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ARAŞTIRMA MAKALESİ / RESEARCH ARTICLE

DETERMINATION OF PEDIATRIC NURSES' KNOWLEDGE, ATTITUDES, AND EXPERIENCES ON APITHERAPY: A CROSS-SECTIONAL MULTICENTER STUDY

Pediatri Hemşirelerinin Apiterapi Hakkındaki Bilgi, Tutum ve Deneyimlerinin Belirlenmesi: Kesitsel Çok Merkezli Bir Çalışma

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ABSTRACT

Honey production and beekeeping practices are more common in the Eastern Black Sea region. This study was conducted to determine the knowledge, experience and attitudes the use of personal and professional apitherapy of pediatric nurses working in the pediatric clinics of the largest hospitals in the Eastern Black Sea region. The study was conducted with 227 pediatric nurses who volunteered to participate in the study, working in six hospitals in Turkey's Eastern Black Sea region. In this study, there is a correlation between gender, having child, clinical experience, and the use of apitherapy. Honey is the most common apitherapeutic product used by nurses both for personal (40,4%) and clinical use (39,1%). Nurses stated that they do not know bee venom, and they know very little about propolis and royal jelly. The nurses listed their positive experiences concerning honey's capacity to "alleviate cough symptoms, treat gastritis, strengthen immune system, effectively heal wounds and burns" and their negative experiences concerning its side effects, such as allergy, dizziness, headache, and itching". It is important that nurses take responsibility for the apitherapy method included in complementary and alternative medicine methods and that nurses can use evidence-based apitherapy methods. It was recommended that nurses should be knowledgeable and careful about the benefits and side effects of apitherapy.

Keywords: Apitherapy, Attitude, Knowledge, Nurses, Pediatric

ÖZET

Bal üretimi ve arıcılık uygulamaları Doğu Karadeniz bölgesinde daha fazla yapılmaktadır. Bu araştırma, Doğu Karadeniz bölgesinde bulunan hasta kapasitesi en büyük hastanelerinin pediatri kliniklerinde çalışan pediatri hemşirelerinin kişisel ve profesyonel apiterapi kullanımına ilişkin bilgi, deneyim ve tutumlarının belirlenmesi amacıyla yapılmıştır. Araştırma, Türkiye'nin Doğu Karadeniz Bölgesi'ndeki altı hastanede çalışan, çalışmaya katılmaya gönüllü 227 pediatri hemşiresi ile gerçekleştirilmiştir. Bu araştırmada, cinsiyet, çocuk sahibi olma ve klinik deneyim ile apiterapi kullanımı arasında korelesyon bulunmaktadır. Bal hemşirelerin hem kişisel (%40,4) hem de klinik kullanımda (%39,1) kullandığı en yaygın apiterapötik bir üründür. Hemşireler arı zehirini bilmediklerini, propolis ve arı sütü hakkında ise çok az şey bildiklerini ifade etmişlerdir. Hemşireler, balın "öksürük semptomlarını hafifletme, gastriti tedavi etme, bağışıklık sistemini güçlendirme, yaraları ve yanıkları etkili bir şekilde iyileştirme" gibi olumlu deneyimlerini ve "alerji, baş dönmesi, baş ağrısı ve kaşıntı" gibi yan etkileriyle ilgili olumsuz

deneyimlerini belirtmişlerdir. Tamamlayıcı ve alternatif tıp yöntemlerinde yer alan apiterapi yöntemi hakkında hemşirelerin sorumluluk alması ve kanıta dayalı apiterapi yöntemlerini kullanabilmeleri oldukça önemlidir. Hemşirelerin apiterapinin yararları ve yan etkileri konusunda bilgili ve dikkatli olmaları önerilmektedir.

Anahtar Kelimeler: Apiterapi, Tutum, Bilgi, Hemşireler, Pediatrik

GENİŞLETİLMİŞ ÖZET

Amaç: Apitherapy (*Apis* arı anlamına gelen Latince bir kelimedir) bal, polen, propolis, arı sütü ve arı zehiri gibi arı ürünlerini hastalık önleme ya da tedavi önerileri için kullanma pratiğidir. Apiterapi ürünleri, yüzyıllardır farklı kültürlerde sağlığı sürdürme ve birçok sağlık problemi için kullanılmaktadır (Cherbuliez, 2013, Özkan and Bancar 2015). Apiterapi ürünlerinin sıklıkla kullanılması nedeniyle, toplumun ihtiyaçlarını karşılamakla sorumlu olan sağlık profesyonellerinin bu konudaki bilgi düzeylerini artırmaları bir zorunluluk haline geldiği düşünülmektedir. Doğu Karadeniz'de bal üretiminin ve arıcılık uygulamalarının fazla olması nedeniyle bu araştırma Doğu Karadeniz bölgesinde bulunan hasta kapasitesi en büyük hastanelerinin pediatri kliniklerinde çalışan pediatri hemşirelerinin kişisel ve profesyonel apiterapi yöntemlerini kullanımına ilişkin bilgi, deneyim ve tutumlarının belirlenmesi amacıyla yapılmıştır.

Yöntem: Araştırmada, kesitsel ve korelasyonel bir tasarım kullanılmıştır. Araştırma, Türkiye'nin Doğu Karadeniz Bölgesi'ndeki Rize Recep Tayyip Erdoğan Üniversitesi Eğitim ve Araştırma Hastanesi, Giresun Üniversitesi Prof.Dr. A. İlhan Özdemir Eğitim ve Araştırma Hastanesi, Karadeniz Teknik Üniversitesi Tıp Fakültesi Farabi Hastanesi, Ordu Üniversitesi Eğitim ve Araştırma Hastanesi, Bayburt Devlet Hastanesi, Gümüşhane Devlet Hastanesi ve Artvin Devlet Hastanesi'nde gerçekleştirilmiştir. Veriler, Temmuz 2019-Mart 2020 tarihleri arasında araştırmacılar tarafından geliştirilen bir anket formu kullanılarak toplanmıştır. Çalışmaya katılan hemşirelerden bir hafta içerisinde anketi iade etmeleri ve diğer hemşirelerle anket hakkında görüşmemeleri istenilmiştir. Anket sırasında bölgedeki hastanelerde 251 çalışan hemşire bulunmaktadır. Araştırmanın örneklemini ise 227 hemşire (%90) oluşturmuştur.

