to a familiar object, event, or phenomenon (18,19). Metaphors offer novel perspectives that foster a deeper understanding, serving as valuable rhetorical tools not only for communicating a phenomenon but also for analysing and comprehending it (20,21). Additionally, metaphors can shed light on broader cultural frameworks and on how we perceive the world (22). In the context of nursing, metaphors are powerful teaching and learning resources that facilitate the understanding of nursing experiences and help establish creative connections between existing conceptual frameworks and new knowledge (23). They help reveal the perceptions of society or of members of the profession (23). Understanding nurse educators' metaphorical perceptions is essential because their conceptualisations can influence their teaching approaches, their communication with patients, and the motivational climate they create in educational settings (24,25). Negative metaphors may hinder the educational process, whereas positive metaphors can empower both educators and patients (26). By analysing these metaphors, it becomes possible to identify underlying beliefs, replace limiting perceptions with more constructive ones, and guide the development of more engaging curricula (24).

A review of metaphor studies showed that researchers have examined nurses' experiences regarding the nursing profession, provision of care, COVID-19, professional communication, and clinical practice (24,27-31). However, no studies have examined how nurses perceive diabetes education through metaphors. In studies conducted among patients, Ardahan et al. (32) reported that diabetes was described using negative, threatening metaphors (e.g., cancer, virus, burnt house, cigarette, dangerous path, broken machine) and more manageable metaphors (e.g., flower, watch, diet). Tok Özen et al. (26) found that individuals with diabetes often described their disease using negative metaphors such as "darkness," "prison," "microbe," "captivity," and, less frequently, using positive metaphors such as "friend," "traffic sign," and "driving a car." However, these patient-centered studies do not reveal how nurse educators perceive and define the process. The present study aimed to explore the perceptions of nurses caring for patients with diabetes by analysing the metaphors they use to describe diabetes education. Gaining a deeper understanding of nurses' beliefs can enrich teaching strategies and strengthen both nurse-led education and patients' self-management.

Methods

Study design and participants

This study employed a qualitative research design. A qualitative research approach is effective for investigating complex phenomena and uncovering participants' underlying perspectives (33). Metaphor analysis is a technique based on the phenomenological research method within qualitative research. Metaphor analysis serves as a qualitative technique that facilitates the comprehension of abstract and complex ideas by comparing them with more familiar concepts (34). Consistent with these explanations, this study utilised the metaphor analysis technique within a phenomenological framework to explore how diabetes nurse educators' metaphors reflect their perspectives and help make sense of the complex nature of diabetes education.

Participants were selected through purposive sampling, targeting individuals who could offer rich, relevant, and diverse insights related to the research question (35). The inclusion criteria were: being a diabetes nurse educator, providing diabetes education, and agreeing to participate in the study. Exclusion criteria were the following: (1) not currently working as a diabetes nurse educator; and (2) providing incomplete or meaningless answers on the data collection form.

In qualitative studies, saturation is the commonly recommended criterion for determining when a sufficient sample size has been reached. Data collection was terminated once saturation was reached (36,37). Therefore, we intentionally included a larger sample of diabetes nurse educators to enrich the diversity of metaphors and achieve conceptual saturation. Thus, we expanded our sample size until conceptual saturation was achieved, a standard consistent with qualitative research. Initially, a total of 55 nurses were recruited. Since three participants provided incomplete or meaningless responses to the open-ended metaphor prompt, their data were excluded from the final analysis to ensure data integrity. The study included 52 participants.

The research was approved by the Çankırı Karatekin University Ethics Committee (decision no.: 26, date: 28.06.2022). Participants were informed about the study at the beginning of the online survey and provided their consent electronically. The research was conducted in accordance with the Helsinki Declaration. To ensure confidentiality and anonymity, the letter "N" was used to represent nurses, along with Arabic numerals indicating their sequence.

