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Oncology Nurses' Knowledge, Attitudes, Behaviors, and Counseling Experiences About Apitherapy: A Cross-Sectional Research

Onkoloji Hemşirelerinin Apiterapi ile İlgili Bilgi, Tutum, Davranış ve Danışmanlık Deneyimleri: Kesitsel Bir Araştırma

Nazan KILIÇ AKÇA[a], Derya ÇINAR[b], Pınar ZORBA BAHÇELİ[c]

[a]Department of Nursing, İzmir Bakırçay University Faculty of Health Sciences, İzmir, Türkiye
[b]Department of Oncology Nursing, İzmir Bakırçay University Faculty of Health Science, İzmir, Türkiye
[c]Department of Internal Medicine Nursing, İzmir Bakırçay University Faculty of Health Science, İzmir, Türkiye

ABSTRACT Objective: Apitherapy is frequently used by patients as honey, pollen, propolis and bee venom in the treatment of cancer and its symptoms. This study was conducted to determine oncology nurses' knowledge, attitudes, behaviors, and cancer patients counseling experiences about apitherapy. **Material and Methods:** This study was descriptive and cross-sectional. The study was performed with 105 oncology nurses who fully completed the questionnaire and provided feedback. **Results:** Oncology nurses received training on apitherapy (1.9%), had knowledge about apitherapy (30.5%), and got information from the internet (33.3%). It was found that 80.0% of oncology nurses used apitherapy. Nurses indicated that, among apitherapy products, cancer patients used honey and propolis the most, and bee venom the least. When the nurses were asked how apitherapy affected the treatment of patients, they reported that it relieved patients psychologically and increased their adherence to treatment (71.5%), positively affected the prognosis of the disease (11.4%), and improved symptoms (8.6%). Oncology nurses reported that patients with lung (47.6%), breast (46.7%) cancers, and leukemia (46.7%) resorted to apitherapy and also used it to manage anorexia (53.3%), fatigue (48.6%), and mucositis (43.8%). Oncology nurses reported toxic reactions in 10.5% (redness-rash on the skin, increased liver enzymes) of patients using apitherapy products. **Conclusion:** This study demonstrated that knowledge and experience of apitherapy among the future's oncology nurses and patients were limited. Cancer patients must receive counseling and accept responsibility for using apitherapy to manage symptoms and improve their quality of life.

Keywords: Apitherapy; oncology nursing; honey; propolis

ÖZET Amaç: Apiterapi, kanser ve semptomlarının tedavisinde bal, polen, propolis ve arı zehiri olarak hastalar tarafından sıklıkla kullanılmaktadır. Bu araştırma, onkoloji hemşirelerinin apiterapi ile ilgili bilgi, tutum, davranış ve kanser hastalarına apiterapi ile ilgili verdikleri danışmanlık deneyimlerini belirlemek amacıyla yapılmıştır. **Gereç ve Yöntemler:** Bu çalışma tanımlayıcı ve kesitseldi. Çalışma anketi eksiksiz dolduran ve geri bildirimde bulunan 105 onkoloji hemşiresi ile gerçekleştirildi. **Bulgular:** Onkoloji hemşirelerinin apiterapi konusunda eğitim almışlardı (%1,9), apiterapi hakkında bilgi sahibi (%30,5) ve internetten bilgi almış (%33,3). Onkoloji hemşirelerinin %80,0'ının apiterapi kullandığı belirlendi. Hemşireler, apiterapi ürünlerinden kanser hastalarının en çok bal ve propolis, en az ise arı zehiri kullandığını belirtmişlerdir. Hemşirelere apiterapinin hastaların tedavisini nasıl etkilediği sorulduğunda, hastaları psikolojik olarak rahatlattığını ve tedaviye uyumlarını artırdığını (%71,5), hastalığın prognozunu olumlu etkilediğini (%11,4) ve semptomları iyileştirdiğini (%8,6) bildirmişlerdir. Onkoloji hemşireleri, akciğer (%47,6) kanseri, meme (%46,7) kanseri ve lösemili (%46,7) hastaların apiterapiye daha fazla başvurduklarını; özellikle anoreksiya (%53,3), yorgunluk (%48,6) ve mukozit (%43,8) tedavisinde de kullandıklarını bildirmişlerdir. Onkoloji hemşireleri, apiterapi ürünleri kullanan hastaların %10,5'inde toksik reaksiyonlar (deride kırmızı renkli döküntüler, karaciğer enzimlerinde yükselme) geliştiğini bildirmiştir. **Sonuç:** Bu çalışma, geleceğin onkoloji hemşiresi ve hastalarının apiterapi bilgi ve deneyiminin sınırlı olduğunu göstermiştir. Kanser hastaları, semptomları yönetmek ve yaşam kalitelerini iyileştirmek için apiterapi kullanma konusunda danışmanlık almalı ve sorumluluk kabul etmelidir.