Bulgular: Cinsiyet, çocuk sahibi olma ve klinik deneyim ile apiterapi kullanımı arasında korelesyon bulunmaktadır. Apiterapi yönteminin kişisel kullanma durumunun hemşirelerin cinsiyetinden etkilendiğini, cinsiyeti kadın olan hemşirelerin önemli düzeyde kişisel olarak apiterapi yöntemini kullandığı saptamıştır ($p<0.01$). Çocuğu olan pediatri hemşirelerinin %62,2'si kişisel olarak apiterapi yöntemini kullanırken, %65'i profesyonel olarak apiterapi yöntemini kullanmaktadır. Apiterapi yönteminin kişisel kullanımı ile çocuğu olma değişkeni arasında istatistiksel olarak anlamlı bir fark bulunmaktadır ($p<0.05$). 6-10 yıl klinik deneyime sahip pediatri hemşirelerinin kişisel olarak apiterapi yöntemini daha fazla kullandığını ve bu durumunda istatistiksel olarak anlamlı olduğu bulunmuştur ($p<0.05$). Bal, hemşirelerin hem kişisel (%40,4) hem de klinik ortamda (%39,1) kullandığı en yaygın apiterapötik bir üründür. Hemşireler arı zehirini bilmediklerini, propolis ve arı sütü hakkında ise çok az şey bildiklerini ifade etmişlerdir. Pediatri hemşirelerinin %75,3'ü solunum yolu enfeksiyonlarını önlemek, %49,3'ü bağışıklık sistemini güçlendirmek, %40,1'i anemiyi önlemek ve %37'si zihinsel aktiviteyi artırmak için apiterapi ürünlerinden biri olan balı kişisel olarak kullanmaktadır. Pediatri hemşireleri apiterapi ürünlerinden balı; %83,7'si solunum yolu enfeksiyonlarını önlemek, %69,8'i bağışıklık sistemini güçlendirmek, %18,6'sı anemiyi önlemek ve %11,6'sı zihinsel aktiviteyi artırmak için klinikte profesyonel olarak kullanmaktadır. Hemşireler, balın "öksürük semptomlarını hafifletme, gastriti tedavi etme, bağışıklık sistemini güçlendirme, yaraları ve yanıkları etkili bir şekilde iyileştirme" gibi olumlu deneyimlerini ve "alerji, baş dönmesi, baş ağrısı ve kaşıntı" gibi yan etkileriyle ilgili olumsuz deneyimlerini belirtmişlerdir.

Sonuç: Türkiye'de Apiterapötik merkezlerin ve yönetmeliklerin varlığına rağmen, az sayıda pediatri hemşiresi apiterapi yöntemlerinin farkındadır. Tamamlayıcı ve alternatif tıp yöntemlerinde yer alan apiterapi yöntemi hakkında hemşirelerin sorumluluk alması ve kanıta dayalı apiterapi yöntemlerini kullanabilmeleri oldukça önemlidir. Hemşirelerin apiterapinin yararları ve yan etkileri konusunda bilgili ve dikkatli olmaları önerilmektedir.

INTRODUCTION

An alternative medicine branch, called apitherapy, has developed in recent years, offering treatments based on honey and the other bee products against many diseases (Bogdanov et al., 2008). Apitherapy is *the science (and art) of the use of honey, pollen, propolis, royal jelly and bee venom"* (Bogdanov et al., 2008, Fratellone et al., 2016). In addition, apitherapy are used to help protect health (Cherbuliez, 2013). In most ancient cultures, honey and other bee products were used for both nutritional and medical purposes. Therefore, it can be said that apitherapeutic products are used for a long time as a nutritional supplement in addition to its medical use. The favorable climate conditions and abundance of honey plants essential to apiculture and apicultural products are notable advantages of Turkey. Turkey's hosting 75% of the honey plants species and types in the world is considered to signify its remarkably diverse nature (Semerci, 2017). According to the General Directorate of Agricultural Research and Policies (2019), Turkey in the second with 115 thousand tons, and Argentine in the third with 76 thousand tons (General Directorate of Agricultural Research and Policies, 2019).

Apitherapy has been described in Turkey under *the Decree-Law, which was enacted by the Ministry of Health on October 27, 2014"* (Resmi Gazete, 27 October 2014). In Turkey, the use of apitherapeutic products for the treatment of diseases is not common (Bölüktepe and Yilmaz 2008, Tunca et al., 2015). The earliest information on the use of honey in children's nutrition dates back to about the ninth century. In a study, 29% of parents with children under the age of five spontaneously give their children honey, which is a product of apitherapy, without a disease (Kumar et al., 2011). In a randomized controlled experimental study, honey, which is a product of apitherapy, has been found to reduce upper respiratory tract infections, cough and regulate children's sleep comfort (Cohen et al., 2012). Although some types of honey are innocuous to bees, they can be toxic to humans (especially under 12 months of age) (Cohen et al., 2012; Cherbuliez, 2013, Godart et al., 2014). For this reason, it is important to use honey in children very carefully and to inform parents of its potential harms. In this regard, it is thought that pediatric nurses, who are in constant communication with parents, have a great role.

