



Apitherapy Use, Knowledge Levels, and Life Quality of Individuals

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Abstract

Aim: The aim of this study is to determine the correlation between apitherapy use levels, knowledge levels about apitherapy, and life quality of individuals.

Material and methods: The sample consisted of 521 people who were contacted and agreed to participate in the study, among those using internet-social media actively. The Descriptive Characteristics Form, the Form for Knowledge on Honey and Apitherapy Use and World Health Organization Quality of Life Brief Form (WHOQOL-BREF) to assess quality of life of the participants were used as data collection tools.

Results: It was observed that 74.3% of the participants used a natural or herbal approach. The rate of those reporting that they used honey or another apicultural product was 81.2%. The most frequently consumed apicultural product was honey (79.8%). 28% of the participants consumed honey at least once a week. In the present study, 86.6% of the participants stated that they had knowledge about the benefits of apicultural products for health and 51.1% of them obtained this knowledge from their family, spouse, friends and relatives. As income level increased, frequency of using honey increased. It was determined that as educational and income levels increased, average correct responses in the honey and apicultural products knowledge form increased.

Conclusion: It was determined that as average correct responses in the honey and apicultural products knowledge form increased, quality of life regarding general state of health, physical health, psychological health, social relationships and environment subscales of the quality of life questionnaire enhanced.

Keywords: Apitherapy, Apitherapy Use Level, Knowledge Level, Quality of Life

Introduction

Natural produces have been used as traditional and alternative medicine applications in all cultures for thousands of years to protect health and treat diseases. One of these applications is apitherapy (Onbaşlı, [1]; Sorucu, [2]). Apitherapy or bee therapy is the use of honeybee products such as honey, royal jelly, propolis, pollen and bee venom for the purpose of preventing and treating illnesses and promoting health as complementary or supportive treatment (Ahuja and Ahuja, [3]; Çelik, [4]; Resmi Gazete, [5]). The history of apitherapy dates back to the year of 6000 B.C.. Ancient Egypt, Romans and Greeks used apiculture products for medical purposes (Altınbaş et al. [6]; Cherbuliez, [7]; Hellner et al. [8]; Zhu and Wongsiri, [50]). In history, there are works of art written by Hippocrates, Aristoteles, and Galen. In the recent years,

medicinal practices made by using apiculture products have been generally accepted by the medical world based on the results of scientific research as well (Çelik, [4]; Albayrak and Albayrak, [9]; Cherbuliez, [7]; Hellner et al. [8]; Zhu and Wongsiri, [10]). There is evidence on the fact that honey is a part of traditional Chinese medicine. In the famous antique prescription book consisting of fifty two prescriptions found in Changsha of the Hunan State, China dating back to the third century, it was determined that two of the prescriptions included information on bees (Cherbuliez [7]; Hellner et al. [8]; Zhu and Wongsiri, [10]). There are apitherapy centers especially in China, and Russia, Romania and some European countries. Apitherapy was added among the traditional and complementary medicine that can be applied officially in Turkey

with the Regulation for Traditional and Complementary Medicine Practices issued in the Official Gazette on 27.10.2014 in Turkey, and with this practice regulations, apitherapy centers have begun to be founded (Sorucu [2]; Resmi Gazete, [5]; Özkan and Bancar [11]).

Being under the scope of apitherapy, propolis heals various injuries such as throat pain, burns, diabetic lesions, and excisional and incisional injuries. When used with honey, it creates a synergic effect and helps rapid tissue regeneration (Górecka et al. [12]; De Almeida et al. [13]; Hozzein et al. [14]; Izuta et al. [15]; Jacob et al. [16]; De Rezende et al. [17]; Olczyk et al. [18]; Takzaree et al. [19]). On the other hand, it has been reported that bee pollen has effects decreasing weakness, premature aging, constipation and loss of weight (Górecka et al. [12]; Izuta et al. [15]; Olczyk et al. [18]; Choi, [20]; Marek et al. [21]). Royal jelly has effects improving skin health and preventing wrinkles (Górecka et al. [13]; Han et al. [8] Young et al. [23]). It is known that bee venom has antimicrobial, anti-inflammatory, antioxidant and antitumor characteristics (Górecka et al. [12]; Amin and Abdel-Raheem, [24]; Badr et al. [25]; Gajski et al. [26]; Han et al. [27]; Kocyigit et al. [28]; Vasileiadou et al. [29]). The studies have emphasized that various honey bee based products contain cytokines and growth factors required for tissue regeneration and sometimes exhibit antimicrobial, antioxidant, anti-inflammatory and moisturizing potential (Garraud et al. [30]; Jalil et al. [31]). There is available evidence on the effectiveness of honey for burns, bee venom for post-stroke shoulder ache and rheumatoid arthritis, propolis for lesions in the mouth, skin and genital area caused by herpes viruses, and honey for oral mucositis caused by radiotherapy and/or chemotherapy (Münstedt, [32]; Aziz and Abdul Rasool [33]; Münstedt et al. [32]). The aim of this study is to determine the correlation between the usage levels of apitherapy, knowledge levels on apitherapy and life quality of individuals based on the positive characteristics of apitherapy on human health in the existing literature.