Anahtar Kelimeler: Apiterapi; kanser hemşireliği; bal; propolis

Complementary and integrative medicine (CIM) based on culturally specific theories, beliefs, and experiences used to maintain health and prevent and treat diseases are used by all societies.[1,2] Apitherapy, one of these applications, is defined as the use of honey, pollen, propolis, royal jelly, bee bread, and bee venom,

Correspondence: Nazan KILIÇ AKÇA
Department of Nursing, İzmir Bakırçay University Faculty of Health Sciences, İzmir, Türkiye
E-mail: nazan.akca@bakircay.edu.tr

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all of which are honey bee products, in the treatment of certain diseases and symptoms caused by diseases.[2,3]

When we look at the history of apitherapy, we can see that it dates back to ancient Egypt, Greece, and China. Today, apitherapy is found to be used more extensively to treat diseases in Far Eastern countries such as Japan.[2,3] Apitherapy is not commonly used in the treatment of diseases and symptoms in Türkiye. In Türkiye, apitherapy is mainly preferred as a food. Although honey is often used, propolis and pollen have also been used recently.[2,4] The Legislation on Traditional and Complementary Medicine, which has been in force in Türkiye since 2014, has created the necessary legislation for applying apitherapy in the field of health.[5]

Due to its healing properties, apitherapy is gaining more and more attention in treating diseases and symptoms. Science advances have led to a better understanding of the components of bee products, which has resulted in a great interest in their use in medical treatments. It is known that honey, pollen, and propolis reduces inflammation and edema in wounds when used topically, activates the immune system when taken orally, protects against cancer and metastasis, and has antimicrobial and antioxidant properties.[2,3,6-9] Apitherapy is also used by healthy people, patients, and medical personnel in individual health care for these reasons as a simple, convenient, and available traditional method.

In a study conducted in our country with cancer patients, it was found that 40% of patients, 39.7% of patients' relatives, and 64% of nurses used CIM in their daily life.[10] In a study conducted by Kavurmaci and Tan, it was determined that 28.8% of the nurses knew what apitherapy was, and 66.1% of the participants used at least one apitherapy.[11] Another study found that 31.5% of cancer patients used CIM, and 10% used apitherapy products.[12] Apitherapy has been shown to help cancer patients cope with symptoms caused by the disease and treatment process due to its antimicrobial and anti-carcinogenic effects, antioxidant, anti-tumor, anti-aging, neurotropic, and anti-inflammatory properties.[13-18]

Despite the high rate and unconscious use of CIM methods by cancer patients in our country, it was found that there are practical problems related to the lack of information and communication between patients and medical staff about CIM applications. Oncology nurses are health professionals responsible for diagnosing the appropriateness of CIM use, ensuring patient safety, and caring for patients with a holistic approach.[10,19] While collecting patient data, nurses should determine whether to use apitherapy, be able to counsel patients about the benefits, risks, and drug-apitherapy interactions of these procedures, and avoid biased approaches. If oncology nurses learn more about apitherapy, it will help oncology patients use it effectively and safely. This study was conducted to determine oncology nurses' knowledge, attitudes, behaviors, and counseling experiences about apitherapy.

MATERIAL AND METHODS

This study was descriptive and cross-sectional. The study population included 840 nurses who worked in oncology services of hospitals in Türkiye and were registered in the Oncology Nurses Association. The study was performed with 105 oncology nurses who fully completed the questionnaire and provided feedback. The study data: the inclusion criteria were as follows: (i) being 18 years and older (ii) voluntarily participating in the study (iii) working in oncology (iv) being registered in the Oncology Nurses Association. The exclusion criterion was as follows: refusing to participate in the study.