Parents often prefer apitherapeutic products, especially for their children, as they think they are traditional, accessible, natural, safer, and more effective than medicines (Özkan and Bancar 2015). Pharmacological agents (dextromethorphan and codeine) used in the treatment of cough, especially in young children, can cause life-threatening side effects with serious potential. Therefore, their use in young children is not recommended and other alternatives are needed for the prevention or treatment of upper respiratory infections (Shadkam et al. 2010). Royal jelly, as another apitherapeutic product, is a honeybee product that contains basic cell elements (Park et al. 2011). Especially pollens are known for their antiseptic, diuretic, menstrual, laxative, myocardial, and sedative effects (Cherbuliez, 2013). Bee venom treatment is an apitherapy method that gives the opportunity to observe various effects in each sting and has effects in reducing pain (Cherbuliez, 2013). Despite the effectiveness of the other apitherapeutic products, these products are not used frequently and information on these methods is insufficient in Turkey (Kavurmaci and Tan 2019). The apitherapeutic product most frequently used by nurses using apitherapeutic products is honey in Turkey. It has been found that the other apitherapeutic products used by nurses are pollen, propolis, and royal jelly. On the other hand, bee bread and bee venom are not used by nurses (Kavurmaci and Tan 2019).

Due to the frequent use of apitherapeutic products, it is thought that health professionals who are responsible for meeting the needs of the society should increase their level of knowledge on this issue. Physicians who are certified in Turkey are allowed to practice apitherapy. However, nurses have not been given legal responsibility and enforcement permission in this regard (Resmi Gazete, 27 October 2014). Although pediatric nurses are not given a legal responsibility, the level of knowledge and attitudes of nurses are very important since they are in constant communication with child patients and their parent. For this reason, together with the changing roles of pediatric nursing, there is a great responsibility for nurses who provide 24-hour care to patients, work focused on care, and apply evidence-based methods. Nursing plays a notable role in complementary treatment practices as an independent, research-based field in health care (Khorshid and Yapucu 2005). Nevertheless, in a study carried out in Turkey, pediatric nurses have

expressed that health care professionals are not responsible about these products (Cırık et al 2017). In another study, almost half (40%) of the primary healthcare practitioners have mentioned that honey is used for children, but few perceive it as a treatment. In addition, some practitioners have stated that they have difficulty communicating the risks of these methods to parents (Kumar et al., 2011). It is more important than ever to train pediatric nurses for the use of apitherapy in children, raise awareness of, promote the use of evidence-based practices, and provide holistic approaches with other team members. However, there has been no research on pediatric nurses' knowledge of and attitudes to apitherapy and their experience of apitherapy. Pediatric nurses' knowledge, attitudes and experiences may affect the level of children's exposure to apitherapy. The aim of this study was to define the knowledge, experiences and attitudes of pediatric nurses working at multicenter hospitals related to personal/professional use of apitherapy.

MATERIAL and METHODS

Research Design

Cross-sectional and descriptive design was used in this study. We conducted descriptive correlation analyses to investigate the relationships among nurses' socio-demographic variables and use of apitherapy.

In the research, pediatric nurses;

1. What are the knowledge levels and attitudes regarding apitherapy methods?

2. What are the personnel and professional uses of apitherapy methods?

3. What are the personnel and professional experiences of apitherapy methods?

4. Which variables affect the use of apitherapy methods? Questions were evaluated.

Setting and Participants

Honey production and beekeeping due to more research in the Eastern Black Sea Region of Turkey are widely practiced in this region. In Turkey, the region occupies the first place in honey production, accounting for 21% of the national production. The region's geographical location, climate conditions, and highly diverse vegetation make it favorable for apicultural activities. There are seven provinces in the Eastern Black Sea Region, namely Ordu, Giresun, Trabzon, Rize, Gümüşhane, Bayburt and Artvin, known for apiculture.

The pediatric nurses working at the hospitals with the highest patient/bed capacity in these provinces constitute the population of the study. All the nurses who volunteered to participate in the study were included in the sample of the study without being subjected to a sample selection method. The necessary institution permit could not be obtained from one of the seven hospitals. Therefore, the multicenter study was carried out in six. The population of the study consists of 251 pediatric nurses working in six hospitals. The study was conducted with 227 (90%) pediatric nurses who agreed to participate in the study between July 2019 and March 2020.

Data Collection Tools

After detailed literature review (Bölüktepe and Yilmaz 2008; Kumar et al., 2011; Cohen et al., 2012; Cherbuliez, 2013; Özkan and Bancar 2015; Cırık et al 2017, Kavurmaci et al. 2019) it was decided to perform a new questionnaire. The questionnaire consisted of three parts and a total of 21 items. The first section included the items about descriptive characteristics of the nurses (gender, age, educational status, having children, identity of clinic in which the nurse worked, and working time of work unit). The second section included the items regarding the nurses' level of knowledge about apitherapy, their knowledge source, apitherapeutic products used by them (for them, their family members, and their patients), and their intended use of these products. In addition, there was a table with 15 statements in this section. In this table, the nurses were asked to respond to the items about apitherapeutic products and their application as "I agree", "I am neutral" and "I disagree". In the third part, they were also asked to evaluate whether the methods they used were "effective" or "ineffective" based on their experiences. First of all, the questionnaire was finalized by making a pilot application. After making the necessary explanation about the research, the questionnaire was distributed to the nurses by the researchers and asked to fill it in a week. In the process of filling the questionnaire, the nurses were asked not to communicate with each other about the questionnaire in this process in order not to affect each other.