Materials And Methods

Type of the Study

This cross-sectional study was conducted to determine the correlation between individuals' usage levels of apitherapy, knowledge levels on apitherapy and quality of life.

Population and Sample of the Study

The population of the study consisted of individuals, who were actively using the internet-social media (E-mail, WhatsApp, Instagram, Facebook etc.), were aged between 18 and 69 years, and voluntarily agreed to participate in the study, between December 2020 and April 2021 in Turkey. While no sample selection was used in the study, the sample consisted of 521 people, who were contacted and agreed to participate in the study, among those using actively internet-social media between December 2020 and April 2021. The inclusion criteria were determined as follows; being aged between 18 and 69 years, being literate in Turkish, being able to use internet-social media, and agreeing to voluntarily participate

in the study. Those who did not meet the inclusion criteria were excluded from the sample. The data were collected by sending with the survey link created on Google Forms after receiving the consent of those agreeing to participate in the study.

Data Collection Tools

Descriptive Characteristics Form prepared by the researchers to reveal the descriptive characteristics of the participants; the Form for Knowledge on Honey and Apitherapy Use prepared again by them to measure the knowledge of participants about honey and apitherapy was used; and World Health Organization Quality of Life Brief Form (WHOQOL-BREF) to assess quality of life of the participants were used as data collection tools.

Descriptive Characteristics Form

The descriptive characteristics form was prepared by the researchers and consists of questions regarding their socio-demographic characteristics (sex, age, educational status, status of employment, income status, region of residence, status of health perception) and their characteristics related to the use of apitherapy (status of using natural or herbal approach, status of using honey or other apitherapy products, which apitherapy products are used, why the apitherapy products are used, frequency of honey consumption, knowledge status of the benefits of apitherapy products for health and the information sources).

Form for Knowledge on Honey and Apitherapy Use

Form for Knowledge on Honey and Apitherapy Use was developed by the researchers to measure the knowledge levels of participants on Honey and Apitherapy. The form consists of 20 true-false questions.

World Health Organization Quality of Life Questionnaire

It is the short version of WHOQOL-100 scale with 26 items. The scale has a five-point rating (1-5) and consists of 4 subscales. These subscales are physical health, psychological health, social relationships and the environment. The subscales can separately be calculated between 4 and 20 and between 0 and 100. There is no total score calculated for the scale. Higher scores signify that quality of life is enhanced. The validity and reliability of the Turkish version of the scale was conducted by Eser et al. In its Turkish adaptation, there is an additional question on the environment and it consists of a total of 27 questions (Eser et al. [34]).

Ethical Considerations

Ethics committee approval was obtained from Gümüşhane University Scientific Research and Publication Ethics Committee in order to conduct the study.

Statistical Analysis

Descriptive statistics, means, median, frequencies, and percentage were used to show the socio-demographic

characteristics of the patients. Comparisons were made using t test, Pearson's Correlation and Spearman's Correlation for all statistical analyses and a two-sided p value of < 0.05 was considered as statistically significant.