Data collection form: It was prepared by the researcher in accordance with the literature and includes questions about participants' descriptive characteristics, knowledge of apitherapy, attitudes, and patient counseling. The data collection form consisted of 2 parts. The first part was composed of questions regarding the descriptive characteristics of nurses (age, gender, marital status, clinic). The second part was about the nurses' level of knowledge about apitherapy, the source of this information, the apitherapy products they used and the reasons for using these products, the cases of application of apitherapy in patients, their goals, and their experience of a toxic condition.[2,11,13,14,16-18]

The researchers examined reliable online questionnaire creation links. The questionnaire was sent to the nurses via the "surveey.com" URL to protect the confidentiality of the data. Study data were collected with participation from active registered nurses of the association between June and December 2020, shared from the Association of Oncology Nurses website using the online survey link with the URL "surveey.com" created by the researchers after the data collection form was created.

ETHICAL CONSIDERATIONS

The study was approved by the Ethics Committee for Non-interventional Clinical Research at İzmir Bakırçay University in Türkiye (date: April 20, 2020, no: 16) and was conducted in accordance with the Declaration of Helsinki. Furthermore, permission was obtained from the Association of Oncology Nurses to conduct the study. Participants read and confirmed the informed consent text, which explains the purpose and rationale of the study, in the link containing the questionnaire sent online.

DATA ANALYSIS

The SPSS 21.0 (IBM Corp. in Armonk, New York, USA) packaged software was used to analyze the study's data. Descriptive tests (percentage, arithmetic mean, standard deviation, and minimum-maximum) were used for analysis.

LIMITATIONS OF THE STUDY

Only 12.5% of nurses registered in the Oncology Nursing Association in Türkiye were reached. Because of the limited sample size of our study, the results of the study cannot be generalized to all oncology nurses. However, our study is the first and original study on the apitherapy method of oncology nurses, which makes our results valuable.

RESULTS

When the descriptive characteristics of the oncology nurses participating in the study were examined, it was found that 83.8% of them were female, 61.9% had a degree in a health profession, and 66.7% of them worked as clinical nurses. The mean age of the nurses was 33.42±7.69 years, their work duration was 10.33±7.87 years, and their work duration in oncology was 5.38±5.01 years (Table 1).

TABLE 1: Distribution of the descriptive characteristics of oncology nurses.

Descriptive characteristics	X±SD	Minimum-maximum
The average age (year)	33.42±7.69	(22-48)
Working period (year)	10.33±7.87	(1-27)
Oncology working period (year)	5.38±5.01	(1-24)
	n	%
Gender		
Female	88	83.8
Male	17	16.2
Professional educational status		
License	75	71.4
Masters	23	21.9
Doctorate	7	6.7
Professional status		
Clinical nurse	70	66.7
Chemotherapy nurse	19	18.1
Management nurse	11	10.5
Education nurse	5	4.8

SD: Standard deviation.

Knowledge and attitude of oncology nurses towards apitherapy: 1.9% received training on apitherapy, 30.5% knew about apitherapy, 33.3% obtained information on the Internet, and 10.5% acquired their knowledge of apitherapy in professional training. When we assessed oncology nurses' knowledge of apitherapy products, they indicated that they were sufficiently informed about honey (81%), and propolis (33.3%). It was found that 80.0% of oncology nurses used apitherapy, most frequently honey (80.0%), and least frequently bee venom (3.8%) (Table 2).

Oncology nurses reported that they informed the patients they cared for about CIM (53.3%) and apitherapy (32.4%). They indicated oncology patients' reasons for using apitherapy as follows: they believe it is beneficial to health (75.2%), and it treats their disease/symptoms (56.2%). Nurses indicated that, among apitherapy products, cancer patients used the most honey (67.6%) and, the least bee venom (11.4%) and that their patients wanted counseling on these topics. Furthermore, 48.5% of oncology nurses

TABLE 2: Distribution of the descriptive characteristics of oncology nurses.

Knowledge and attitude about apitherapy	n	%
Professional educational about apitherapy		
Yes	2	1.9
No	103	98.1
Information sufficient about apitherapy		
Yes	32	30.5
No	73	69.5
The source of knowledge about apitherapy*		
Internet	35	33.3
Vocational training	11	10.5
Newspaper/magazine	11	10.5
Friend	7	6.7
Family	2	1.9
Enough information about honey		
Yes	82	81.0
No	23	19.0
Enough information about polen		
Yes	34	32.4
No	71	67.6
Enough information about propolis		
Yes	35	33.3
No	70	66.7
Enough information about royal jelly		
Yes	27	25.7
No	78	74.3
Enough information about bee venom		
Yes	8	7.6
No	97	92.4
Nurses' apitherapy usage status		
Yes	84	80.0
No	21	20.0
Nurses' apitherapy product usage status*		
Honey	84	80.0
Polen	41	39.9
Propolis	40	38.1
Royal jelly	19	18.1
Bee venom	4	3.8

*More than one answer was given.