Statistical Analysis

The data were analyzed using the Statistical Package for the Social Sciences software for Windows (version 25.0). The descriptive statistics were produced using totals and percentages for the categorical variables. The nominal data were evaluated in view of frequencies and percentages. Pearson's chi square test was performed to determine the correlation between the personal and professional use of apitherapy and socio-demographic characteristics. Binary logistic regression analysis was conducted to create a prediction model based on the cause-effect relationship between the socio-demographic characteristics of pediatric nurses and their personal apitherapy method use cases. In the logistic model in this study, the independent variables are he socio-demographic characteristics of pediatric nurses. The predicted dependent variable has two categories: (0) Using the personal apitherapy method, (1) not using the personal apitherapy method. Variables that differ significantly from the socio-demographic characteristics of pediatric nurses according to the use and non-use of personal apitherapy method were included in the model as a predictor variable. The p value was set at .05, the confidence intervals (CIs) surrounding odd ratios (ORs) of 95% were reported.

Ethical Considerations

The study was approved by the respective hospitals and a university ethics committee (Date: 2019, Number: 95674917-108.99-E.25355). The participants were also assured of their right to refuse participation and that all the information obtained would be used for research purposes only. The study was carried out in accordance with the Helsinki Declaration Principles.

RESULTS

Socio-Demographic Characteristics of Pediatric Nurses According to Apitherapy Use

The relationship between the socio-demographic characteristics of the pediatric nurses and the personal and professional use of apitherapy methods is given in Table 1.

When the pediatric nurses participating in the study were examined according to age variable, it was found that 53,6% of the pediatric nurses in the 30-39 age group used the apitherapy method personally, while 53,5% of the nurses in the same age group used the apitherapy method in the professional. It was also revealed that the pediatric nurses of 30-39 years of age personally used apitherapy more frequently than the other age groups and that this difference was considerably significant ($p<0.01$). However, no statistically significant difference was found between professional use of apitherapy method and age ($p>0.05$). When the pediatric nurses participating in the study were examined by gender variable, 87.6% of female pediatric nurses personally use the apitherapy method, while 90,7% of the same sex nurses use the apitherapy method professionally. Moreover, the female nurses were found to resort to apitherapy methods more frequently than the male ones, which refers to a statistically significant difference ($p<0.05$). There is no statistically significant difference between professional use of the apitherapy method and gender ($X^2=1.007$, $p=0.316$).

When the personal and professional use of apitherapy method is compared according to the educational status of pediatric nurses; 58,9% of the nurses with undergraduate and above education use apitherapy method personally and 55,8% professionally. There is no statistically significant difference between educational status and personal and professional use of apitherapy [($X^2=.123$, $p=0.940$), ($X^2=.237$, $p= 0.888$)]. The higher educational levels of the nurses were revealed to signify increased use of apitherapy. When pediatric nurses are examined according to the variable of having a child, 62,2% of the nurses with children use the apitherapy method personally, while 65% use the apitherapy method professionally. It was found that the nurses with children personally adopted apitherapy methods more frequently and this difference was calculated to be considerably statistically significant ($p<0.01$). However, there was no statistically significant difference between professional use of apitherapy and having a child ($p>0.05$).

Table 1: Socio-demographic characteristics of pediatric nurses according to personal and professional apitherapy use

Variable	Personal use* Used n(%)	Personal use* Not used n(%)	χ2 p	Professional use** Used n(%)	Professional use** Not used n(%)	χ2 p
Age, years						
18-29	65 (%31.1)	14 (%77.8)	15.920	14 (%32.6)	65 (%35.3)	.173
30-39	112 (%53.6)	3 (%16.7)	p<0.01	23 (%53.5)	92 (%50.0)	0.917
40-59	32 (%15.3)	1 (%5.6)		6 (%14.0)	27 (%14.7)	
Gender						
Female	183 (%87.6)	12 (%66.7)	5.974	39 (%90.7)	156 (%84.8)	1.007
Male	26 (%12.4)	6 (%33.3)	0.015	4 (%9.3)	28 (%15.2)	0.316
Educational attainment						
Vocational school of health	44 (%21.1)	4 (%22.2)	.123	10 (%23.3)	38 (%20.7)	.237
Associate degree	42 (%20.0)	3 (%16.7)	0.940	9 (%20.9)	36 (%19.6)	0.888
Bachelor's degree and Postgraduate qualification	123 (%58.9)	11 (%61.1)		24 (%55.8)	110 (%59.8)	
Having children						
Yes	130 (%62.2)	5 (%27.8)	8.148	28 (%65.1)	107 (%58.2)	.701
No	79 (%37.8)	13 (%72.2)	p<0.01	15 (%34.9)	77 (%41.8)	0.402
Service						
Emergency	34 (%16.3)	9 (%50.0)	3.265	22 (%51.2)	73 (%39.7)	3.042
Intensive Care Unit	89 (%42.6)	5 (%27.8)	0.195	4 (%9.3)	35 (%19.0)	0.218
Pediatric service	86 (%41.1)	4 (%22.2)		17 (%39.5)	76 (%41.3)	
Experience as a nurse, years						
1-5	75 (%35.9)	13 (%72.2)	9.537	20 (%46.5)	68 (%37.0)	1.730
6-10	83 (%39.7)	4 (%22.2)	p<0.01	13 (%30.2)	74 (%40.2)	0.421
11 ≥	51 (%24.4)	1 (%5.6)		10 (%23.3)	42 (%22.8)	
Knowing about apitherapy methods						
Honey	209 (%40.4)	18 (%43.9)	1.534	43 (%39.1)	184 (%41.1)	2.498
Pollen	178 (%34.4)	15 (%36.6)	0.821	36 (%32.7)	157 (%35.0)	0.645
Propolis	107 (%20.7)	7 (%17.1)		24 (%21.8)	90 (%20.1)	
Royal jelly	23 (%4.4)	1 (%2.4)		7 (%6.4)	17 (%3.8)	
Learning about apitherapy method						
Family	160 (%27.1)	17 (%34.7)	6.801	33 (%25.6)	144 (%28.2)	7.549
Doctor	161 (%27.3)	15 (%30.6)	0.236	37 (%28.7)	139 (%27.3)	0.183
Nurse	114 (%19.3)	8 (%16.3)		26 (%20.2)	96 (%18.8)	
Television	84 (%14.2)	7 (%14.3)		18 (%14.0)	73 (%14.3)	
Internet	71 (%12.0)	2 (%41)		15 (%11.6)	58 (%11.4)	