Results

Table 1: Socio-demographic characteristics of the participants.

	n	%
Gender		
Female	380	72.9
Male	141	27.1
Educational Status		
Literate	7	1.3
Secondary School	19	3.6
High School	58	11.1
Undergraduate and Higher	437	83.9
Status of Employment		
Employed	188	36.1
Unemployed	333	63.9
Income Level		
Low	103	19.8
Middle	344	66
Region of Residence		
Black Sea	88	16.9
Central Anatolia	51	9.8
Eastern Anatolia	84	16.1
South Eastern Anatolia	121	23.2
Aegean	20	3.8
Marmara	81	15.5
Mediterranean	76	14.6
How would you describe your health?		
Bad	10	1.9
Fine	174	33.4
Good	337	64.7

Table 2: Characteristics related to apitherapy.

	n	%
Do you use natural or herbal approaches?		
Yes	387	74.3
No	134	25.7
Do you use honey or other apicultural products?		
Yes	423	81.2
No	98	18.8
Which apicultural products do you use? *		
Honey	416	79.8
Royal Jelly	20	3.8

Propolis	79	15.2
Pollen	64	12.3
Bee Venom	2	0.4
For what purposes do you use apicultural products?*		
For enhancing immunity	342	65.6
Wound therapy	20	3.8
Cough treatment	196	37.6
To relieve respiration	104	20
For mouth sore	28	5.4
For skin or hair care	91	17.5
Nutrition	30	5.8
How often do you consume honey?		
Don't use	107	20.6
Rarely	133	25.5
Once in fifteen days	33	6.3
Once a week	146	28
Every day	108	20.7
Do you have knowledge about the health benefits of apicultural products (honey, pollen, etc.)?		
Yes	451	86.6
No	70	13.4
If you have knowledge, how did you obtain that information? *		
Radio Television	207	39.7
Newspaper Magazine	148	28.4
Health Staff Members	149	28.6
Family Spouse Friends Relatives	266	51.1
The internet	49	9.4

*more than one response was given

It was found that the average age of the participants was 24.48 ± 5.94 , 72.9% were female, 83.9% had undergraduate or postgraduate education, 63.9% were unemployed, 66% had a middle level of income, 23.2% resided in the Southeastern Anatolia, and 64.7% described their health as fine (Table 1). Also, 74.3% of the participants used a natural or herbal approach, 81.2% used honey or another apicultural products, 79.8% consumed honey, 65.6% used them for enhancing immunity, 28% consumed honey at least once a week, 86.6% had knowledge about the health benefits of apicultural products, and 51.1% obtained this information from their family, spouse, friends and relatives (Table 2). There was a significant correlation among the status of having knowledge about the health benefits of apicultural products (honey, pollen, etc.) and average correct responses to the form for knowledge on honey and apiculture products. The knowledge form mean scores of those who had knowledge on the health benefits of apicultural products (honey, pollen, etc.) were higher than the scores of those than those who did not ($t= 4.628$; $p<0.001$).

There was a significant correlation between status of having knowledge about the health benefits of apicultural products (honey, pollen, etc.) and the subscales of general health, psychological health and environment subscales. The mean scores of general health subscale were higher in those who had knowledge about the health benefits of apicultural products (honey, pollen, etc.) than those who did not ($t= 3.205$; $p= 0.001$). The mean scores of the psychological health subscale were higher in those who had knowledge about the health benefits of apicultural products (honey, pollen, etc.) compared to those who did not ($t= 3.711$; $p<0.001$). The mean scores of the environment subscale were higher in those who had knowledge about the health benefits of apicultural products (honey, pollen, etc.) than those who did not ($t= 2.206$; $p= 0.028$). It was found that there was a significant correlation between the use of natural or herbal approaches and the psychological health and social relationships subscales. The mean scores of psychological health subscale were higher in those who used natural or herbal approaches than those who did not ($t= 2.618$; $p= 0.009$). The mean scores of social relationships subscale were higher in those who

used natural or herbal approaches than those who did not ($t=2.519$; $p=0.012$).

There was a positive significant correlation between the average correct response in the form for knowledge on honey and apiculture products and the educational status and income status. As educational level increased, average correct response in the form for knowledge on honey and apiculture products increased ($r=0.210$; $p<0.001$). As income level increased, average correct response in the form for knowledge on honey and apiculture products increased ($r=0.145$; $p=0.001$). There was a positive significant correlation between average correct response in the form for knowledge on honey and apiculture products and the subscales of general health, physical health, psychological health, social

relationships and environment in the quality of life questionnaire. As average correct response in the form for knowledge on honey and apiculture products increased, the quality of life related to the general health also increased ($r=0.091$; $p=0.038$). As average correct response in the form for knowledge on honey and apiculture products increased, the quality of life related to the physical health enhanced ($r=0.201$; $p<0.001$). As these average correct responses increased, the quality of life related to the psychological health also enhanced ($r=0.202$; $p<0.001$). As these average correct responses increased, the quality of life related to the social relationships also enhanced ($r=0.168$; $p<0.001$). As these average correct responses increased, the quality of life related to the environment also enhanced ($r=0.263$; $p<0.001$) (Table 3).