Data collection form

Researchers developed a two-part form based on existing literature (19,20,28-30,38). The first part included questions about the descriptive characteristics of diabetes nurse educators. The second part featured an open-ended metaphor prompt:

"Diabetes education is like ..., because ..." Participants were also free to provide more than one metaphor if they wished.

Data collection

The data were collected through a web-based data collection form between July 2022 and March 2023. The Informed consent statement on the first page of the online survey explained the study's purpose and participants' rights. Nurse educators were informed that their data would remain confidential, and that all information obtained would be analysed anonymously and used solely for scientific purposes. Participants were contacted via social media and WhatsApp groups that diabetes nurse educators actively use. An online link directing them to the data collection form was shared with the nurses. Voluntary participants individually completed the first part of the data collection form, which included questions about the descriptive characteristics of the diabetes nurse educators. Afterwards, participants completed the second section of the form, which included an open-ended metaphor prompt: "Diabetes education is like …, because ..." The "like" section determined how nurse educators perceived diabetes education, while the "because" section revealed the reasoning behind it. They were asked to write their metaphorical expressions and explanations directly in response to the open-ended prompt. Participants were also free to generate more than one metaphor and to repeat the given sentence structure "Diabetes education is like …, because …" if they wished.

Data analysis

Data analysis was conducted using IBM SPSS Statistics for Windows, Version 21.0 (IBM Corp., Armonk, NY: USA). Descriptive statistics were presented as counts, percentages, means, and standard deviations. The responses to the open-ended metaphor question were analysed through content analysis in three steps. First, the diabetes nurse educators' responses were repeatedly reviewed to identify metaphors and indicators such as repetition, elaboration, relatedness, contrast, and emotion. All metaphors were then listed, and participants who did not produce any were excluded from the study. In the second step, a general metaphor analysis was conducted. The meanings of selected metaphors were examined in isolation from their sentence contexts, focusing on comparisons, associations, dimensions, categories, concepts, and idioms. Distinct categories were then developed manually based on the compiled list and the group classifications. In the third step, a text-immanent metaphor analysis was conducted by revisiting the original sentences to examine each metaphor in context. The final grouping was determined based on participants' explanations beginning with "because …" (39).

The study was conducted in accordance with the principles of credibility, dependability, confirmability, and transferability. To ensure participant diversity, purposive sampling was employed. The data collection procedures were described in detail, and a specific routine was followed. The stages of data analysis were explained step by step, and the researchers had prolonged engagement with the data, reading and rereading it multiple times. The analysis included direct quotations, and the researchers reviewed the categories several times (27). In this study, 38 metaphors were categorised into four themes based on their shared characteristics. Sample expressions representing the general views of the nurse educators were selected and presented to provide deeper insights.

Results

Socio-demographic characteristics

As shown in Table 1, the mean age of the nurse educators was 41.51±7.31 years. All participants were female, with 71.2% being married, 67.3% having children, and 42.3% reporting a chronic disease. The average duration of professional experience among the nurse educators was 19.34±8.35 years, while their expertise as diabetes nurse educators averaged 8.96±7.98 years.

An analysis of the metaphors provided about diabetes education revealed four main themes. These themes are: a tool to empower the patient, an indispensable process, a thorny path requiring patience and effort, and a tool to touch other lives (Table 2).

Theme 1: A tool to empower the patient

When the metaphors used by nurse educators were examined in the research, the first identified theme was "diabetes education as a tool to empower the patient." Within

Table 1. The descriptive characteristics of nurses (n=52)

Characteristics	Value
Age (years), mean ± SD	41.51±7.31
Working time in the profession (years)	19.34±8.35
Working time as a diabetes nurse educator (years)	8.96±7.98
Marital status, n (%)	
Married	37 (71.2)
Single	15 (28.8)
Having children, n (%)	
Yes	35 (67.3)
No	17 (32.7)
Number of children*, n (%)	
One	16 (45.7)
Two	16 (45.7)
Three	3 (8.6)
Having chronic disease, n (%)	
Yes	22 (42.3)
No	30 (57.7)

*Calculated for nurses with children (n=35)
SD: Standard deviation

this theme, nurse educators used eight different metaphors. Two subthemes emerged: "managing the disease" and "drawing a new path in life." The metaphors within this theme commonly emphasised that diabetes education helps patients understand that they can manage their disease, reminding them that they are not alone and that they can chart a new path in their lives. Overall, the metaphors found in this theme reflected positive perceptions of diabetes education.