Variable	Personal use* Used n(%)	Personal use* Not used n(%)	χ2 p	Professional use** Used n(%)	Professional use** Not used n(%)	χ2 p
Age, years						
18-29	65(%31,1)	14(%77,8)	15,920	14(%32,6)	65(%35,3)	.173
30-39	112(%53,6)	3(%16,7)	p<0.01	23(%53,5)	92(%50,0)	0.917
40-59	32(%15,3)	1(%5,6)		6(%14,0)	27(%14,7)	
Gender						
Female	183(%87,6)	12(%66,7)	5,974	39(%90,7)	156(%84,8)	1.007
Male	26(%12,4)	6(%33,3)	0,015	4(%9,3)	28(%15,2)	0,316
Educational attainment						

Vocational school of health	44(%21,1)	4(%22,2)	.123 0.940	10(%23,3)	38(%20,7)	.237 0,888
Associate degree	42(%,20,0)	3(%16,7)		9(%20,9)	36(%19,6)	
Bachelor's degree and Postgraduate qualification	123(% 58,9)	11(%61,1)		24(%55,8)	110(%59,8)	
Having children						
Yes	130(%62,2)	5(%27,8)	8.148 p<0.01	28(%65,1)	107(%58,2)	.701 0.402
No	79(%37,8)	13(%72,2)		15(%34,9)	77(%41,8)	
Service						
Emergency	34(%16,3)	9(%50,0)	3.265 0,195	22(%51,2)	73(%39,7)	3.042 0,218
Intensive Care Unit	89(%42,6)	5(%27,8)		4(%9,3)	35(%19,0)	
Pediatric service	86(%41,1)	4(%22,2)		17(%39,5)	76(%41,3)	
Experience as a nurse, years						
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Royal jelly	23(%4,4)	1(%2,4)		7(%6,4)	17(%3,8)	
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Family	160(%27,1)	17(%34,7)	6.801 0,236	33(%25,6)	144(%28,2)	7.549 0,183
Doctor	161(%27,3)	15(%30,6)		37(%28,7)	139(%27,3)	
Nurse	114(%19,3)	8(%16,3)		26(%20,2)	96(%18,8)	
Television	84(%14,2)	7(%14,3)		18(%14,0)	73(%14,3)	
Internet	71(%12,0)	2(%4,1)		15(%11,6)	58(%11,4)	

* **Personal use:** It includes nurses themselves and their family members.

** **Professional use:** It covers the clinics and patients of the nurses.

When the personal and professional use of apitherapy method is compared according to the service status of the pediatric nurses; ıt was determined that 42.6% of the nurses who used the apitherapy method personally worked in the intensive care unit, and 51.2% of the nurses using professional work in the emergency department. There is no statistically significant difference between the service worked and the use of apitherapy method personally and professionally [(X^2=3.265, p=0.195), (X^2=3.042, p=0.218)]. When the pediatric nurses are examined according to the working time variable, 39.7% of the nurses working for 6-10 years use the apitherapy method personally, while 46,5% of the nurses working for 1-5 years use the apitherapy method professionally. However, there was no statistically significant difference between the professional use of the apitherapy method and the duration of study (p> 0.05). Besides, the pediatric nurses with clinical experience of 6-10 years were revealed to personally employ apitherapy methods more frequently, which referred to a considerably statistically significant difference (p<0.01). When examined by pediatric nurses' knowledge of apitherapy products; 40,4% of the nurses who use the apitherapy method personally know honey, 34.4% pollen, 20.7% propolis and 4.4% royal jelly. 39.1% of the nurses who use apitherapy professionally know honey, 32.7% pollen, 21.8% propolis and 6.4% royal jelly as apitherapy product. None were observed to know about bee venom as an apitherapeutic product. The participants knowing of honey as an apitherapeutic product were revealed to use apitherapy method more frequently. There is no statistically significant difference between knowing apitherapy products and using apitherapy method personally and professionally [(X^2=1.534, p=0.821), (X^2=2.498, p=0.645)].

It was understood that the pediatric nurses personally and professionally using apitherapy methods learned about these methods from doctors, their family members, nurses, television, and internet. There is no statistically significant difference between learning the apitherapy method and using the apitherapy method personally and professionally [(X^2=6.801, p=0.236), (X^2=7.549, p=0.183)]. The data showed that 91,6% of the pediatric nurses did not receive training on apitherapy methods, whereas 81,5% wished to be trained.

Factors Affecting The Use of Personal Apitherapy Method

The logistic regression analysis findings made to determine the factors affecting the use of personal apitherapy method are shown in Table 2.