TABLE 3: Oncology nurses' opinions on the use of apitherapy in cancer patients.

	n	%
Giving information about CIM		
Yes	56	53.3
No	49	46.7
Giving information about apitherapy		
Yes	34	32.4
No	71	67.6
Reasons for patients to use apitherapy*		
Thinking that it is beneficial for health	79	75.2
Thinking that he will cure his disease/symptom	59	56.2
Thinking that it has no side effects	43	41.0
Being easily accessible	38	36.2
Being cheap	25	23.8
Answering patients' questions about apitherapy products*		
Honey	74	70.5
Polen	58	55.3
Propolis	53	50.3
Royal jelly	38	36.2
Bee venom	30	28.6
Cancer patients' apitherapy product usage status*		
Honey	71	67.6
Propolis	53	50.5
Polen	51	48.6
Royal jelly	40	38.2
Bee venom	12	11.4
Cancer patients experiencing toxicity*		
Honey	5	6.2
Polen	11	10.5
Propolis	14	13.3
Royal jelly	10	9.6
Bee venom	8	7.6
Oncology nurses' views on apitherapy		
I think psychologically relieve patients	75	71.5
I think that the positive effects of the disease prognosis.	12	11.4
I think it cured the symptoms	9	8.6
I think that worsens symptoms	2	1.9
I think the prognosis negatively	3	2.9
Interaction of apitherapy with stotoxic drugs used by patients*		
I don't think	51	48.5
I think it can have a toxic effect	42	40.0
I think the drug reduces its effect	7	6.7
I think the drug enhances its effect	5	4.8

*More than one answer was given; CIM: Complementary and integrative medicine.

reported that apitherapy products did not interact with medications taken by patients and did not cause toxic effects (Table 3).

Oncology nurses reported that patients with lung cancer (47.6%), breast cancer (46.7%), and leukemia (46.7%) resorted to apitherapy and also used it to manage anorexia (53.3%), fatigue (48.6%), and mucositis (43.8%) and similar symptoms. Oncology nurses reported toxic reactions in 10.5% of patients using apitherapy products, including allergic reactions (3.8%), skin redness and rash (3.8%), and elevated liver enzymes (2.9%) (Table 4).

TABLE 4: Oncology nurses' opinions on the use of apitherapy in cancer patients.

	n	%
Cancer patients most often using apitherapy		
Lungs	50	47.6
Breast	49	46.7
Leukemia	49	46.7
Column	44	41.9
Lymphoma	39	37.1
Bone	29	27.6
Cervix	19	18.1
Brain	13	12.4
Common symptoms of the patients who use apitherapy		
Anorexia	56	53.3
Tiredness	51	48.6
Mucositis	46	43.8
Infection	36	34.3
Stress/anxiety/depression	30	28.6
Anemia	29	27.6
Nausea-vomiting	28	26.7
Pain	14	13.3
Skin lesions	12	11.4
Experiencing toxicity of patients		
Yes	11	10.5
No	94	89.5
Toxics experienced by patients (n=11)		
Allergic reaction	4	3.8
Redness-rash on the skin	4	3.8
Increased liver enzymes	3	2.9

DISCUSSION

Apitherapy is a healing method known to humankind since ancient times.[13] As a result of this study conducted to assess the knowledge, attitudes, behaviors, and counseling status of oncology nurses about apitherapy, it was found that one-third of the nurses knew apitherapy, they obtained this information from the internet with their efforts, and almost all of them had not received any training on apitherapy. According to the findings of a study performed by Kavurmaci and Tan with nurses working in general clinics in our country, nurses' level of knowledge regarding apitherapy was low, and the primary source of information was the internet.[11] Our results are consistent with the literature. When we assessed oncology nurses' knowledge of apitherapy products, it was found that they knew the most about honey, propolis, and pollen and the least about royal jelly or bee venom. It has been reported in the literature that oncology nurses know little about CIM and apitherapy in particular, and that they would like more information on these topics to be of benefit to themselves and their patients.[10,11,20] The majority of nurses obtained their knowledge about CIM and apitherapy from sources such as the internet, newspapers, and magazines, respectively, but the reliability of this information is debatable. As a result, we believe that nurses' fundamental professional training should include apitherapy training to correctly and effectively apply apitherapy and advise their patients and that their knowledge should be kept up to date through continuing education.