The first subtheme identified in the study is "managing the disease." Within this subtheme, nurse educators employed metaphors such as "teaching how to fish," "key," "compass," and "rain in the desert" to describe diabetes education.

- *"Diabetes education is analogous to teaching individuals how to fish. It eliminates dependency and empowers individuals to sustain themselves throughout their lives."* (N 29)
- *"Diabetes education shifts patients from the passenger seat to the driver's seat. It teaches patients how to manage and take control of their disease."* (N 33)
- *"Diabetes education serves as a guide for individuals with diabetes. Without education, patients feel lost and struggle to find a healthy lifestyle."* (N 46)

"Diabetes education is analogous to rain in a desert. It provides clarity and relief to newly diagnosed patients or those facing treatment changes, helping them understand that they are not alone and can navigate a new path." (N 38)

Table 2. Metaphors generated by nurse educators regarding diabetes education

Core themes	Subthemes	n	%	Metaphor
A tool to empower the patient	Drawing a new path in life	10	13.0	• A rising sun/light (n=5) • A new path (n=3) • Opportunity for self-expression (n=1) • A port in a storm (n=1)
	Managing the disease	6	7.8	• Teaching how to fish (n=2) • Key (n=2) • Compass (n=1) • Rain in the desert (n=1)
An indispensable process		15	19.5	• Necessity (n=9) • Honeycomb (n=1) • Foundation of a building (n=1) • Traffic rules (n=1) • Four-legged table (n=1) • Seat belt (n=1) • Life partner (n=1)
A thorny path that requires patience and effort	Process and labor	24	31.2	• Growing flowers (n=8) • School (n=7) • Time-consuming (n=5) • Bringing up a child (n=4)
	Difficulty and challenge	8	10.4	• Flog a dead horse (n=2) • A difficult path (n=1) • Tunnel of horror (n=1) • Funeral home (n=1) • House arrest for a relative (1) • Sometimes battle of nerves (n=1) • Removing watermelon seeds (n=1)
	Complexity and depth	6	7.8	• Endless sea (n=2) • The tip of the iceberg (n=1) • Puzzle (n=1) • A dark road (n=1) • Ocean (n=1)
	Value and potential	3	3.9	• Diamond (n=1) • Internet connection (n=1) • Boomerang (n=1)
A tool to touch other lives		5	6.5	• Achieving satisfaction in the profession (n=2) • Holding on to life (n=1) • Discovering the unseen (n=1) • Achieving a new turning point in life (n=1)

n= It indicates the number of nurses who provided the metaphor.

The second subtheme, "drawing a new path in life," uses metaphors such as a new path, a rising sun or light, an opportunity for self-expression, and a port in a storm.

- *"Diabetes education enhances patients' understanding by clarifying specific details."* (N 41)
- *"Diabetes education serves as a source of illumination and empowerment for patients with diabetes. They can learn comprehensive information about managing the disease from that source."* (N 3)
- *"Diabetes education provides a setting in which the patient can express himself/herself and serves as a port in a storm. This is because he/she can tell the nurse about his/her problems."* (N 3)

Theme 2: An indispensable process

When examining the metaphors used by nurse educators, the next theme identified was "diabetes education as an indispensable process." The central idea conveyed by the metaphors in this theme is that diabetes education is essential and non-negotiable in patients' lives. Nurse educators emphasised that without a solid educational foundation, effective disease management would not be possible. Overall, the metaphors within this theme emphasized positive views.