Table 2: Factors affecting the use of personal apitherapy method

Variable	Using Personal Apitherapy Method OR	95% CI
Age, years		
18-29	3.42*	0.11-106.22
30-39	0.38*	0.02-7.01
40-59	Referent	
Gender		
Female	0.25*	0.07-0.87
Male	Referent	
Having children		
Yes	0.58*	0.14-2.30
No	Referent	
Experience as a nurse, years	0.97*	0.78-2.30

* p> 0.05

As a result of the analysis, it was found that the binary logistic regression model established was statistically significant (-2 log L=96.70, X^2=24.11, p<0.05). The Hosmer-Lemeshow test findings indicate that the model has an acceptable fit and the model-data fit is sufficient (X^2=15.335, p>0.05). The Nagelkerke R^2 value is shows that all of the independent variables explain 24% of the variance in the dependent variable. When the classification table is examined; It is seen that the total correct classification rate for the intended model is 92,5%. Whereas the logistic regression model was statistically significant, excluding the socio-demographic characteristics of the pediatric nurses from the logistic regression model did not cause a significant change. This implies that the predictor variables were highly correlated. The fact that the initial values of confidence intervals are below 1 and do not show statistical significance can be shown as evidence. This finding shows that the socio-demographic characteristics of the pediatric nurses do not have a significant predictive power in predicting whether to use the personal apitherapy method.

The Reasons of Pediatric Nurses to Use Apitherapy Methods

Among the reasons why the pediatric nurses personally and professionally use apitherapy methods are to prevent respiratory tract infection, to increase mental activity, to strengthen the immune system, and to prevent anemia. Moreover, to strengthen immune system, to prevent anemia, and to promote mental activity were found to be among the reasons why the nurses used propolis for personal purposes (Table 3).

The pediatric nurses were observed not to use propolis in their respective clinics. Furthermore, it was revealed that the pediatric nurses did not use royal jelly, pollen grain, bee bread, and bee venom for personal and professional purposes.

Table 3: The reasons of pediatric nurses to use apitherapy methods

Reasons	Personal use n(%)	Professional use n(%)
Honey		
Preventing respiratory infections / Cough	171 (%75.3)	36 (%83.7)
Strengthening the immune system	112 (%49.3)	30 (%69.8)
Preventing anemia	91 (%40.1)	8 (%18.6)
Increasing mental activity	84 (%37.0)	5 (%11.6)
Propolis		
Strengthening the immune system	23 (%10.1)	-
Preventing anemia	16 (%7.0)	-
Increasing mental activity	11 (%4.8)	-

Pediatric Nurses' Knowledge on Apitherapy Methods

The data on the pediatric nurses' knowledge regarding the apitherapy methods are presented in Table 4.

78,9%, 65,2%, 63%, and 23,8% of the pediatric nurses were found to present the right answer by agreeing with "In Turkey, apitherapeutic products, such as honey, pollen, and propolis, are available at drug stores", "If used in the recommended doses, apitherapy exhibits fewer counter indications than medical drugs/therapies", "Intake of honey under a certain age is known to be harmful", and "Apitherapy is described in the Turkish regulations", respectively.

Moreover, 61,2%, 54,2%, and 35,2% gave the wrong answer by agreeing with "There are apitherapy centers in Turkey", "It is known that all apicultural products have positive effects on healing wounds and burns", and "Nurses are certified to practice apitherapy at medical centers", respectively.

Personal and Professional Experiences of Pediatric Nurses Regarding Apitherapy Methods

183 pediatric nurses personally using apitherapy methods stated that they benefited from them. 56 of these nurses expressed their experiences as follows: "I used honey to ameliorate diarrhea in my child" (n=4), "I applied honey to my face, and the acnes decreased in number" (n=6), "I used honey for my gastritis and it was relieved. I feel much better" (n=4), "I strengthened my and my child's immune system by using honey" (n=10), "I used honey for such conditions as cough and cold and I easily recovered from them" (n=12), "Honey reduced the occurrence of respiratory system diseases in my child" (n=12), "Honey helped my child put on weight" (n=8).

34,9% (15) of the nurses professionally applying apitherapy in their respective clinics stated that they benefited from apitherapy. 14 commented as follows: "I used honey in the occurrence of oral mucositis in cancer patients and it helped ameliorate and treat the mucositis (n=8) and "I used it to treat wounds and burns and it was quite effective" (n=6). 71,4% of the pediatric nurses recommended apitherapy method for personal and professional use.

22 pediatric nurses personally using apitherapy methods remarked that they did not observe positive effects. 14 of them commented as follows: "My child was one-year-old. It caused rashes after he/she ate honey and started to itch" (n=5), "One day I ate too much honey, which gave me dizziness and headache" (n=2), "I gave propolis to my two-year-old and he/she developed allergy and suffered from rashes" (n=2), and "I used honey to treat cold in my child and it proved no good" (n=5).

Table 4: Knowledge of pediatric nurses on apitherapy methods

	Item	Agree n(%)	Neutral n(%)	Disagree n(%)
1.	There are apitherapy centers in Turkey. (T)*	41 (%18.1)	47 (%20.7)	139 (%61.2)
2.	Apitherapy is described in the Turkish regulations. (T)	54 (%23.8)	80 (%35.2)	93 (%41.0)
3.	Nurses are certified to practice apitherapy at medical centers. (F)**	80 (%35.2)	78 (%34.4)	69 (%30.4)
4.	The use of honey has been introduced into the modern medicine. (T)	54 (%23.8)	44 (%19.4)	129 (%56.8)
5.	The recommended daily intake of honey is 0.8-1.2 grams per liter for adults and children. (T)	84 (%37.0)	54 (%23.8)	89 (%39.2)
6.	The limited use of honey for the pediatric population is known to result from botulism, honey intoxication, and allergic reactions. (T)	106 (%46.7)	91 (%40.1)	30 (%13.2)
7.	Royal jelly is used as an antibacterial and antifungal agent. (F)	91 (%40.1)	54 (%23.8)	82 (%36.1)
8.	Bee venom is administered intradermally and subcutaneously. (T)	68 (%30.0)	47 (%20.7)	112 (%49.3)
9.	Bee venom is used to treat musculoskeletal pains. (T)	34 (%15.0)	52 (%22.9)	141 (%62.1)
10.	It is known that all apicultural products have positive effects on healing wounds and burns. (F)	123 (%54.2)	51 (%22.5)	53 (%23.3)
11.	In Turkey, apitherapeutic products, such as honey, pollen, and propolis, are available at drug stores (T)	179 (%78.9)	32 (%14.1)	16 (%7.0)
12.	In Turkey, apitherapeutic products, such as royal jelly, bee poison, and bee bread, are available at drug stores. (F)	76 (%33.5)	107 (%47.1)	44 (%19.4)
13.	At pediatric clinics, parents should be encouraged to use apitherapeutic products. (F)	126 (%55.5)	55 (%24.2)	46 (%20.3)
14.	If used in the recommended doses, apitherapy exhibits fewer counter indications than medical drugs/therapies. (T)	148 (%65.2)	41 (%18.1)	38 (%16.7)
15.	Intake of honey under a certain age is known to be harmful. (T)	143 (%63.0)	37 (%16.3)	47 (%20.7)