Table 3: Correlation of some parameters with quality of life parameters.

Age	Age		Knowledge form mean score		Definition of health		Frequency of using honey	
	r	p	r	p	r	p	r	p
Educational level	-0.017	0.701	0.21	$p<0.001$	-0.006	0.899	-0.008	0.862
Income level	0.04	0.362	0.145	0.001	0.066	0.131	0.124	0.004
General health	0.086	0.049	0.091	0.038	0.478	$p<0.001$	0.097	0.027
Physical health	0.058	0.19	0.201	$p<0.001$	0.404	$p<0.001$	0.085	0.053
Psychological health	0.177	$p<0.001$	0.202	$p<0.001$	0.308	$p<0.001$	0.124	0.005
Social Relationships	0.098	0.025	0.168	$p<0.001$	0.226	$p<0.001$	0.114	0.009
Environment	0.115	0.009	0.263	$p<0.001$	0.226	$p<0.001$	0.115	0.009

There was a positive significant correlation between the frequency of using honey and income status. The better the income was, the more increase there was in the frequency of using honey ($r=0.124$; $p=0.004$). There was a positive significant correlation between the frequency of using honey and the general health, psychological health, social relationships and environment subscales of the quality of life questionnaire. As the frequency of using honey increased, quality of life related to the general health also enhanced ($r=0.097$; $p=0.027$). As the frequency of using honey increased, quality of life related to the psychological health also enhanced ($r=0.124$; $p=0.005$). As frequency of using honey increased, quality of life related to the social relationships also enhanced ($r=0.114$; $p=0.009$). As frequency of using honey increased, quality of life related to the environment also enhanced ($r=0.115$; $p=0.009$) (Table 3). There was a positive correlation between age and the general health, psychological health, social relationships and environment subscales of the quality of life questionnaire. As age increased, the quality of life related to the general health also enhanced ($r=0.086$; $p=0.049$). As age increased, the quality of life related to the psychological health also enhanced ($r=0.177$; $p<0.001$). As age increased, the quality of life related to the social relationships also enhanced ($r=0.098$; $p=0.025$). As

age increased, the quality of life related to the environment also increased ($r=0.115$; $p=0.009$) (Table 3).

There was a significant correlation between the environment and gender ($t=-2.946$; $p=0.004$). Women had a higher quality of life related to the environment compared to men. There was a significant correlation between the status of employment and psychological health, social relationships and the environment subscales. The psychological health subscale mean scores of the employed ones were higher than the scores of those who were unemployed ($t=4.574$; $p<0.0001$). The social relationships subscale mean scores of the employed ones were higher than those who were unemployed ($t=2.341$; $p=0.020$). The environment subscale mean scores of the employed ones were higher than the scores of those who were unemployed ($t=2.126$; $p=0.034$).

Discussion

Throughout the decades, there has been a global increase in the use of traditional and complementary and alternative treatments. One of these treatments is apitherapy. There is increasing number of studies in the literature in the recent years concerning the use of apitherapy in health and treatment of illnesses. The number of

studies carried out with individuals on apitherapy is yet limited. This study assessed the correlation between the apitherapy use levels, levels of knowledge on apitherapy and life qualities of individuals. It was observed in the study that 74.3% of the participants used a natural or herbal approach. The rate of those reporting the use of honey or other apicultural products was 81.2%. The most frequent apicultural product was honey (79.8%). 28% of the participants stated that they consumed honey at least once a week. In a study carried out with nurses, it was reported that 66.1% of them used at least one of the apitherapy products and that the most frequently used apitherapy product among the nurses using apitherapy products was honey. The nurses used apitherapy products from time to time (Kavurmaci and Tan, [35]). Two other studies conducted in Turkey reported that the most well-known apicultural product was honey and it was more used as a nutrient (Bölüktepe and Yılmaz, [36]; Tunca et al. [37]). In another study conducted on medical students, it was observed that the most frequently used apitherapy product for 69% of the first-year students and 64% of 6th-year students was honey (Ünal and Öztürk, [38]). In another study conducted with university students, it was also found that honey was the most well-known one among the apicultural products (Saral and Yavuz, [39]). In another study, it was reported that approximate two thirds of the patients (64.2%) did not consume honey every day (Männle et al. [40]). Another study reported that 74.4% of the women consumed honey and the average frequency of honey consumption was twice a week (Münstedt et al. [41]). The results of these studies are compatible with the results of the present study.