The most frequently used metaphor within this theme was "necessity." Examples of nurse educators' expressions highlighting this metaphor include;

- *"Diabetes education, like air, water, or oxygen, is essential—life cannot continue without it."* (N 19)
- *"Just as a bee cannot live on flowers without a honeycomb, the disease cannot be managed without education."* (N 26)
- *"It is the cornerstone of diabetes treatment."* (N 52)
- *"A person should know everything they should and should not do."* (N 35)

Theme 3: A thorny path that requires patience and effort

When the metaphors created by the nurse educators were examined as part of the research, another significant theme emerged: "diabetes education as a thorny path that requires patience and effort." Within this theme, nurse educators described education as a challenging process that demands persistence, proceeds in stages, and requires substantial time and dedication. The metaphors within this theme conveyed both positive and negative perceptions of the challenges of education.

Within this theme, four subthemes were identified: "process and labor," "difficulty and challenge," "complexity and depth," and "value and potential." Among these, the "process and labor" subtheme stood out as particularly important. The metaphors most frequently used in this subtheme were "growing flowers," "school," "bringing up a child," and "time-consuming." These metaphors share a common thread; they emphasise the patience and effort required in the educational process.

- *"It is like a child; it requires endless responsibility."* (N 17)
- *"It is like caring for flowers; it requires constant attention and follow-up. Education should be conveyed patiently, according to the needs of the patient."* (N 42)
- *"It is like time: when used correctly, it changes lives; when wasted, it is nothing."* (N 1)
- *"It is like school; there is always something to learn."* (N 24)

Another subtheme identified in the study is "difficulty and challenge." This subtheme captures the challenges and hardships experienced by both patients and nurses in the education and monitoring process. The metaphors in this subtheme, such as "flog a dead horse" and "funeral home," highlight the emotional and practical difficulties involved.

The common thread in these metaphors is the acknowledgement that this process can be highly demanding and, at times, discouraging. Examples of nurse educators' expressions reflecting this subtheme include;

- *"Sometimes it is like flogging a dead horse, because no matter how much education you give, the patient still does what he/she knows."* (N 49)
- *"It is like writing on water because what is important is not what you say, but how well the other person understands you."* (N 16)
- *"Sometimes it resembles a funeral home because it is characterized by rebellion, denial, and non-acceptance. Patients often have questions such as, 'Why did this happen to me?'"* (N 11)
- *"At times, the patient experiences a tunnel of horror, appearing fearful and asking, 'How will I do this?' How many rules must I follow? Every subject is perceived by them as a tunnel of horror."* (N 11)

Another subtheme identified in the study is "complexity and depth." This subtheme highlights the intricate nature of diabetes and its management, emphasising the need to integrate various aspects of the disease into the educational process. Metaphors such as "endless sea," "the tip of the iceberg," and "puzzle" were frequently used to describe this complexity.

- *"It is like an endless sea because the explanations and topics never end."* (N 32)
- *"It is like an endless sea because there is no limit to knowledge."* (N 47)

Another notable subtheme is "value and potential." This subtheme highlights the importance of achieving valuable results through persistent effort, maintaining continuity and connection, and recognizing that the outcomes of actions often come full circle. Metaphors such as "diamond," "internet connection," and "boomerang" were used to illustrate these ideas.

- *"It is like a diamond because it is valuable; this stone emerges through effort. We know that there is no cure for the disease without effort."* (N 28)

- *"It is like an internet connection: when the patient–education connection is broken, education must start from scratch." "It is necessary to ensure continuity of the patients' education."* (N 13)
- *"It is like a boomerang because the patient comes back to you again and again."* (N 20)

Theme 4: A tool to touch other lives

Another theme identified in the study was "diabetes education as a tool to touch other lives." Within this theme, nurses emphasised that education helps patients navigate their ups and downs and uncover deeper issues beyond what patients openly share, and that it enables nurses to find fulfillment in their professional roles. The metaphors under this theme reflected positive perceptions.