***T:** True

****F:** False

DISCUSSION

This study investigated what the pediatric nurses in the Eastern Black Sea Region, which is listed, in the first place of honey production and consumption, know about apitherapy methods, whether and how they use them, and what their attitudes and experiences concerning these methods are.

Honey is the best known bee product among apitherapy products (Marangoz and Dolu 2019). Turkey is a study of bee products in the consumer, it was found that 39,6% of participants consume honey on a monthly basis between 0-500 grams. In addition, when asked which product is the first to associate with bee products in the study, 64% of the respondents stated only honey (Tunca et al., 2015).

Honey is the most common apitherapeutic product personally and professionally used by the nurses. A study on consumers of apitherapeutic products has revealed the most commonly known product to be honey (99,4%) (Bölüktepe and Yilmaz 2008). In a study conducted with consumers, they stated that among apitherapy products, the bee products they know best are “Petek Honey”, “Filtered Honey” and “Polen”, while the least known bee product is “Bee Venom” (Marangoz and Dolu 2019). In a study, almost half (40%) of primary healthcare practitioners have mentioned the use of honey for children (Kumar et al., 2011). In another study, the apitherapeutic product most commonly used by nurses has been detected to be honey (Kavurmaci and Tan 2019). Honey is one of the most commonly used traditional complementary approaches, which is similarly perceived as a ‘natural’, ‘safe’ and ‘traditional’ remedy (Kumar et al., 2011; Godart et al., 2014; Özkan and Bancar 2015; Münstedt et al., 2019). Honey is very important because it has high nutritive components and is a sweet food ingredient (Pasupuleti et al., 2017). Another reason for the predominant use of honey may be the fact that the other apitherapeutic products have come to be known and used in Turkey over the last years. Additionally, the structure of Turkish society based on culture and tradition may have caused mothers to prefer solutions commonly used in Turkish society over Western medicine (Sener and Karaca 2020). Since honey contains numerous nutritional and biological effects (antimicrobial, antioxidant, antiviral, antiparasitic, antiinflammatory, antimutagenic, anticancer and immunosuppressive activities), it is especially important for children (Bogdanov et al., 2008). As found in the present study, among the reasons why the pediatric nurses personally and professionally used apitherapy methods were to prevent respiratory tract infection, to strengthen the immune system, and to prevent anemia. Honey remain important as a healing product, e.g. to prevent radiation induced mucositis (Song et al., 2012) and to heal wounds in bacteria-contaminated full-thickness (Sukur et al., 2011). The findings by Badet and Quero (2011) suggest that manuka honey might be able to reduce oral pathogens within dental plaque (Badet and Quero 2011). Since honey, one of the bee products, is used as a medicine against various diseases outside of human nutrition, it has gained an increasing value (Albayrak and Albayrak, 2008). The nurses herein positively elaborated that honey “ameliorates diarrhea and coughs, reduces acnes, treats gastritis and respiratory system diseases, strengthens immune system, and helps put on weight”. Further, some of the nurses shared their positive experiences pertaining to honey’s “help to treat and prevent oral mucositis and effectiveness in healing wounds and burns”. Contrary to these positive attitudes and experiences, 22 pediatric nurses listed such negative experiences as “allergy, dizziness, headache, itching, and rashes”. Despite honey’s popularity, honey should not be fed to infants because of botulism risk (Kumar et al., 2011; Özkan and Bancar 2015). Almost half the pediatric nurses in this study did not know about the harms associated with honey intake under one year of age. In addition, almost half is not knowledgeable about the recommended doses of apitherapeutic products. Therefore, its use should be acknowledged in order to investigate potential adverse effects (Kumar et al., 2011). Although honey obtained from various plant species generally gains importance as a health and energy source in human body due to its content (Doğaroğlu, 2009; Alvarez-Suarez et al., 2013), it is extremely important to use apitherapy very carefully.

The nurses in the current study did not know of bee venom and knew very little about propolis and royal jelly. It was also found that the pediatric nurses did not use propolis, royal jelly, pollen, bee bread, and bee venom for clinical purposes. A study has revealed that bee venom (16,3%) and propolis (8,9%) are less commonly known than the other apitherapeutic products (Bölüktepe and Yılmaz 2008). In another study, they found that among Apitherapy products, honey, pollen, beeswax and royal jelly are the most known, while propolis and bee venom are the least known (Niyaz and Demirbaş, 2017). In a study about apitherapy, 78% of the consumers stated that they did not know heard of propolis, 76,7% of royal jelly, 56,8% of bee venom (Tunca et al., 2015). Although propolis and royal jelly have important benefits on human health, it should be used with caution to allergen effects and daily doses (Pasupuleti et al., 2017). Bee venom is a product used traditionally in the treatment of back pain, skin diseases and rheumatism, anti-carcinogenic activity against prostate, and liver and breast cancer (Park et al., 2011; Jo et al., 2012). However, bee venom treatment should be employed very carefully due to its allergic reaction. Similarly, although pollen does not have a toxic effect even in long-term application and high dosage, it may cause diarrhea and gastric pain in the first uses (Cherbuliez, 2013). In a randomized controlled