It was determined in the present study that 86.6% of the participants had knowledge about the health benefits of apicultural products and 51.1% obtained this knowledge from their family, spouse, friends and relatives. As income level increased, the frequency of using honey increased. As the frequency of using honey increased, the quality of life regarding the general health, psychological health, social relationships and environment also enhanced. In a study conducted on university students, it was reported that 48.4% of them preferred to consume apicultural products due to their importance for health and 61.1% consumed them upon the suggestion of family/friends/neighbors/close circle (Saral and Yavuz, [39]). In a study carried out in Lithuania, it was reported that 62% of the participants used the apicultural products for themselves or their family members (Trumbeckaite et al. [42]). This result is similar to the results of studies on the use of complementary and alternative treatments in Australia (Tiralongo and Wallis, [43]), the United Kingdom (Freyman et al. [44]), Kuwait (Awad et al. [45]), Malesia (Hasan et al. [46]) and Sierra Leone (James and Bah, [47]). It was reported in another study that the most important sources of information related to apitherapy were the internet (62.5%), magazines (59.7%), and formal continuous education courses (52.8%). 41.7% of the participants reported that they obtained information from parents, grandmothers or

grandfathers and only 18% from the media (Trumbeckaite et al. [42]). In another study conducted in Germany, it was stated that the most important sources of information related to apitherapy were practical experience (68%) and media (48%) (Münstedt et al. [48]). In another study carried out in Sierra Leone, they were ranged as media (58.9%), books (35.6%), and CAM practitioners (43.3%) (James and Bah, [49]). In a study carried out in Turkey, it was determined that very few nurses had knowledge on apitherapy and they obtained the related information generally from the internet (Kavurmaci and Tan, [35]).

It was determined that those using apicultural products used them more for enhancing the immunity (65.6%) and for cough treatment (37.6%). In a previous study, it was reported that they were used for the treatment of cold, wounds, throat ache, and gingivitis (Hellner et al. [8]). In another study, more than 90% of the participants stated that they used them for respiratory infections (Trumbeckaite et al. [42]). On the other hand, in a study carried out with nurses to examine on which illnesses they were used for treatment, it was seen that the first three illnesses they were used were the immune system, digestion system and respiratory illnesses (Kavurmaci and Tan, [35]). Trumbeckaite et al. found in their study that the participants used the apitherapy products primarily to enhance their immune system and heal respiratory diseases (Trumbeckaite et al. [42]). The results of these studies are compatible with result of the present study.

It was observed that the descriptive form mean scores were higher for those who had knowledge on the health benefits of apicultural products compared to those who did not. As the educational and income levels increased, average correct response in the form for knowledge on honey and apicultural products increased. Those who had knowledge about the health benefits of apicultural products had a better quality of life in general health, psychological health and environment subscales than those who did not have. As average correct response in the form for knowledge on honey and apicultural products increased, the quality of life enhanced in general health, physical health, psychological health, social relationships, and environment subscales of quality of life questionnaire. In a study carried out in Poland, it was stated that education and counselling played a significant role in increasing the honey consumption (Kowalczyk et al. [50]). In the present study, it was observed that knowledge was important and it was correlated to quality of life.

Conclusion

It was observed as a result of the study that the most frequently consumed apicultural product was honey (79.8%). 86.6% of the participants had knowledge about the benefits of apicultural products for health and 51.1% obtained this knowledge from their family, spouse, friends, and relatives. As income level increased, frequency of using honey increased. With increasing educational and income levels, average correct response in the

form for knowledge on honey and apicultural products increased. Those who had knowledge about the health benefits of apicultural products had a better quality of life in general health, psychological health, and environment subscales than those who did not have. As average correct response in the form for knowledge on honey and apicultural products increased, quality of life enhanced in general health, physical health, psychological health, social relationships, and environment subscales of quality of life questionnaire.

Conflicts of Interest

No conflict of interest has been declared by the authors

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