The most frequently mentioned metaphor within this theme was "achieving satisfaction in the profession," reflecting how diabetes education allows nurses to make meaningful connections with their patients. Examples of nurse educators' expressions include:

- *"It provides professional satisfaction because it allows one to touch people's lives and to transfer information. The feedback I receive from patients makes me very happy."* (N 32)
- *"It provides support in life because sometimes you get stuck on the road and you need someone to help you get back on your feet."* (N 50)
- *"It is like discovering the unseen because in addition to what the patient tells you, you also need to reach the essence by asking questions."* (N 50)
- *"Diabetes education represents a turning point in life because the patient must recreate their entire life to accommodate this disease."* (N 10)

Discussion

This study found that diabetes nurse educators view patient education as a tool to empower patients and create new opportunities, believing that this can enhance disease management. Metaphors such as "teaching to fish," "key," and "compass" reflected positive perceptions, emphasising self-management, independence, and guidance. Similarly, previous studies have demonstrated that diabetes education motivates and empowers patients, leading to improved self-care behaviours and overall well-being (15,40-43). At the same time, it helps reduce complications and healthcare utilisation (44). However, in this study, alongside expressing positive views, some nurse educators described negative views using metaphors such as "funeral home," "tunnel of fear," or even "house arrest for a relative." These metaphors reflected frustration, emotional strain, and a sense of restriction. These findings highlight the critical role of diabetes education in empowering patients to manage their condition more effectively, to reduce diabetes-related complications, and to adopt healthy lifestyles.

In the sub-theme of charting a new path in life, nurse educators often liken diabetes education to the "sun," symbolising its role in illuminating knowledge and empowering patients for effective self-management. Just as the sun is an essential source of energy for sustaining life, diabetes education is viewed as indispensable for developing patients' self-management abilities and improving their quality of life. Moreover, the use of this metaphor by nurse educators is meaningful in emphasising that education is a continuous, dynamic, and lifelong process. Similarly, Ardahan et al. (32) emphasised the metaphors of guidance and wayfinding, which are consistent with this study. In the sub-theme of disease management, the metaphor of "teaching how to fish" reflects that patient education goes beyond merely providing information. It develops self-management skills, represents the shift from dependency to independence, and embodies the concept of empowerment. Additionally, the metaphor of the "key" symbolises access to knowledge and tools needed to control and manage the disease. It conveys the idea of facilitating treatment and self-care processes by providing essential skills and information. Together, these metaphors emphasise that diabetes education should go beyond information-sharing to build patients' self-management abilities.

National and international guidelines support our study findings, emphasising diabetes education as a core element of treatment (3-6). O'Brien et al. (15) examined diabetes nurse educators' experiences of diabetes self-management, identifying knowledge as a key factor in effective self-management. Similarly, Ndjaboue et al. (44) found that patients consider learning about the disease essential. In this study, diabetes nurse educators consistently described patient education as an indispensable part of disease management, frequently using the metaphor of "necessity" to underline its fundamental role. In addition, the "four-legged table" metaphor emphasises that effective diabetes management requires balance and stability. In contrast, the metaphor of a "life partner" reflects the lifelong nature of diabetes education. When evaluated together, the metaphors highlight the core messages that diabetes education is mandatory, foundational, protective, vital, and that it requires ongoing commitment.

In this study, nurse educators acknowledged that diabetes education, while essential, is also a laborious, time-consuming, and demanding process. Similarly, patients have expressed comparable perspectives. Consistent with Ndjaboue et al. (44), patients often view managing diabetes as a challenging task requiring ongoing effort and support. Individuals with diabetes face various challenges, including treatments required to control blood glucose levels and self-management practices