study, it was found that the use of royal jelly developed erythropoiesis, glucose tolerance, and mental health (Morita et al., 2012). Despite the positive effects of bee venom, pollen, and royal jelly products, they are apitherapeutic products that should be used with caution. Although every apitherapy method exhibits varying degrees of efficacy, more than half the nurses in this research claimed that "all apicultural products exert positive effects on recovery from wounds and burns". Therefore, pediatric nurses must reinforce the useful apitherapy approaches. Especially, informing the public about bee products other than honey and the health benefits of these products seems to be important in terms of bee economy and health (Niyaz and Demirbaş, 2017). Health professionals, particularly nurses, have a great role and responsibility in informing the public.

Another reason why the pediatric nurses do not employ apitherapy methods may be the absence of legal responsibilities. Although nurses are not legally held responsible for the administration of apitherapy methods, 35,2% of the participating nurses thought of being certified. The nurses' being knowledgeable about the apitherapy methods although they are not legally responsible is greatly important considering that they are responsible for the care of pediatric patients. It was revealed that the pediatric nurses learned about the apitherapy methods from doctors, their families, nurses, television, and the internet and 81,5% wished to receive training on these methods. Sener and Karaca (2020) have determined that the information sources affecting complementary and alternative medicine use were family members, and friends/neighbors (Sener and Karaca 2020). Marangoz and Dolu have stated that while purchasing the apitherapy products, the consumers were affected mostly by "Friends/Relatives/Neighbors", "Promotional Sales", "Discount Days", and least "Newspaper/Magazine Ads" (Marangoz and Dolu 2019). In another study, although half the participants had experience using complementary medicine methods, they stated that they did not consult nurses (Jeon et al., 2019). In this study, the higher educational levels of the nurses were considered to signify increased use of apitherapy. In a study involving 1112 people, a significant relationship was found between the honey consumption and education levels of the participants (Tunca et al., 2015). In a study, it was determined that the level of education is important in using the complementary alternative medicine (Ince et al., 2020). It is important that nurses take responsibility for the apitherapy method included in complementary and alternative medicine methods and that nurses can use evidence-based apitherapy methods. Additionally, Since bee products have been used in many fields, especially in nutrition, the evidence-based studies in this field are very important. It may be recommended to follow up the results of these evidence-based studies and to inform the public about the recommended apitherapy products by the nurses.

Limitations

The study has three limitations. One limitation of this study was that it was conducted in the pediatric clinics of only six hospitals. Therefore, the results of the study cannot be generalized to all pediatric nurses in Turkey.

CONCLUSION

Variables such as gender, having child, and clinical experience did correlate with apitherapy use. The logistic regression finding shows that the socio-demographic characteristics of the pediatric nurses do not have a significant predictive power in predicting whether to use the personal apitherapy method. Therefore, the socio-demographic characteristics may be recommended for future studies to be examined in large sample groups.

The educational levels among the nurses using apitherapy methods were high. The most common type of apitherapy methods was honey. The nurses did not know of bee venom and knew very little about propolis and royal jelly. The nurses noted as their positive experiences that honey ameliorated diarrhea, treated gastritis, respiratory system diseases, and oral mucositis, strengthened immune system, and helped heal wounds and burns. Contrary to these positive experiences, pediatric nurses reported such negative experiences as "allergy, dizziness, headache, itching, and rashes". Almost half the nurses did not know that intake of honey products under one year of age was harmful and were not knowledgeable about the recommended doses of apitherapeutic products. It was determined that nurses learned apitherapy from doctors, family members, nurses, television and internet.

Turkey incorporates a diverse culture of the production and consumption of honey and the other

apicultural products thanks to its natural climate conditions. Despite the presence of apitherapeutic centers and regulations, a small number of pediatric nurses are aware of the current condition. The most important result is that although nurses are not legally held responsible for the administration of apitherapy methods, 35,2% of the participating nurses thought of being certified. Furthermore, 81,5% of the pediatric nurses expressed their interest in receiving training on apitherapy methods.

Since apitherapy products are produced naturally by bees, the benefit to children's health has been proven by many studies. Pediatric nurses play an important role in the protection and development of child health. Therefore, the knowledge, attitude and experience of pediatric nurses about apitherapy methods are very important. Pediatric nurses have a great role in helping parents to obtain information about apitherapy products, the use of the products and the beneficial and harmful side effects that may occur due to the use of the product. The results of this study provide valuable baseline information for pediatric nurses to refer to and use for apitherapy. In conclusion, the effectiveness of apitherapeutic products should be proved by conducting more experimental research studies, certificate programs should be offered, and nurses should be given roles/responsibilities and encouraged to employ apitherapy methods for personal and professional use.

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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, shareholding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Vildan Apaydın Cırık, Bahar Aksoy; **Design:** Vildan Apaydın Cırık, Bahar Aksoy; **Control/Supervision:** Vildan Apaydın Cırık; **Data Collection and/or Processing:** Bahar Aksoy; **Analysis and/or Interpretation:** Vildan Apaydın Cırık, Bahar Aksoy; **Literature Review:** Vildan Apaydın Cırık, Bahar Aksoy; **Writing the Article:** Vildan Apaydın Cırık, Bahar Aksoy; **Critical Review:** Vildan Apaydın Cırık; **References and Fundings:** Vildan Apaydın Cırık, Bahar Aksoy; **Materials:** Vildan Apaydın Cırık, Bahar Aksoy.

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