Honey is the most consumed apitherapy product among many food groups due to its taste and aroma because it is an energy-rich and carbohydrate-rich food rather than medicine in the world and our country.[7,21] A systematic review found that, after 2000, the use of propolis and pollen increased rapidly in apitherapy and scientific publications in this field.[22] In our study, three-quarters of oncology nurses were found to use at least one apitherapy product, mostly honey and propolis, and at least bee venom. Similar to our study, a study conducted with nurses found that more than half of the nurses used at least one apitherapy product, and the most commonly used products were honey and propolis.[11] In studies conducted with health science students, it was found that more than half of the participants knew more than one apitherapy product and used honey most frequently.[23] A recent systematic review has reported that an average of 51% of cancer patients use CIM. The reasons for using CIM are, respectively, that it has been determined to treat cancer, reduce/treat the side effects of treatment, provide psychological support, and strengthen the immune system.[24] Apitherapy products are recommended for cancer patients to stimulate the immune system, manage symptoms, and support nutrition.[13,15,17] Our study found that more than half of the oncology nurses informed their patients about CIM and one-third of them about apitherapy. Nurses reported using apitherapy

products such as black hive honey, propolis, and pollen during their patients' cancer treatment. When we asked the oncology nurses how apitherapy affected the treatment of their patients, they stated that it relieved the patients psychologically and increased their adherence to therapy, positively influenced the prognosis of the disease, and improved their commitment to therapy symptoms. Similar to our findings, studies conducted with cancer patients found that they mainly used propolis and pollen in addition to honey.[10,25,26] Pollen and propolis are mainly recommended for stimulating the immune system and/or improving the nutrition of cancer patients. Studies investigating the effects of propolis and pollen suggest that they have antioxidant, anti-inflammatory, and anti-cancer effects.[15,25] Our results support the literature.

In our study, oncology nurses reported that patients with lung, breast cancer, and leukemia, used apitherapy to cope with symptoms of anorexia, fatigue, and mucositis. A review of apitherapy found that cancer patients could use honey, propolis, and pollen to manage oral mucositis, skin toxicity, and fatigue with their physician's permission.[15] It is recommended that CIM administered inside the body not be used during active treatment without a physician's approval, as they can reduce the effectiveness of treatment and have toxic effects along with the chemotherapy, radiation, and immunotherapy that cancer patients receive.[26] According to half of the oncology nurses, the apitherapy products used would not interact with medications taken by patients and would not cause toxic effects. It has been noted that oncology nurses lack knowledge on this topic.[27] In our study, toxic reactions occurred in 10.5% of patients treated by oncology nurses or treated with apitherapy, reported as allergic reactions, skin redness, and elevated liver enzymes. Studies have also reported side effects such as diarrhea, rashes, and itching in cancer patients using CIM.[25,26]

CONCLUSION

As a result of the study, it was found that one-third of the oncology nurses had knowledge of apitherapy, and the majority of them had not received any training on the subject. It has been discovered that oncology nurses believe that apitherapy products improve cancer patients' psychosocial well-being and compliance with therapy. Cancer patients must receive counseling and accept responsibility for using apitherapy to manage symptoms and improve their quality of life. There needs to be better evidence of the efficacy and safety of apitherapy product use in cancer patients and therapies. Experimental studies on the use of apitherapy products by cancer patients are recommended.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Design:*** *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Control/Supervision:*** *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Data Collection and/or Processing:*** *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Analysis and/or Interpretation:*** *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Literature Review:*** *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Writing the Article:*** *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Critical Review:*** *Derya Çınar, Pınar Zorba Bahçeli, Nazan Kılıç Akça;* ***References and Fundings:*** *Nazan Kılıç Akça, Derya Çınar, Pınar Zorba Bahçeli;* ***Materials:*** *Pınar Zorba Bahçeli, Derya Çınar, Nazan Kılıç Akça.*

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