to prevent complications (45). Gardsten et al. (45) highlighted that patients recently diagnosed with diabetes often struggle most with accepting the diagnosis and finding motivation to adopt lifestyle changes. In contrast, more experienced patients emphasise difficulties related to complications and medication management. These findings underscore the multidimensional nature of diabetes education, which must address a wide range of challenges across different stages of the disease. Nurse educators frequently used metaphors such as "growing a flower," "a school," and "bringing up a child" to describe the ongoing, patient, and nurturing nature of the educational process. These metaphors highlight both the long-term commitment required and the potential for positive growth and meaningful outcomes. Despite these positive perspectives, negative metaphors such as "funeral home" and "tunnel of horror" reflect the emotional toll and sense of hopelessness that may arise during this journey. In contrast, positive metaphors such as "diamond" and "boomerang" underscore that persistence, effort, and support can eventually lead to success and transformation. Altogether, these metaphors reflect the challenging yet promising nature of diabetes education. These findings are also consistent with those reported by Tok Özen et al. (26), in which patients described diabetes using restrictive and coercive metaphors. However, unlike in patient-centered studies, our participants also highlighted positive, empowering metaphors such as "compass" or "diamond," reflecting the dual perspective of educators who both witness challenges and aim to inspire hope.

This study emphasises that nurse-led diabetes education has a meaningful impact on patients' lives by helping them cope with their condition, manage it more effectively, and improve their overall well-being. At the same time, it contributes to nurse educators' professional satisfaction, confidence, and self-esteem. Supporting studies indicate that completing diabetes education programs enhances patients' motivation and that educator support is important in navigating the challenges of the disease (45,46). For example, Findlay-White et al. (16) found that nurses involved in empowerment-based education reported greater confidence, role satisfaction, and self-esteem. These metaphors illustrate the richness and multidimensional nature of diabetes education, reflecting nurses' personal experiences. The metaphors suggest that diabetes education is not merely the transfer of information but also a complex process that requires empathy, patience, continuity, and professional expertise. Ultimately, it offers mutual benefits. While patients gain self-management skills and an improved quality of life, nurses experience professional satisfaction, increased self-esteem, and enhanced role confidence. However, these findings should be considered in light of Türkiye's cultural and contextual factors, and caution is warranted when comparing them to different healthcare settings.

This study has some strengths and limitations. One of the main strengths of this study is its focus on a relatively neglected topic: how diabetes nurse educators perceive diabetes education through metaphors. A qualitative research design with purposive sampling provided rich insights into nurse educators' views of their roles, and a relatively large, diverse group of participants strengthened the credibility of the findings. However, some limitations should be noted. Although the data were collected online and nurse educators from different parts of Türkiye were able to participate, the sample may not fully represent the diversity of healthcare and educational settings. Participation may have been more feasible for nurses with better access to technology and the internet, higher digital literacy, or stronger professional networks, which could have limited the diversity of perspectives captured. Furthermore, as the data were obtained through self-reported written responses, the results reflect participants' subjective perceptions rather than directly observed practices. As with most qualitative studies, the findings are not intended to be generalised, but to provide a deeper understanding and generate new insights for future research.

Conclusion

The research revealed that nurse educators' perceptions of diabetes education were diverse, ranging from positive to negative. Nurse educators described diabetes education as both a powerful tool empowering patients to take control of their lives, manage their disease, and view it as indispensable, and a process that is long, challenging, and labor-intensive.

Understanding nurse educators' experiences and perceptions is key to the development and improvement of diabetes education programs. Future research should explore the challenges educators face and the support systems needed to address them. This can help reduce nurses' workload and enhance the benefits of patient education.

Ethics

Ethics Committee Approval: The research was approved by Çankırı Karatekin University Ethics Committee (decision no.: 26, date: 28.06.2022).

Informed Consent: Informed consent was obtained from all participants before the study.

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Footnotes

Authorship Contributions

Concept: F.İ.Ç., D.A., A.D., Design: F.İ.Ç., D.A., A.D., Data Collection or Processing: F.İ.Ç., D.A., A.D., E.Ü., Analysis or Interpretation: F.İ.Ç., D.A., A.D., E.Ü., Literature Search: F.İ.Ç., D.A., A.D., E.Ü., Writing: F.İ.Ç., D.A., A.D., E.Ü.

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